CRWMS/M&O

Design Analysis Cover Sheet

Complete only applicable items.

(1.) QA: L

Page: 1 Of: 56

2. DESIGN ANALYSIS TITLE	
Probabilistic Criticality Consequence Evaluation (SCPB: N/A)	
3. DOCUMENT IDENTIFIER (Including Rev. No.)	4. TOTAL PAGES
BBA000000-01717-0200-00021 REV00	56
5. TOTAL ATTACHMENTS	6. ATTACHMENT NUMBERS - NO. OF PAGES IN EACH
35	See Sect. 9 for Attachment list and number of pages in each

	Printed Name	Signature	Date
7. Originator	P. Gottlieb, J. W. Davis, J.R. Massari	P. Gottlieb JWD JRM	9/4/96
8. Checker	Z. Ceylan, J. R. Massari, D.A. ~~Massari~~ Thomas P.G. 9/4/96	Zeki Ceylan, T.L.D. per FAX JRM	9/4/96
9. Lead Design Engineer	P. Gottlieb	Peter Gottlieb	9/4/96
10.QA Manager	HYDE GRIFFITH ~~O. J. Gilstrap~~ NG 9/4/96	Hyde Griffith	9/4/96
11. Department Manager	Hugh A. Benton	Jerry L. Youngblood for H.A. BENTON	9/4/96

12. REMARKS

Note: Attachments XII and XXIV are not used.

Editorial change to correct page # of page 9. GD 9/5/96 JWD 9/5/96

Summary of originator and checker responsibilities:

Section(s)	Responsible Individual(s)	Checker(s)
1.0, 3.0, 4.0	P. Gottlieb	D.A. Thomas
2.0, 5.0, 6.0	J.R. Massari	D.A. Thomas
7.0	P. Gottlieb	D.A. Thomas
7.1	J.R. Massari	D.A. Thomas
7.2	J.W. Davis	D.A. Thomas
7.2.1	J.R. Massari	D.A. Thomas
7.2.2	J.W. Davis	D.A. Thomas
7.2.3	J.W. Davis	D.A. Thomas
7.3.1	P. Gottlieb	D.A. Thomas
7.3.2	P. Gottlieb	Z. Ceylan
7.3.3	P. Gottlieb	Z. Ceylan
7.3.4	P. Gottlieb	D.A. Thomas
7.4.4	J.W. Davis	D.A. Thomas
7.4, 7.4.1 - 7.4.3, 7.4.	J.W. Davis	J.R. Massari
7.5	P. Gottlieb	D.A. Thomas
8.0	P. Gottlieb	D.A. Thomas
9.0	J.W. Davis	D.A. Thomas
Att. I	P. Gottlieb	Z.Ceylan
Att. II-VIII	J.W. Davis	D.A. Thomas
Att. IX-XXXVII	J.W. Davis	J.R. Massari

2. DESIGN ANALYSIS TITLE
Probabilistic Criticality Consequence Evaluation
3. DOCUMENT IDENTIFIER (Including Rev. No.)
BBA000000-01717-0200-00021 REV 00

4. Revision No.	5. Description of Revision
00	Initial Issue

Table of Contents:

Item		Page
1.	Purpose	5
2.	Quality Assurance	5
3.	Method	5
4.	Design Inputs	7
	4.1 Design Parameters	7
	4.1.1 Spent Fuel Assembly Parameters	7
	4.1.2 Intact Waste Package Geometry Parameters	8
	4.1.3 Isotope Atomic Weights	10
	4.1.4 Far-Field Tuff Composition and Characteristics	11
	4.1.5 Properties of Saturated Liquid Water	12
	4.2 Criteria	12
	4.3 Assumptions	14
	4.4 Codes and Standards	17
5.	References	18
6.	Use of Computer Software	21
	6.1 Scientific and Engineering Software	21
	6.2 Computational Support Software	22
7.	Design Analysis	23
	7.1 Internal Criticality, Basic Parameters	23
	7.1.1 Waste Package Nominal Criticality Configuration	23
	7.1.2 Determination of Power, Temperature, and Duration	27
	7.2 Internal Criticality, Neutronic Evaluation	27
	7.2.1 Radionuclide Increase Resulting From an Internal Criticality	27
	7.2.2 Compositions as a Function of Duration for Internal Criticality	33
	7.2.3 Check of Reactivity Changes With Time Due to Internal Criticality	34
	7.3 External Criticality, Basic Parameters	37
	7.3.1 Geometry and Material Composition	37
	7.3.2 Relation Between Power and Temperature	38
	7.3.3 Maximum Possible Power and Temperature	39
	7.3.4 Maximum Sustainable Power, Temperature, and Duration	40
	7.4 External Criticality, Neutronics Evaluation	41
	7.4.1 Reference MCNP Calculation for Initial Composition	41
	7.4.2 SAS2H Burnup Calculations	42
	7.4.3 ORIGEN-S Decay Calculations	44
	7.4.4 Burnup Compositions	45
	7.4.5 Check of Reactivity Changes With Time Due to Criticality	50
	7.5 Probability Estimates	51

7.5.1 Summary of Prior Probability Estimates 51
7.5.2 Data Needs for Future Probability Estimates 52

8. Conclusions 53

9. Attachments 54

1. Purpose

This analysis is prepared by the Mined Geologic Disposal System (MGDS) Waste Package Development (WPD) department with the objective of providing a comprehensive, conservative estimate of the consequences of the criticality which could possibly occur as the result of commercial spent nuclear fuel emplaced in the underground repository at Yucca Mountain. The consequences of criticality are measured principally in terms of the resulting changes in radionuclide inventory as a function of the power level and duration of the criticality. The purpose of this analysis is to extend the prior estimates of increased radionuclide inventory (Refs. 5.52 and 5.54), for both internal and external criticality. This analysis, and similar estimates and refinements to be completed before the end of fiscal year 1997, will be provided as input to Total System Performance Assessment - Viability Assessment (TSPA-VA) to demonstrate compliance with the repository performance objectives.

2. Quality Assurance

The Quality Assurance (QA) program applies to this analysis. The work reported in this document is part of the preliminary probabilistic evaluation of the waste package (WP). This activity can affect the proper functioning of the MGDS waste package; the waste package has been identified as an MGDS Q-List item important to safety and waste isolation (Ref. 5.1, pp. 5, 16). The waste package is on the Q-List by direct inclusion by the Department of Energy (DOE) as are the natural barriers of the Topopah Spring Welded (TSw) Hydrogeologic Unit, the Calico Hills Nonwelded (CHn) Hydrogeologic Unit, and the Saturated Zone (SZ) barrier; a QAP-2-3 evaluation has yet to be conducted. The work performed for this analysis is covered by a WPD QAP-2-0 work control Activity Evaluation entitled *Perform Probabilistic Waste Package Design Analyses* (Ref. 5.2). This QAP-2-0 evaluation determined that such activities are subject to *Quality Assurance Requirements and Description* (QARD) (Ref. 5.3) requirements. Applicable procedural controls are listed in the evaluation.

All design inputs which are identified in this document are for preliminary design and shall be treated as unqualified data; these design inputs will require subsequent qualification (or superseding inputs) as the waste package design proceeds. This document will not directly support any construction, fabrication or procurement activity and therefore is not required to be procedurally controlled as TBV (to be verified). In addition, the inputs associated with this analysis are not required to be procedurally controlled as TBV. However, use of any data from this analysis for input into documents supporting procurement, fabrication, or construction is required to be controlled as TBV in accordance with the appropriate procedures.

3. Method

The following methods are used for evaluating the consequences of WP internal criticality:

- The waste package temperature is determined as that at which the evaporation from the water surface (assumed to be just covering the top most assemblies; see Assumption 4.3.16) will just balance the infiltration which is assumed to be the maximum credible, 10

mm/yr (Ref. 5.18, Sect. 7).

- The drift wall temperature is determined by repository scale and drift scale hydrothermal calculations summarized in TSPA-95 (Ref. 5.18).
- The power level of the internal criticality is that necessary to support the rate of heat dissipation to the environment: (1) by radiation to the drift wall and conduction through the rock invert which is driven by the temperature gradient between the waste package and the drift wall; (2) by heating the infiltrating water from the general repository temperature to the waste package temperature; and (3) by evaporation of the water (heat of vaporization) from the surface of the pond within the waste package.
- The duration of the internal criticality is limited by the duration of the peak inflow (to the waste package) of water moderator necessary to maintain the power level.
- The sustainability of this criticality with respect to the balance between fissile species, which are generally consumed by the criticality, and neutron absorbers, which are generally produced by the criticality is verified by using SAS2H (Ref. 5.39) to calculate the species amounts at several times during the criticality, and using these amounts as input to MCNP (Ref. 5.40) to calculate the k_{eff} at each of the times.
- The radionuclide inventory found by using SAS2H is decayed after criticality shutdown for several times up to 999,999 years, using ORIGEN-S (Ref. 5.39).

The following methods are used for evaluating the consequences of criticality external to the WP:

- The average temperature of the critical mass is estimated as the boiling temperature of water at 50 atm. The reason for this estimate is that the most probable place where a reducing zone may occur is in organic material at the base of the tuff (Ref. 5.52), which is typically 500 meters below the water table (Ref. 5.25, Figure 1-6), giving rise to a hydrostatic pressure of 50 atm.
- The maximum power is determined as that required to maintain the average temperature of the critical spherical configuration against heat conduction out from the sphere.
- The maximum sustainable power is determined by assuming that all fissile material transported to the critical mass by the fissile material bearing water from one or more degraded waste packages in the repository is burned (Assumption 4.3.8).
- The duration of the external criticality is determined by the duration of flow of fissile material bearing water from the repository.
- The sustainability of the criticality and the increase in radionuclide inventory are determined by the same methods as were used for the internal criticality, using the computer codes, MCNP (Ref. 5.40), SAS2H, and ORIGEN-S (both Ref. 5.39).

Further detail on the specific analytical methods employed for each step is available in Section 7 of this analysis.

4. Design Inputs

The design inputs identified in this document are for preliminary design and shall be treated as unqualified data; these design input will require subsequent qualification (or superseding inputs) as the waste package design proceeds. This document will not directly support any construction, fabrication, or procurement activity and therefore is not required to be procedurally controlled as TBV.

4.1 Design Parameters

4.1.1 Spent Fuel Assembly Parameters

The fuel assembly upon which this calculation is based is the B&W 15 x 15 fuel assembly. The mechanical parameters for this assembly type are shown in Table 4.1-1. Note that inches are converted to centimeters exactly (2.54 cm/in.); this is not an indication of tolerance (accuracy), but is done for consistency between calculations using English or metric units. The theoretical density of UO_2 is 10.96 g/cm^3 (Ref. 5.39, Table M8.2.1). Non-fuel material compositions of Alloy 825, water, Zircaloy-4, A 516 carbon steel, and 316B6A stainless steel-boron alloy are taken from a QAP-3-9 analysis on material compositions (Ref. 5.5) and used in Attachment VII.

Table 4.1-1. Mechanical Parameters of B&W 15x15 Fuel Assembly

Parameter	Value	Units	Metric	Units	Radius (cm)	Ref.
Fuel Rods	208	/assbly	208	/assbly		5.41
Fuel Rods on a Lattice Side	15	/side	15	/side		5.41
Guide Tubes	16	/assbly	16	/assbly		5.41
Instrumentation Tubes	1	/assbly	1	/assbly		5.41
Total Guide + Instrument Tubes	17	/assbly	17	/assbly		-
Clad/Tube Material	ZIRC-4		ZIRC-4			5.41
Fuel Pellet OD	0.3686	inches	0.936244	cm	0.468122	5.41
Fuel Stack Height	141.8	inches	360.172	cm		5.41
Mass of U	1023	lb	464	kg		5.7
Mass of UO_2	1160.64	lb	526.46	kg		5.41
Percent of Theoretical Density	95	%	95	%		5.41
Fuel Clad OD	0.430	inches	1.0922	cm	0.5461	5.41
Clad Thickness	0.0265	inches	0.06731	cm		5.41
Fuel Clad ID*	0.377	inches	0.95758	cm	0.47879	-
Fuel Rod Pitch	0.568	inches	1.44272	cm		5.41
Guide Tube OD	0.530	inches	1.3462	cm	0.6731	5.41
Guide Tube Thickness	0.016	inches	0.04064	cm		5.41
Guide Tube ID*	0.498	inches	1.26492	cm	0.63246	-
Instrumentation Tube OD	0.493	inches	1.25222	cm	0.62611	5.41
Fuel Assembly Envelope	8.536	inches	21.68144	cm		5.41

* The inner diameters (IDs) above are calculated by subtracting 2 X thickness from the outer diameter (OD).

4.1.2 Intact Waste Package Geometry Parameters

The intact waste package geometry parameters used in this analysis are taken from Reference 5.54. The dimensions are listed in Table 4.1-2 below. Figure 4.1-1 depicts the 21 Pressurized Water Reactor (PWR) Advanced Uncanistered Fuel (AUCF) WP, its internals, and the material specifications (Ref. 5.34).

Table 4.1-2. Intact WP Dimensions

Component	Dimension (cm)
Outer barrier length (skirt edge to skirt edge)	533.5
Outer barrier skirt length (both ends)	22.5
Outer barrier inner radii	73.1
Outer barrier outer radii	83.1
Inner barrier length (overall)	466.5
Inner barrier inner radii	71.095
Inner barrier outer radii	73.095
Fuel cell tube opening	22.9
Fuel cell tube thickness	0.5
Fuel cell tube height	457.5
Criticality control panel/plate thickness	0.7
Criticality control panel/plate width	113.4
Criticality control long panel/plate (16 total) length	122.1
Criticality control short panel/plate (16 total) length	73.0
Criticality control panel/plate cutout length (4 per long panel/2 per short panel)	56.7
Criticality control panel/plate cutout width	0.7
Side and corner guide thickness	1.0

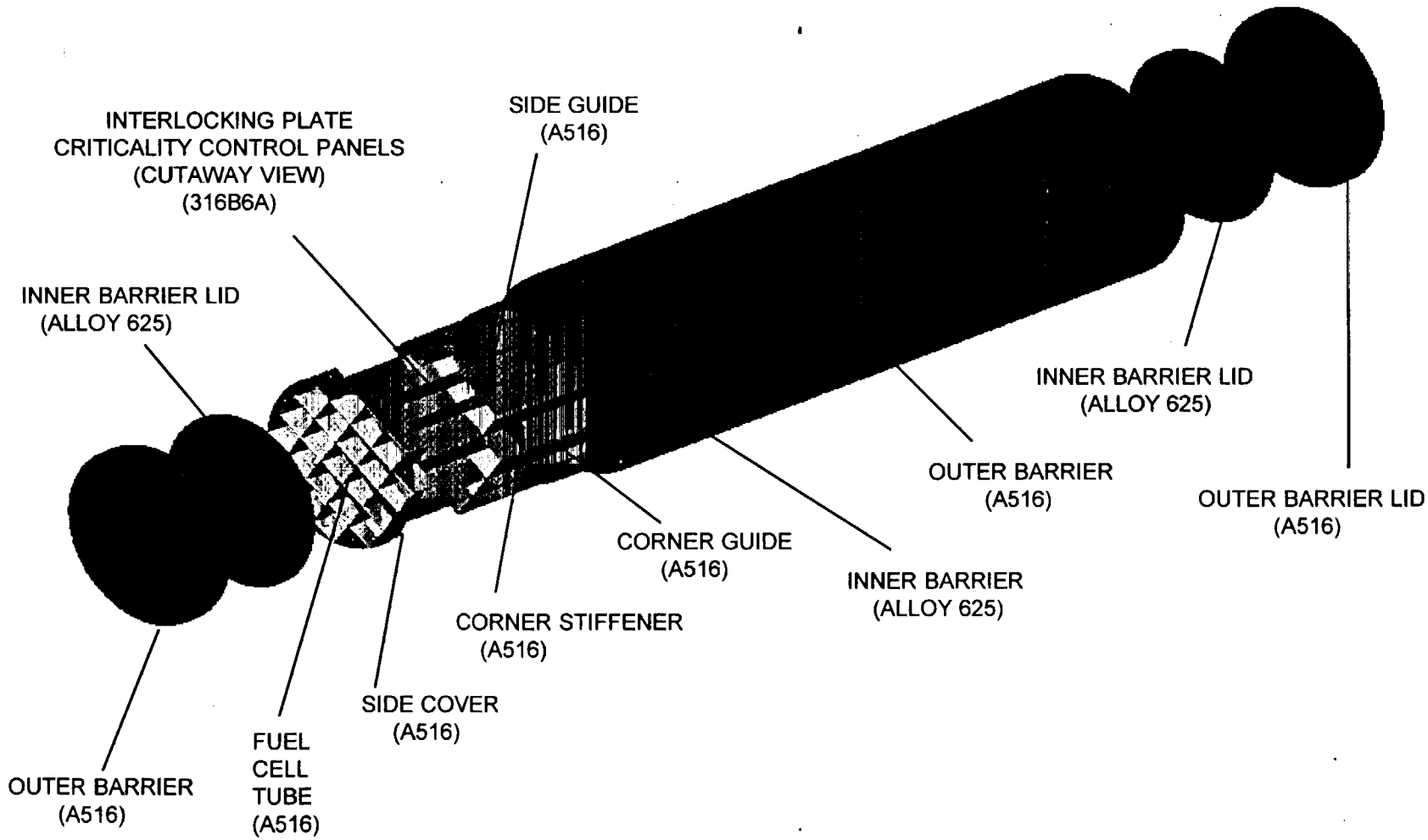


Figure 4.1-1. Advanced Uncanistered Fuel Waste Package with Internals Shown

4.1.3 Isotope Atomic Weights

The atomic weights of isotopes are listed in Table 4.1-3 below (Ref. 5.43 unless otherwise noted) and are used in the number density calculations discussed in Sections 7.2.1 and 7.4.4.

Table 4.1-3. Atomic Weights in g/mole (Ref. 5.43)

Isotope	MCNP ID	Atomic Weight
O-16	8016.50C	15.994915
nat. Mo	42000.50C	95.94
Mo-95	42095.50C	94.905839
Tc-99	43099.50C	98.90627501*
Ru-101	44101.50C	100.905576
Rh-103	45103.50C	102.905511
Ag-109	47109.50C	108.904756
nat. Cd	48000.50C	112.4
Xe-131	54131.50C	130.905069**
Xe-135	54135.50C	134.9063***
Cs-133	55133.50C	132.905355
Cs-135	55135.50C	134.90577
Nd-143	60143.50C	142.909779
Nd-145	60145.50C	144.912538
Sm-147	62147.50C	146.914867
Sm-149	62149.50C	148.91718
Sm-150	62150.50C	149.917276
Sm-151	62151.50C	150.919919
Sm-152	62152.50C	151.919756
Eu-151	63151.55C	150.919838
Eu-153	63153.55C	152.921242
Eu-154	63154.50C	153.923053
Gd-155	64155.50C	154.922664
Gd-157	64157.50C	156.924025
U-233	92233.50C	233.039522
U-234	92234.50C	234.040904
U-235	92235.50C	235.043915
U-236	92236.50C	236.045637
U-238	92238.50C	238.05077
Np-237	93237.55C	237.048056
Pu-238	94238.50C	238.049511
Pu-239	94239.55C	239.052146
Pu-240	94240.50C	240.053882
Pu-241	94241.50C	241.056737
Pu-242	94242.50C	242.058725
Pu-243	94243.35C	243.061972
Am-241	95241.50C	241.056714
Am-242m	95242.50C	242.059502
Am-243	95243.50C	243.061367
Cm-243	96243.35C	243.06137
Cm-245	96245.35C	245.065371

* From Reference 5.5

** From Reference 5.33

***Linearly interpolated from Atomic Weights of Xe-134 and Xe-136 in Reference 5.33.

Avogadro's Number [N_A] = 0.602252 $(g\text{-}mol)^{-1} \times 10^{24}$ (Ref. 5.43, p. 933).

4.1.4 Far-Field Tuff Composition and Characteristics

The composition and characteristics of the far field tuff are shown in Table 4.1-1 (Ref. 5.48, p. 16 unless noted otherwise).

Table 4.1-4. Calico Hills/Prow Pass Nonwelded-Zeolitic Tuff

Parameter	Value
Mean Density 198 samples	1.746 g/cm^3 *
Mean Porosity 127 samples (Max = 0.470**)	0.306*
Estimated Average Thermal Conductivity	1.38 W/m·K***
SiO_2 Wt%	69.1
TiO_2 Wt%	0.11
Al_2O_3 Wt%	13.4
Fe_2O_3 Wt%	1.13
MnO Wt%	0.05
MgO Wt%	0.94
CaO Wt%	3.22
Na_2O Wt%	1.23
K_2O Wt%	2.64
P_2O_5 Wt%	0.01
LOI (volatile) Wt%	8.90
Total Wt%	100.7

* Average values obtained form the data in Reference 5.47, p. 7-11.

** Previous evaluation of the porosity data for this tuff indicated that the 47% porosity data point was a statistical outlier (Ref. 5.47, p. 7-10) which was probably anomalous, so that the maximum of the sample should have been the maximum of the remaining 126 elements, 40% porosity.

*** Estimate is from Reference 5.31, p. 6 and is based on the average of two values from the Calico Hills tuff unit.

In addition to the above major-element concentrations, 25 trace-element concentrations were identified by parts per million (ppm) by weight (Ref. 5.48, Appendix C). Some of these trace elements have high absorption cross sections, for example, Eu, Hf, Sm, etc. Previous evaluation (Ref. 5.55, p. 5) indicated that none of these elements is contained in sufficient concentrations in the tuff, with an adequate confidence in the nominal value, to be included.

4.1.5 Properties of Saturated Liquid Water

Table 4.1-5. Properties of Saturated Water (Ref. 5.20, p. 656)

Temperature (°F)	Pressure (psia)	Specific Volume (ft^3/lb)
500	680.0	0.02043
510	743.5	0.02067

4.2 Criteria

This design analysis provides preliminary input for criticality analyses which evaluate whether waste package designs meet the repository criticality control design criteria from requirement documents. The *Mined Geological Disposal System Requirements Document* (Ref. 5.11) and the *Engineered Barrier Design Requirements Document* (EBDRD, Ref. 5.12) have criteria which pertain to criticality analyses. Reference 5.12 is the lower level document and contains all of the criteria listed in Reference 5.11. These requirements also apply to accumulations of fissile material in the far-field because far-field consequences can have an impact on the WP design. The WP is the source for material in the far-field and mitigation of significant consequences in the far-field may require some modification of the WP (Engeneered Barrier) design. The criteria cited in Reference 5.12 that have bearing on this analysis include the following:

4.2.1 From the EBDRD (Ref. 5.12);

"**3.2.2.6 CRITICALITY PROTECTION**

A. The Engineered Barrier Segment shall be designed to ensure that a nuclear criticality accident is not possible unless at least two unlikely, independent, and concurrent or sequential changes have occurred in the conditions essential to nuclear criticality safety. Each system shall be designed for criticality safety under normal and accident conditions. The calculated effective multiplication factor must be sufficiently below unity to show at least a five percent margin, after allowance for the bias in the method of calculation and the uncertainty in the experiments used to validate the methods of calculation.

[MGDS-RD 3.2.2.6.A][10CFR60.131(b)(7)]

B. To mitigate the potential for nuclear criticality, the Engineering Barrier Segment shall be designed and constructed to comply with the nuclear criticality requirements specified by DOE order 6430.1A, 1300-4.

[MGDS-RD 3.2.2.6.B] [DOE Order 6430.1A, 1300-4]"

4.2.2 From the EBDRD (Ref. 5.12);

"**3.7.1.3 INTERNAL STRUCTURE REQUIREMENTS**

A. The internal structure shall provide separation of the waste forms such that

> nuclear criticality shall not be possible unless at least two unlikely, independent, and concurrent or sequential changes have occurred in the conditions essential to nuclear criticality safety. The calculated effective multiplication factor (k_{eff}) must be sufficiently below unity to show at least a five percent margin after allowance for the bias in the method of calculation and the uncertainty in the experiments used to validate the methods of calculation (TBD).
>
> [MGDS-RD 3.2.2.6.A] [10CFR60.131(b)(7)]"

The present DOE Office of Civilian Radioactive Waste Management (OCWRM) and Civilian Radioactive Waste Management System (CRWMS) Management and Operating Contractor (M&O) position is that the requirement cited in the above criteria based on 10CFR60.131(b)7, being primarily of a deterministic nature, is not appropriate for postclosure disposal criticality. Instead, the probability or risk based approach has been recommended to the U.S. Nuclear Regulatory Commission (NRC) in the following two letters:

4.2.3 From Ronald A. Milner, Director, Office of Program Management and Integration, OCRWM, to the NRC, Docketing and Service Branch, dated June 16, 1995, which included the specific recommendation to apply the above requirements only to preclosure, and create the following new requirement for postclosure criticality:

"Postclosure criticality safety. The engineered barrier system shall be designed such that the probability and consequences of nuclear criticality provide reasonable assurance that the performance objective of §60.112 is met." (Ref. 5.4)

4.2.4 From Stephan J. Brocoum, Assistant Manager for Suitability and Licensing, OCRWM, to Michael J. Bell, Chief, Engineering and Geosciences Branch, Division of Waste Management, Office of Nuclear Material Safety and Safeguards, NRC, which referred to the above referenced letter, and specifically commented as follows:

"The DOE, therefore, requests that consideration be given to the DOE's proposed revision to 10CFR60.131(b)7 that would allow disposal criticality to be evaluated with risk-based methods." (Ref. 5.6)

The analyses in this document are intended to provide values of, and justification for, consequence parameters (specifically increased radionuclide inventory) plus probability information which will be used as part of TSPA-License Application (LA) to demonstrate compliance with the performance objective of §60.112 (or, as appropriate, other applicable performance objectives in effect or proposed by the NRC at the time the TSPA-LA analysis is performed). The "TBD" items identified in the above criteria will not be carried to the conclusions of this analysis based on the rationale that the conclusions are for preliminary design, and will not be used as input in design documents supporting construction, fabrication, or procurement.

4.3 Assumptions

All assumptions identified in this section will require verification (or superseding assumptions) as the waste package design proceeds and should be treated as unconfirmed items for preliminary design. For this preliminary design, that will not be used to support procurement, fabrication, or construction, the assumptions are clearly identified and traceable to a source, but are not procedurally controlled as TBV.

4.3.1 Principal Isotope (PI) burnup credit is assumed to be an acceptable method to account for reduced reactivity of SNF in criticality evaluations. The basis for this assumption is CDA Key 009 (Ref. 5.44). This assumption is used throughout Section 7.

4.3.2 The reference PWR fuel physical assembly selected for conceptual development is the B&W 15 x 15 fuel type, which has been established as one of the more reactive PWR fuel designs under intact fuel assembly and fixed basket geometry conditions (Ref. 5.16, p. II.A.3-35). This assumption is used throughout Section 7.

4.3.3 The design basis spent nuclear fuel (SNF) characteristics within the physical assembly are 3.0% U-235 enrichment, 20 GWd/MTU burnup, as established by the M&O (Ref. 5.10, Section 5). This SNF composition is assumed to be more stressing with respect to criticality than 96-97% of the SNF inventory. This SNF composition is representative only. It does not necessarily match any composition for a B&W assembly type specified in the previous assumption. This assumption is used throughout Section 7.

4.3.4 For SNF, the list of "Principal Isotopes" previously established (Ref. 5.46, p. 4-4) for long-term criticality control was used. The 29 principal isotopes are shown in Table 4.3-1. This assumption is used in Sections 7.3.2 and 7.4.

Table 4.3-1. Principal Long-Term Burnup Credit Isotopes

-	Mo-95	Tc-99	Ru-101	Rh-103
Ag-109	Nd-143	Nd-145	Sm-147	Sm-149
Sm-150	Sm-151	Sm-152	Eu-151	Eu-153
Gd-155	U-233	U-234	U-235	U-236
U-238	Np-237	Pu-238	Pu-239	Pu-240
Pu-241	Pu-242	Am-241	Am-242m	Am-243

4.3.5 It is assumed that the cooling of the external criticality in the saturated zone will be primarily by conduction. The basis for this assumption is that the maximum cooling possible from the next largest physical mechanism, advective flow through the criticality zone, is much smaller than the rock conduction, as is seen from the following calculation:

The maximum advective heat transfer is approximated by the mean advective flow

(Darcy velocity) in the saturated zone (2 meters/yr, Ref. 5.18, p. 7-21) multiplied by the cross-section area of the critical zone (1.4 m radius, which is 6.16 m^2 cross-section), multiplied by the heat capacity of water (aproximated by 4200 Joules/kg·K, Ref 5.14, which is also 4.2×10^6 Joules/m^3·K), multiplied by maximum temperature change between the critical mass and the far-field heat sink, and divided by the number of seconds in a year (31.5×10^6). The maximum change in temperature between the critical sphere and the far field is given in Attachment I, and in Section 7.3.2, as $P/(4\pi kR)$, where k is the thermal conductivity (1.38 W/m·K, Ref. 5.31, p. 6), P is the power generated by the critical sphere, and R is the radius, 1.4 m, given above. The resulting conservative estimate of advective heat transfer is 0.07P, which means that it can be no more than 7% of the conductive heat transfer. This assumption is used in Section 7.3.2.

4.3.6 It is assumed that the maximum power from the worst case external criticality will occur in the saturated zone, at the base of the tuff and will be at a pressure of 50 atmospheres. The basis for this assumption is that the reducing material from original organic deposits could not have been emplaced while the tuff was being deposited, and can, therefore, be found only at the base of the tuff, which is approximately 500 meters below the water table (Ref. 5.25, Figure 1-6), at which the hydrostatic pressure is approximately 50 atmospheres. A rapid onset of criticality could, of course, result in a temporary overpressure, but that possibility is not considered according to the steady state assumption (Assumption 4.3.7, below). This assumption is used in Section 7.3.3.

4.3.7 It is assumed that the criticality is in a steady state so that the time independent heat conduction equation can be used to establish the relation between criticality power and temperature. The basis for this assumption is that over the thousands of years (conservative estimate of reactor duration) the short period fluctuations will average out. This assumption is used in Section 7.3.2 and in Attachment I.

4.3.8 First, it is assumed that the sustainable criticality power for the external criticality is limited by the fuel replenishment rate from the infiltration of fissile material bearing water from the repository. (This is lower than the maximum power identified in Assumption 4.3.6, above and described in Section 7.3.3.) Secondly, it is further assumed that the incoming fissile material can only provide that portion of the fissile material which is above 1.37%, as is explained in Section 7.3.4 of this analysis and Section 7.7 of Reference 5.52, where the argument was initially presented. The basis for the first part of this assumption is that the criticality will begin when k_{eff} just reaches 1, so that any amount of fissile material consumed must be replaced by fresh fissile material in order to sustain the criticality. The basis for the second part of this assumption is given in Section 7.3.4 of this analysis and Section 7.7 of Reference 5.52. This assumption is used in Section 7.3.4.

4.3.9 The SAS2H module in SCALE4.3 (Ref. 5.39) is assumed to be applicable to analysis of accumulations of fissile material in tuff. The basis of this assumption is that the 44 group cross section library used in these calculations likely provides enough detail to cover the more thermal spectrum (compared to PWRs) of the external accumulations adequately.

This assumption will require future verification. This assumption was used in a previous analysis (Ref. 5.53) to generate the data used in Section 7.2.2, and is also used in Section 6.1.

4.3.10 The SAS2H and ORIGEN-S modules in SCALE4.3 are assumed to provide reasonable predictions of isotopic compositions for a low power criticality event over several thousand years. The basis of this assumption is the demonstration in Section 7.4.2 that no nonconservative trends exist by comparing the results of 100 year and 1000 year time steps. This assumptions will require future verification. This assumption is used in Sections 6.1, 7.2.1, 7.2.2, 7.4.3, and 7.4.4.

4.3.11 For external criticality, water infiltration has provided the mechanism for waste package and SNF degradation, as well as the mechanism for actinide transport to the far field environment. This assumption is used throughout Sections 7.3 and 7.4.

4.3.12 The material compositions for tuff in the far field is assumed to be represented by the major constituents of Calico Hills/Prow Pass nonwelded-zeolitic tuff taken from References 5.47 and 5.48. Portions of these formations fall within the saturated zone. This assumption is used throughout Sections 7.3 and 7.4.

4.3.13 The accumulation of UO_2 in saturated tuff is assumed to be represented by a spherical homogeneous mixture of UO_2/tuff/water. Fracture distributions and densities in the tuff, size and density of potential uranium deposits, and presence and composition of reducing zones within the tuff are unknown. This assumption is used throughout Sections 7.3 and 7.4.

4.3.14 The power level of the internal criticality is that necessary to support the rate of heat dissipation to the environment: (1) from the lower half of the waste package, by conduction through the rock invert which is driven by the temperature gradient between the waste package and the drift wall; (2) from the upper half of the waste package, which is assumed to be uncovered, by radiation from the package surface to the drift wall; (3) by evaporation of the water from the surface of the pond within the waste package. This assumption was used in Reference 5.54, which is the basis for information provided in Sections 7.1 and 7.2.

4.3.15 In determining the temperature gradient for Assumption 4.3.14, the drift wall temperature is determined by repository scale and drift scale hydrothermal calculations summarized in TSPA-95 (Ref. 5.18). This assumption is used throughout Sections 7.1 and 7.2.

4.3.16 In determining the temperature gradient for Assumption 4.3.14, the waste package temperature is assumed to be just large enough that the evaporation from the water surface (assumed to just cover the top most assemblies) will just balance the water inflow to the package which is assumed to be at the maximum high infiltration rate 10 mm/yr (Ref. 5.18, TSPA-95). The basis for this assumption is that the internal criticality is moderator limited, so that it is necessary to maintain the water level in order to maintain

the criticality. It turns out that even for this maximum possible infiltration rate, this waste package temperature is significantly less than the boiling temperature. This assumption is stated in Section 3.0, and is used throughout Sections 7.1, 7.2, and 7.3.4.

4.3.17 The duration of the internal criticality is limited by the peak inflow of water necessary to maintain the power level estimated according to Assumption 4.3.14. The basis for this assumption is the same as the basis for Assumption 4.3.16 to which it is closely related. This assumption is used throughout Sections 7.1 and 7.2.

4.3.18 The fresh fuel bias and uncertainty for MCNP is approximately 0.015 (Ref. 5.45, p. 6-221). The preliminary SNF bias and uncertainty is approximately 0.06 (Ref. 5.45, p. 6-221). These uncertainties were used in a prior unverified analysis. This assumption is used throughout Section 7.

4.3.19 The deterministic based requirements in the EBDRD (Ref. 5.12) are assumed not to apply to postclosure disposal criticality. The basis is the ongoing interaction between DOE and NRC to change the requirements to allow a probabilistic approach to postclosure disposal criticality as indicated in Section 4.2. This assumption is used throughout Section 7.

4.3.20 It is assumed that the mobilization (removal from the waste package) of the fissile material is much slower than the dissolution of the SNF. The consequence of this assumption is that the removal of the fissile material from the waste package is limited by the water flux through the waste package, or incident on the waste package. The basis of this assumption is the analysis given in Reference 5.52, Section 7.2. This assumption is used in Section 7.3.4.

4.4 Codes and Standards

American National Standard on "Criticality Safety Criteria for the Handling, Storage, and Transportation of LWR Fuel Outside Reactors", ANSI/ANS-8.17, 1984.

5. References -

5.1 *Q-List*, YMP/90-55Q, REV 3, Yucca Mountain Site Characterization Project

5.2 Activity Evaluation, *Perform Probabilistic Waste Package Design Analyses*, Document Identifier Number (DI#) BB0000000-01717-2200-00030 REV 02, CRWMS M&O

5.3 *Quality Assurance Requirements and Description*, DOE/RW-0333P, REV 5, Department of Energy (DOE) Office of Civilian Radioactive Waste Management (OCRWM)

5.4 Letter, R.A. Milner to Secretary, U.S. NRC Docketing and Service Branch, Transmitting DOE comments regarding NRC-proposed revisions to 10 CFR Part 60 Regulations for Design Basis Events, June 16, 1995

5.5 *Material Compositions and Number Densities for Neutronics Calculations*, DI# BBA000000-01717-0200-00002 REV 00, CRWMS M&O

5.6 Letter, S.J. Brocoum to M.J. Bell, Providing DOE acknowledgment of receipt of NRC comments on the Annotated Outline for the Disposal Criticality Analysis Topical Report, April 12, 1996

5.7 *Characteristics of Potential Repository Wastes*, DOE/RW-0184-R1, Volume 1, p. 2A-8, July 1992, DOE OCRWM

5.8 *Initial Waste Package Probabilistic Criticality Analysis: Uncanistered Fuel*, DI# B00000000-01717-2200-00079 REV 01, CRWMS M&O

5.9 *Initial Waste Package Probabilistic Criticality Analysis: Multi-Purpose Canister With Disposal Container*, DI# B00000000-01717-2200-00080 REV 01, CRWMS M&O

5.10 *Mined Geologic Disposal System Advanced Conceptual Design Report, Volume III of IV, Engineered Barrier Segment/Waste Package*, DI#: B00000000-01717-5705-00027 REV 00, CRWMS M&O.

5.11 *Mined Geologic Disposal System Requirements Document*, DOE/RW-0404P REV 02/ICN 01, DOE OCRWM

5.12 *Engineered Barrier Design Requirements Document*, YMP/CM-0024, REV 0, ICN 1, Yucca Mountain Site Characterization Project

5.13 *Characteristics Database LWR Radiological PC Database*, Version 1.1, CSCI A00000000-02268-1200-20002, CRWMS M&O

5.14 Holman, J.P., *Heat Transfer*, 7th Edition, McGraw-Hill Publishing Company, 1990

5.15 *User Manual for the CDB_R*, DI#: A00000000-01717-2002-20002 REV 01, CRWMS M&O

5.16 *Multi-Purpose Canister (MPC) Implementation Program Conceptual Design Phase Report, Volume II.A - MPC Conceptual Design Report*, DI# A20000000-00811-5705-00002 REV 00, CRWMS M&O

5.17 *CRC Handbook of Chemistry and Physics*, 66th Edition, CRC Press, 1985

5.18 *Total System Performance Assessment - 1995: An Evaluation of the Potential Yucca Mountain Repository*, DI# B00000000-01717-2200-00136 REV 01, CRWMS M&O

5.19 Reserved

5.20 Lamarsh, J.R., *Introduction to Nuclear Engineering*, 2nd Edition, Addison-Wesley Publishing Company, 1983

5.21 Reserved

5.22 Reserved

5.23 Reserved

5.24 Reserved

5.25 *Performance Assessment of the Direct Disposal in Unsaturated Tuff of Spent Nuclear Fuel and High-Level Waste Owned by U.S. Department of Energy*, Sandia National Laboratory, SAND94-2563/2, March 1995

5.26 Reserved

5.27 Reserved

5.28 Reserved

5.29 Reserved

5.30 Reserved

5.31 *Emplacement Scale Thermal Evaluations of Large and Small WP Designs*, DI# BB0000000-01717-0200-00009 REV 00, CRWMS M&O

5.32 Reserved

5.33 *Nuclides and Isotopes*, Fourteenth Edition, General Electric Company, 1989

5.34 *Material of 21 PWR AUCF Waste Container*, Interoffice Correspondence LV.WP.HW.03/96.059, Helen Wang, March 13, 1996, CRWMS M&O

5.35 Reserved

5.36 Reserved

5.37 Reserved

5.38 Reserved

5.39 *SCALE 4.3, RSIC Computer Code Collection*, CCC-545, Oak Ridge National Laboratory, October 1995

5.40 *MCNP 4A - Monte Carlo N-Particle Transport Code System*, CSCI# 30006 v4A, RSIC Computer Code Collection, CCC-200, Oak Ridge National Laboratory, February 1994

5.41 *Preliminary Waste Form Characteristics Report Version 1.0*, UCRL-ID-108314 Rev 1, Lawrence Livermore National Laboratory, December 1994

5.42 Reserved

5.43 Benedict, Manson, et al., *Nuclear Chemical Engineering*, Second Edition, McGraw-Hill Book Company, New York, 1981

5.44 *Controlled Design Assumptions (CDA) Document*, DI# B00000000-01717-4600-00032 REV 03, CRWMS M&O (TBV-221-DD)

5.45 *Initial Summary Report for Repository/Waste Package Advanced Conceptual Design*, DI# B00000000-01717-5705-00015 REV 00, CRWMS M&O

5.46 *Disposal Criticality Analysis Technical Report*, DI# B00000000-01717-5705-00020 REV 00, CRWMS M&O

5.47 *Total-System Performance Assessment for Yucca Mountain - SNL Second Iteration (TSPA-1993), Volume 1*, SAND93-2675, April, 1994

5.48 *Chemistry of Diagenetically Altered Tuffs at a Potential Nuclear Waste Repository, Yucca Mountain, Nye County, Nevada*, LA-10802-MS, Los Alamos National Laboratory, October, 1986

5.49 *SCALE4.3 and MCNP4A Installation*, Interoffice Correspondence LV.WP.JWD.06/96.135, J. Wesley Davis, June 11, 1996, CRWMS M&O

5.50 *Emplaced Waste Package Structural Capability Through Time Report*, DI# BBAA00000-

01717-5705-00001 REV 00, CRWMS M&O

5.51 Reserved

5.52 *Probabilistic External Criticality Evaluation*, DI# BB0000000-01717-2200-00037 REV 00, CRWMS M&O

5.53 *SAS2H Generated Isotopic Concentrations for B&W 15x15 PWR Assembly*, DI# BBA000000-01717-0200-00012 REV 01, CRWMS M&O

5.54 *Second Waste Package Probabilistic Criticality Analysis: Generation and Evaluation of Internal Criticality Configurations*, DI# BBA000000-01717-2200-00005 REV 00, CRWMS M&O

5.55 *Preliminary Criticality Analysis of Degraded SNF Accumulations External to a Waste Package*, DI# BBA000000-01717-0200-00016 REV 00, CRWMS M&O

5.56 *Validation of the Scale System for PWR Spent Fuel Isotopic Composition Analyses*, Oak Ridge National Laboratory, ORNL/TM-12667, March 1995

6. Use of Computer Software -

6.1 Scientific and Engineering Software

SCALE 4.3 (Ref. 5.39), which includes the SAS2H and ORIGEN-S modules used in this report, has not been qualified according to QA procedures. The SAS2H and ORIGEN-S results for external criticalities of this analysis, therefore, shall be treated as unqualified data. SCALE 4.3 was run on HP Series 735 Workstations. SCALE 4.3 is an appropriate tool to be utilized to determine the composition and characteristics of PWR spent fuel and has been demonstrated to run correctly on the HP 735 workstations (Ref. 5.49). This code has been validated for this application by ORNL (Ref. 5.56). The application of SAS2H to accumulations of fissile material in tuff and to long term low power depletion due to a criticality event does not fall within the ORNL range of validation and must be validated in the future. The 44 group cross section library used in these calculations likely provides enough detail to cover the more thermal spectrum of the external accumulations adequately (Assumption 4.3.9). In addition, the ability to cover the long term low power depletion calculations is checked in this report (Section 7.4.2) by comparing the results from two different time step sizes (100 and 1000 years; Assumption 4.3.10).

MCNP4A (Ref. 5.40; CSCI# 30006 v4A) was run on HP 735 Workstations. MCNP4A is qualified according to QA procedures and was obtained from the SCM in accordance with appropriate procedures. MCNP4A is utilized to determine the criticality potential SNF and of fissile material accumulations in the far field environment external to the repository and is an appropriate tool for these purposes, and was used within the range of validation.

The results from MCNP cases are reported as $k_{eff} \pm 2\sigma$. k_{eff} is the final estimated combined collision/absorption/track-length k_{eff} reported in MCNP. 2σ is twice the standard deviation of the calculated value and $k_{eff} \pm 2\sigma$ approximately represents the 95% confidence interval of the result.

There are biases and uncertainties associated with a criticality calculation. How these biases and uncertainties are treated in criticality calculations is covered in the American National Standard on "Criticality Safety Criteria for the Handling, Storage, and Transportation of LWR Fuel Outside Reactors" (see Section 4.4). The fresh fuel bias and uncertainty for MCNP is approximately 0.015 (Ref. 5.16, p. II.A.3-35). The fresh fuel bias and uncertainty is appropriate for application to the external accumulations of fissile material investigated in this analysis.

The CDB LWR Radiological PC Database (CDB-R, Ref. 5.13), CSCI: A00000000-02268-1200-20002 v1.1, was used to obtain the radiological characteristics of the thermal/shielding DBF. The CDB has been qualified by the Office of Civilian Radioactive Waste Management for use in work subject to the requirements of the QARD (Ref. 5.3). The CDB was installed on an IBM-compatible PC in accordance with the User Manual for the CDB-R (p. 1, Ref. 5.15) and was obtained in accordance with the QAP-SI series procedures. Use of the SNF radionuclide inventories from the CDB is appropriate for this design analysis and is within the range of validation performed for the CDB.

6.2 Computational Support Software

LOTUS 1-2-3, Release 4.01 for Windows was used to calculate the isotopic number densities for the spent nuclear fuel and tuff/water/UO_2 mixtures investigated. Details of the equations and used of the spreadsheet are provided in Section 7.

7. Design Analysis -

This design analysis is presented in five sections. Sections 7.1 and 7.2 deal with internal criticality. The first gives the basic parameters of the criticality, and the second gives the results of the neutronics evaluation; increase in radionuclide inventory and change in k_{eff}. Sections 7.3 and 7.4 deal with external criticality in the same way as the internal criticality sections. Section 7.5 summarizes the previous estimates of probability associated with the critical configurations and lists the data items expected to be obtained within the next year to improve these estimates.

7.1 Internal Criticality, Basic Parameters

7.1.1 Waste Package Nominal Criticality Configuration

The purpose of this section is to summarize the 21 PWR AUCF WP internal degraded configuration for which the consequences of criticality have been modeled, and provide a brief summary of the progression of WP degradation from the initial configuration to the configuration for which criticality may be of concern. Further detail on the information presented here can be found in the *Second Waste Package Probabilistic Criticality Analysis: Generation and Evaluation of Internal Criticality Configurations* (Ref. 5.54) and the *Emplaced Waste Package Structural Capability Through Time Report* (Ref. 5.50).

7.1.1.1 Basket Collapse

This section discusses the four primary basket components responsible for maintaining the initial configuration of the WP, and the anticipated changes in the WP configuration which will occur as a result of their degradation following WP breach. These are the side and corner guides, the neutron absorber plates, fuel cell tubes, and the fuel assemblies themselves. Prior to WP breach, the interior of the WP is filled with an inert gas, and no degradation of the internal components would be expected. The inert environment is lost on first pit penetration of both WP barriers, which TSPA-95 (Ref. 5.18, Sect. 5) predicted would occur for a majority of WPs (typically 80% or more) within 2000 to 10,000 years after emplacement under most of the 83 MTU/acre scenarios. However, those scenarios which considered that the remaining carbon steel could provide cathodic protection for the inner barrier showed much longer times to first pit penetration (in the 10,000 to 100,000 year time frame)

The AUCF WP side and corner guides are fabricated from 10 mm thick carbon steel plates. Reference 5.50 indicates that the side guide will fail by bending at a thickness of 2.9 mm if there is no backfill loading the basket. Reference 5.50 estimated that this failure would occur within 60 to 340 years following WP breach for the 83 MTU/acre case without backfill using the TSPA-95 carbon steel corrosion model. Failure of the side guides will cause the bottom row of fuel assemblies to shift downward to touch the inside of the inner barrier. As the criticality control plate assemblies also rest on the top of the side guides, the entire basket structure should also shift downward. Since the corner guides are under less loading, their failure should occur shortly after failure of the side guides. Failure of the corner guides will result in the assemblies on the end of the second row from the bottom to shift downward to touch the inside of the inner barrier.

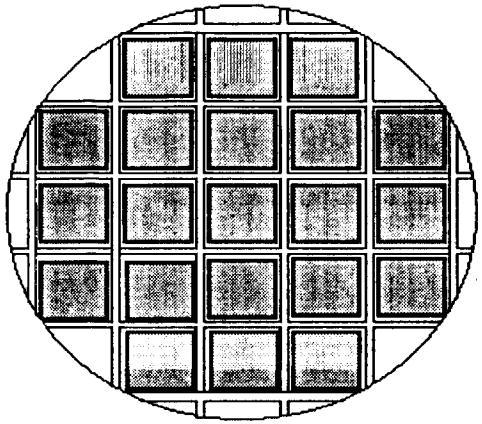
The assemblies above them should remain in place until sufficient degradation of the neutron absorber plates which support them has occurred.

The fuel cell tubes are also fabricated from carbon steel and have a wall thickness of 5 mm. The tubes will fully degrade before the failure of the side guides or the criticality control plates. In analyzing the criticality control plates, it was determined that the plates could maintain the basket and SNF assembly configuration without structural support from the tubes. Failure of the tubes will, therefore, not cause collapse of the basket, so no specific analysis was performed for the tubes. However, the remaining corrosion products occupy a greater volume than the original tubes and are fairly insoluble. Thus their presence may have some impact on WP internal criticality.

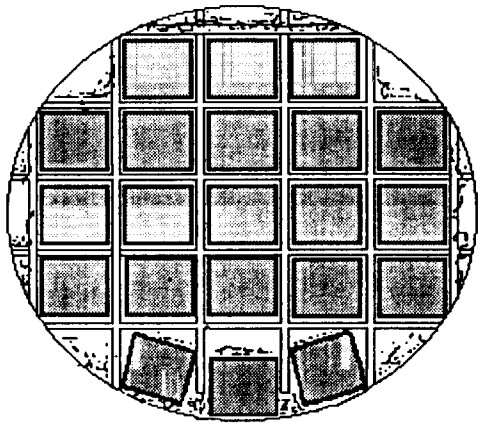
The AUCF WP neutron absorber plates are fabricated from 7 mm thick borated Type 316L stainless steel plates. Reference 5.50 found that the horizontal absorber plates will bend once 2.5 mm of thinning has occured, and the vertical plates will buckle after 5.36 mm of material is removed. Reference 5.50 made a preliminary estimate that it will take 2000 to 8500 years following breach of the WP for general corrosion of both sides of the neutron absorber plates to remove the 2.5 mm of material that would be required for bending to occur. It was estimated to take 4300 to 18,000 years to remove the 5.36 mm of material that would be required for buckling of the vertical plates. Bending will occur first at the ends of horizontal long criticality plates, causing the assemblies in the two side columns to drop down. Final collapse of the basket will occur due to bending of the horizontal plates supporting the assemblies (which would be expected to occur at a time later than the bending of the ends because the plates are supported on two sides) or buckling of the vertical plates. Final collapse will leave the center three columns of fuel assemblies resting on the bottom of the inner barrier.

Finally, Reference 5.50 also evaluated possible mechanisms for denting or crushing the fuel assemblies such that they no longer provide an optimum geometry for criticality. It was concluded that denting of the fuel rods would not occur because there is sufficient void space for expansion of the corroding basket materials, thus preventing them from causing any load on the fuel assemblies. Preliminary structural analyses were also performed which determined that the bottom-most fuel assemblies would be capable of supporting the entire degraded basket structure, and all fuel assemblies above them, without being crushed. Based on this information, the assumption of intact fuel assemblies for criticality analyses is appropriate and conservative until significant corrosion of the fuel rods and spacer grids has occured. Efforts to estimate the amount of corrosion required for such failures are currently under way.

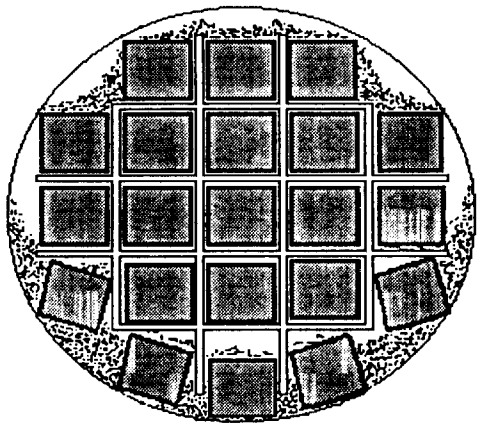
Figure 7.1.1-1 shows the initial and degraded waste package internal configurations. As will be discussed in the following sections the final stage, where complete degradation of the basket components has occured, will be the primary configuration of concern for postclosure internal AUCF WP criticality.



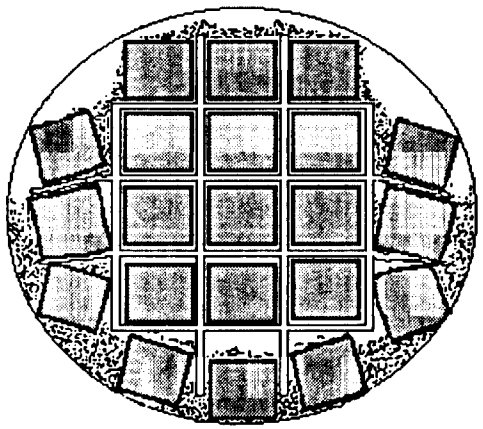
Initial Configuration



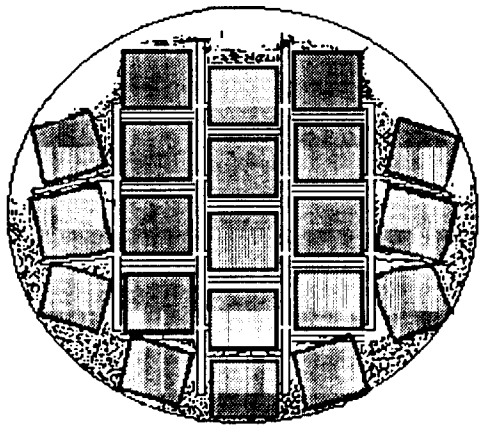
Side Guide Failure
60 to 340 years after WP breach



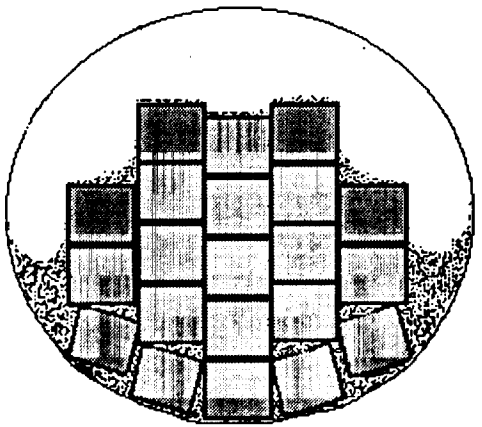
Corner Guide Failure
100 to 500 years after WP breach



Long Criticality Control Plates
Bend at Ends
2000 to 8500 years after WP breach



Complete Basket Collapse
2000 to 18000 years after WP breach
(remainder of plates still between assemblies)



Complete Basket Degradation
5700 to 24000 years
after WP breach

Figure 7.1.1-1. Initial and Degraded Waste Package Internal Configurations

7.1.1.2 Neutron Absorber Loss

As discussed above in Section 7.1.1.1, the degradation and collapse of the basket will leave behind a significant amount of iron, nickel, and chromium oxide corrosion products. In addition, the boron in borated stainless steel is in the form of a boride of iron (or one of the other metal components of stainless steel). Since such borides are generally found to be very stable (as described in Reference 5.25), the borides can be assumed to oxidize much more slowly than the iron, and some fraction will be trapped in the solid iron/chromium/nickel oxide matrix of the corroding stainless steel. Oxide corrosion products from the carbon steel components will also contribute to this trapping process.

Reference 5.54 performed an evaluation of the times required to remove specific amounts of the oxide corrosion products and the trapped boron from a WP which is assumed to be penetrated only on top and filled with water. A scenario which could lead to this configuration is based on the assumption that there will be very little probability of penetration of the lower portion of the waste package barriers before penetration of the upper portion, because such an "outside-in" process would require pit growth to a depth of 12 centimeters against gravity. The scenario begins with penetration of the upper portion of the barrier in 3000 to 5000 years; during much of the time before 3000 years the barrier temperature is above 90°C, and the aqueous corrosion rate of corrosion resistant inner barrier is modeled as being relatively high (Ref. 5.18), which is the reason why the penetration time is so short. After penetration of the upper portion of the barrier, penetration of the lower portion can begin from the inside out. By this time, however, the temperature is likely to have dropped below 50°C, where the TSPA-95 inner barrier corrosion models predict very small corrosion rates (Ref. 5.18). Because of the present uncertainty in the corrosion model, the probability for achieving a water-filled configuration as a result of this scenario has not yet been estimated. It is expected to be small.

Under such a flooded "bath tub" scenario (which is a required precondition for any internal WP criticality), removal of the oxides is accomplished by dissolution and removal via flushing through the upper portion of the WP. Reference 5.54 assumed that by the time oxides are dissolved, the trapped boride will have oxidized and will also dissolve, in which case it will be quickly flushed out of the package. The alternative is that the boron would still be solid boride, in which case it could remain in place (clinging to the remaining solid iron oxide, or fuel rods) or it could fall to the bottom of the package. The preliminary analysis in Reference 5.54 found that a flooded WP did not exceed a k_{eff} of 0.91 (used as the delimiter for criticality in that reference) until only 90% of the iron, nickel, and chromium oxides (uniformly occupying approximately 26% of the interior void space), and 5% of the initial boron remained. By this time, all internal plates, guides, and tubes had completely degraded. Thus, the first four degraded configurations identified in Figure 7.1.1-1 are of no concern from a postclosure criticality standpoint. Flushing times required to remove this material ranged from 12,000 years to greater than 100,000 years, depending on a number of assumptions such as the fraction of trapped boron, the inflow rate, the solubility of the oxides, the efficiency of the flushing process, and the drip rate of water onto the package.

7.1.2 Determination of Power, Temperature, and Duration

The internal criticality scenarios evaluated thus far simulate a flooded waste package that is gradually approaching a critical condition (k_{eff}=1) as a result of positive reactivity insertions caused by a slow loss of boron and iron from the package interior. Once a waste package reaches a k_{eff} of 1, continued small positive reactivity insertions will cause the power output of the waste package to begin to slowly rise (i.e., a long reactor period). If the power exceeds a certain limit, the rate at which water is consequentially removed from the waste package will exceed the rate of input, and the resulting water level drop will provide a negative reactivity insertion driving the waste package back towards a subcritical condition. Conversely, if insufficient power is produced, the water level will be maintained and the exchange process discussed previously will continue to remove dissolved boron, thus providing a continued source of positive reactivity insertions until the point of equilibrium is achieved. The maximum steady state power can then be estimated by determining the power required to maintain the bulk waste package water temperature at the point where water is removed at the same rate that it drips into the waste package. The waste package must produce sufficient power to raise the temperature of the incoming water to this equilibrium value, as well as account for the heat of vaporization and heat losses to the environment by radiation and/or conduction. Preliminary calculations, which are provided in detail in Reference 5.54, have shown that at a water temperature of 57.4°C, the evaporation rate will match the maximum TSPA-95 rate at which water drips into a WP located beneath a flowing fracture (191 liters/yr, Ref. 5.18, Sect. 7). The thermal power required to raise the water temperature to 57.4°C, while at the same time compensating for heat losses to the environment is 2.18 kW.

7.2 Internal Criticality, Neutronic Evaluation

The neutronic evaluation procedure for the far-field criticality involves three tasks as indicated below:

1) SAS2H burn calculations for intact fuel assemblies were run in a separate analysis (Ref. 5.53) and the results are displayed and utilized in this analysis,
2) Spreadsheet calculations of compositions from various duration criticality events using information from step 1, and
3) MCNP calculations of k_{eff} based on compositions from a 15,000 year decay case and the various duration criticality events.

7.2.1 Radionuclide Increase Resulting From an Internal Criticality

To evaluate the effects of a criticality on the radionuclide inventory of a waste package, the computer code ORIGEN-S was run using the PWR criticality design basis fuel, and the steady state power of 2.18 kW discussed above. The criticality was assumed in References 5.53 and 5.54 to occur after the fuel had aged/decayed for 15,000 years and was maintained at the above mentioned power for three durations: 1000, 5000 and 10,000 years. The maximum duration of 10,000 years is based on the assumption that it is the upper bound for the conditions supporting criticality (high infiltration, integrity of the lower part of the barrier, sufficient fissile material and

void space remaining). The output of these runs was the radionuclide inventory, in curies, at the times corresponding to the end of each criticality, and at fuel ages (time since reactor discharge) of 45,000 and 65,000 years (Ref. 5.53, Atts. VII-XI). In addition a fourth, decay-only case was run to determine the radionuclide inventories at the above times for fuel which did not experience a criticality event (Ref. 5.53, Att. VI). The percentage increase in the inventories of 36 of the isotopes examined in TSPA-95 is provided in Reference 5.54. The overall effect of the criticality on the radionuclide inventory can be summarized by the percentage increase in the total curies, over that of the decay-only case, for the 36 TSPA-95 isotopes. Table 7.2.1-1 shows this comparison. The explicitly stated times are measured from emplacement. Figure 7.2.1-1 graphically shows that even the 10,000 year duration criticality does not increase the inventory of the 36 isotopes above that at the time the criticality began. In addition, the criticality appears to have no significant long-term effect on the inventory of these isotopes. Within 25,000 years the total inventory of these 36 isotopes in fuel assemblies which experienced a criticality can barely be distinguished (<10%) from the inventory in fuel assemblies which did not experience a criticality. Furthermore, Table 7.2.1-2 indicates that the increase in the total inventory of the 36 TSPA-95 isotopes in a fuel assembly which experiences a criticality at 15,000 years does not exceed that of the worst decay only fuel, which is represented by the PWR thermal/shielding DBF.

Table 7.2.1-3 shows that the total increase in the inventory of the 36 TSPA-95 isotopes per unit burnup for the PWR criticality DBF is comparible to the in-reactor burn with ≈400 years of decay. Note that Table 7.2.1-3 gives the increment in Curies due to the specified burn, while Table 7.2.1-2 gives the toal Curies after the specified burn. These results are consistent based on the fact that the short lived isotopes present from the in-reactor burn have decayed by 400 years. It is just these short lived isotopes which are not present after the long post-closure criticality burns. It should be noted that the comparison of the 10,000 year burn increment in totoal Curies with the meaningful 400 year initial decay shows only a 2% increase. All calculations are performed in Attachment VIII. Tables 7.2.1-4 through 7.2.1-6 provide detailed inventories of the 36 isotopes, and the percentage change from the decay-only case, for the 1000, 5000, and 10,000 year criticalities.

Table 7.2.1-1. Percentage Increase in Total Curies of the 36 TSPA-95 Isotopes

Duration of Criticality (years)	Percent Increase at End of Criticality	Percent Increase at 45,000 years	Percent Increase at 65,000 years
1000	8.5% (16k years)	0.73%	0.73%
5000	15% (20k years)	4.2%	3.7%
10,000	24% (25k years)	9.9%	8.5%

Table 7.2.1-2. Total Curies of 36 TSPA-95 Isotopes Per Assembly

Fuel Age (years since)	16,000	20,000	25,000	45,000	65,000
PWR Thermal/Shielding DBF, Decay Only*	-	1.7e+02	-	-	-
PWR Criticality DBF, Decay Only	1.4e+02	1.2e+02	9.8e+01	5.3e+01	3.2e+01
PWR Criticality DBF, 1000 yr Criticality	1.5e+02	-	-	5.4e+01	3.3e+01
PWR Criticality DBF, 5000 yr Criticality	-	1.4e+02	-	5.5e+01	3.3e+01
PWR Criticality DBF, 10,000 yr Criticality	-	-	1.2e+02	5.8e+01	3.5e+01

* - Information for this fuel obtained from the CDB-R (Ref. 5.13).

Table 7.2.1-3. Total Curies of 36 TSPA-95 Isotopes Per Unit Burnup (Ci/GWd) Per Assembly

	Incremental Burnup (GWd)	Fuel Age (years since discharge)							
		30	400	15,000	16,000	20,000	25,000	45,000	65,000
PWR Criticality DBF, Decay Only	9.3e+00	1.3e+03	1.2e+02	1.6e+01	1.5e+01	1.3e+01	1.1e+01	5.7e+00	3.5e+00
PWR Criticality DBF, 1000 yr Criticality	3.8e-02	-	-	-	3.0e+02	-	-	2.6e+01	2.6e+01
PWR Criticality DBF, 5000 yr Criticality	1.9e-01	-	-	-	-	1.1e+02	-	1.1e+01	5.3e+00
PWR Criticality DBF, 10,000 yr Criticality	3.8e-01	-	-	-	-	-	5.8e+01	1.3e+01	7.9e+00

Inventory of 36 TSPA 95 Nuclides as a Function of Time for a PWR SNF Assembly After A 10,000 Year Criticality Starting at 15,000 Years

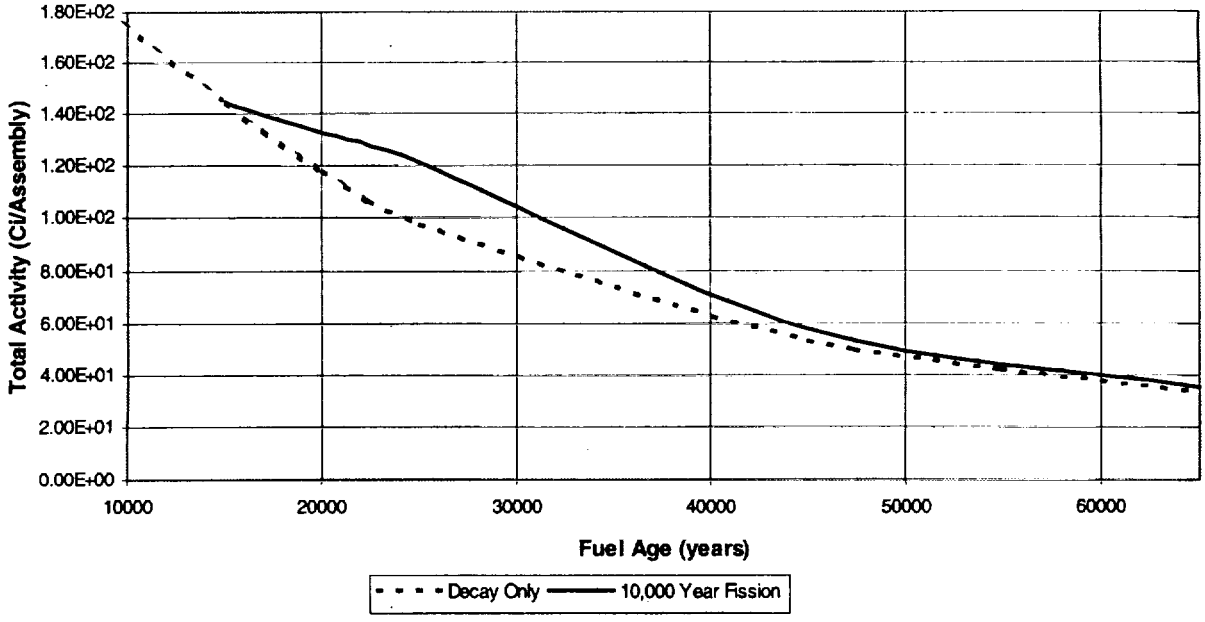


Figure 7.2.1-1

Table 7.2.1-4. Effects of 1000 Year Criticality on the Radionuclide Inventory of a PWR Fuel Assembly (Ref. 5.54)

	16,000 yr Act. (Ci) Critical	Act. (Ci) Decay Only	% Diff. Isotope	% Diff. Total	45,000 yr Act. (Ci) Critical	Act. (Ci) Decay Only	% Diff. Isotope	% Diff. Total	65,000 yr Act. (Ci) Critical	Act. (Ci) Decay Only	% Diff. Isotope	% Diff. Total
ac227	4.9e-003	4.3e-003	1.6e+001	4.9e-004	1.0e-002	1.0e-002	3.0e+000	5.6e-004	1.3e-002	1.3e-002	2.3e+000	9.3e-004
am241	2.6e+000	2.2e-003	1.2e+005	1.9e+000	2.0e-004	2.0e-004	-1.5e+000	-5.6e-006	3.9e-005	3.9e-005	-1.5e+000	-1.9e-006
am242m	2.0e-003	0.0e+000	N/A	1.4e-003	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000
am243	4.8e-001	4.5e-001	7.2e+000	2.3e-002	3.1e-002	2.9e-002	7.2e+000	3.9e-003	4.8e-003	4.5e-003	7.2e+000	9.9e-004
c 14	4.9e-006	4.8e-006	2.5e+000	8.7e-008	1.5e-007	1.4e-007	2.8e+000	7.5e-009	1.3e-008	1.3e-008	2.3e+000	9.3e-010
cm244	1.7e-002	0.0e+000	N/A	1.2e-002	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000
cm245	2.1e-003	2.1e-003	-1.4e+000	-2.2e-005	2.0e-004	2.0e-004	-1.5e+000	-5.6e-006	3.9e-005	3.9e-005	-1.5e+000	-1.9e-006
cm246	9.6e-005	8.8e-005	9.2e+000	5.8e-006	1.4e-006	1.3e-006	9.5e+000	2.3e-007	7.3e-008	6.7e-008	9.2e+000	1.9e-008
cs135	2.0e-001	2.0e-001	9.9e-001	1.4e-003	2.0e-001	2.0e-001	1.0e+000	3.8e-003	2.0e-001	2.0e-001	1.0e+000	6.2e-003
i129	8.8e-003	8.8e-003	4.5e-001	2.9e-005	8.8e-003	8.8e-003	4.5e-001	7.5e-005	8.8e-003	8.8e-003	3.4e-001	9.3e-005
nb 93m	3.5e-001	3.5e-001	5.8e-001	1.4e-003	3.4e-001	3.4e-001	2.9e-001	1.9e-003	3.4e-001	3.4e-001	2.9e-001	3.1e-003
nb 94	1.9e-005	1.4e-005	4.0e+001	4.0e-006	7.1e-006	5.0e-006	4.1e+001	3.9e-006	3.6e-006	2.5e-006	4.1e+001	3.2e-006
np237	3.8e-001	3.8e-001	2.6e-001	7.2e-004	3.8e-001	3.8e-001	2.6e-001	1.9e-003	3.8e-001	3.8e-001	2.7e-001	3.1e-003
pa231	4.9e-003	4.3e-003	1.6e+001	4.9e-004	1.0e-002	1.0e-002	3.0e+000	5.6e-004	1.3e-002	1.3e-002	1.6e+000	6.2e-004
pb210	8.0e-002	8.0e-002	0.0e+000	0.0e+000	2.1e-001	2.1e-001	4.7e-001	1.9e-003	2.8e-001	2.8e-001	7.1e-001	6.2e-003
pd107	2.6e-002	2.6e-002	3.8e-001	7.2e-005	2.6e-002	2.6e-002	3.8e-001	1.9e-004	2.6e-002	2.6e-002	7.7e-001	6.2e-004
pu238	2.9e+000	0.0e+000	N/A	2.1e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000
pu239	1.0e+002	1.0e+002	9.7e-001	7.2e-001	4.5e+001	4.5e+001	6.7e-001	5.6e-001	2.6e+001	2.5e+001	7.9e-001	6.2e-001
pu240	2.9e+001	2.8e+001	4.3e+000	8.7e-001	1.4e+000	1.3e+000	3.8e+000	9.4e-002	1.7e-001	1.6e-001	4.4e+000	2.2e-002
pu241	3.2e+000	2.1e-003	1.5e+005	2.3e+000	2.0e-004	2.0e-004	-1.5e+000	-5.6e-006	3.9e-005	3.9e-005	-1.5e+000	-1.9e-006
pu242	2.7e-001	2.7e-001	-3.7e-001	-7.2e-004	2.6e-001	2.6e-001	-3.9e-001	-1.9e-003	2.5e-001	2.5e-001	-4.0e-001	-3.1e-003
ra226	8.0e-002	8.0e-002	-1.3e-001	-7.2e-005	2.1e-001	2.1e-001	4.7e-001	1.9e-003	2.8e-001	2.8e-001	7.1e-001	6.2e-003
ra228	9.0e-008	9.0e-008	0.0e+000	0.0e+000	2.8e-007	2.8e-007	3.6e-001	1.9e-009	4.1e-007	4.1e-007	4.9e-001	6.2e-009
se 79	1.4e-001	1.4e-001	7.3e-001	7.2e-004	7.5e-002	7.5e-002	6.7e-001	9.4e-004	4.9e-002	4.9e-002	6.1e-001	9.3e-004
sm151	7.9e-001	0.0e+000	N/A	5.7e-001	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000
sn126	1.3e-001	1.2e-001	8.1e-001	7.2e-004	1.0e-001	1.0e-001	0.0e+000	0.0e+000	8.9e-002	8.8e-002	4.5e-001	1.2e-003
tc 99	3.8e+000	3.7e+000	5.3e-001	1.4e-002	3.4e+000	3.4e+000	5.9e-001	3.8e-002	3.2e+000	3.2e+000	3.1e-001	3.1e-002
th229	1.1e-002	1.2e-002	-8.7e-001	-7.2e-005	5.1e-002	5.1e-002	0.0e+000	0.0e+000	7.8e-002	7.8e-002	0.0e+000	0.0e+000
th230	9.2e-002	9.2e-002	-2.2e-001	-1.4e-004	2.2e-001	2.2e-001	4.5e-001	1.9e-003	2.9e-001	2.9e-001	7.0e-001	6.2e-003
th232	9.0e-008	9.0e-008	0.0e+000	0.0e+000	2.8e-007	2.8e-007	3.6e-001	1.9e-009	4.1e-007	4.1e-007	4.9e-001	6.2e-009
u233	2.5e-002	2.5e-002	-8.0e-001	-1.4e-004	6.7e-002	6.7e-002	0.0e+000	0.0e+000	9.3e-002	9.3e-002	1.1e-001	3.1e-004
u234	6.7e-001	6.7e-001	9.0e-001	4.3e-003	6.3e-001	6.3e-001	9.6e-001	1.1e-002	6.1e-001	6.0e-001	1.0e+000	1.9e-002
u235	1.6e-002	1.6e-002	-6.4e-001	-7.2e-005	1.8e-002	1.8e-002	-5.6e-001	-1.9e-004	1.8e-002	1.8e-002	-5.4e-001	-3.1e-004
u236	1.3e-001	1.3e-001	7.9e-001	7.2e-004	1.3e-001	1.3e-001	0.0e+000	0.0e+000	1.4e-001	1.3e-001	7.5e-001	3.1e-003
u238	1.5e-001	1.5e-001	0.0e+000	0.0e+000	1.5e-001	1.5e-001	0.0e+000	0.0e+000	1.5e-001	1.5e-001	0.0e+000	0.0e+000
zr 93	3.5e-001	3.5e-001	5.8e-001	1.4e-003	3.4e-001	3.4e-001	2.9e-001	1.9e-003	3.4e-001	3.4e-001	2.9e-001	3.1e-003
36 Iso. Totals	1.5e+002	1.4e+002	8.5e+000	0.0e+000	5.4e+001	5.3e+001	7.3e-001	0.0e+000	3.3e+001	3.2e+001	7.3e-001	0.0e+000

Table 7.2.1-5. Effects of 5000 Year Criticality on the Radionuclide Inventory of a PWR Fuel Assembly (Ref. 5.54)

	20,000 yr Act. (Ci) Critical	Act. (Ci) Decay Only	% Diff. Isotope	% Diff. Total	45,000 yr Act. (Ci) Critical	Act. (Ci) Decay Only	% Diff. Isotope	% Diff. Total	65,000 yr Act. (Ci) Critical	Act. (Ci) Decay Only	% Diff. Isotope	% Diff. Total
Ac227	8.8e-003	5.2e-003	7.0e+001	3.1e-003	1.2e-002	1.0e-002	2.0e+001	3.8e-003	1.4e-002	1.3e-002	1.0e+001	4.0e-003
Am241	2.7e+000	1.6e-003	1.7e+005	2.3e+000	1.9e-004	2.0e-004	-7.5e+000	-2.8e-005	3.6e-005	3.9e-005	-7.4e+000	-9.0e-006
Am242m	2.4e-003	0.0e+000	N/A	2.0e-003	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000
Am243	4.4e-001	3.1e-001	4.4e+001	1.1e-001	4.2e-002	2.9e-002	4.4e+001	2.4e-002	6.4e-003	4.5e-003	4.3e+001	6.0e-003
C 14	3.5e-006	3.0e-006	1.7e+001	4.3e-007	1.7e-007	1.4e-007	1.7e+001	4.5e-008	1.5e-008	1.3e-008	1.7e+001	6.8e-009
Cm244	1.6e-002	0.0e+000	N/A	1.3e-002	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000
Cm245	1.4e-003	1.5e-003	-7.1e+000	-9.3e-005	1.9e-004	2.0e-004	-7.0e+000	-2.6e-005	3.6e-005	3.9e-005	-7.4e+000	-9.0e-006
Cm246	7.4e-005	4.9e-005	5.1e+001	2.1e-005	1.9e-006	1.3e-006	5.2e+001	1.2e-006	1.0e-007	6.7e-008	5.2e+001	1.1e-007
Cs135	2.1e-001	2.0e-001	4.4e+000	7.6e-003	2.1e-001	2.0e-001	4.5e+000	1.7e-002	2.1e-001	2.0e-001	4.5e+000	2.8e-002
I129	9.0e-003	8.8e-003	2.0e+000	1.5e-004	9.0e-003	8.8e-003	2.0e+000	3.4e-004	9.0e-003	8.8e-003	2.0e+000	5.6e-004
Nb 93m	3.5e-001	3.5e-001	2.0e+000	5.9e-003	3.5e-001	3.4e-001	2.0e+000	1.3e-002	3.5e-001	3.4e-001	2.1e+000	2.2e-002
Nb 94	4.1e-005	1.2e-005	2.5e+002	2.5e-005	1.8e-005	5.0e-006	2.5e+002	2.4e-005	8.9e-006	2.5e-006	2.5e+002	2.0e-005
Np237	3.8e-001	3.8e-001	1.0e+000	3.4e-003	3.8e-001	3.8e-001	1.1e+000	7.5e-003	3.8e-001	3.8e-001	1.3e+000	1.5e-002
Pa231	8.8e-003	5.2e-003	7.0e+001	3.1e-003	1.2e-002	1.0e-002	2.0e+001	3.8e-003	1.4e-002	1.3e-002	1.0e+001	4.0e-003
Pb210	1.0e-001	1.0e-001	-9.9e-001	-8.5e-004	2.2e-001	2.1e-001	2.3e+000	9.4e-003	2.9e-001	2.8e-001	3.6e+000	3.1e-002
Pd107	2.7e-002	2.6e-002	1.9e+000	4.2e-004	2.7e-002	2.6e-002	1.9e+000	9.4e-004	2.7e-002	2.6e-002	2.3e+000	1.9e-003
Pu238	3.0e+000	0.0e+000	N/A	2.5e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000
Pu239	9.6e+001	9.2e+001	3.6e+000	2.8e+000	4.7e+001	4.5e+001	3.8e+000	3.2e+000	2.6e+001	2.5e+001	4.0e+000	3.1e+000
Pu240	2.3e+001	1.9e+001	2.6e+001	4.1e+000	1.7e+000	1.3e+000	2.6e+001	6.4e-001	2.0e-001	1.6e-001	2.6e+001	1.3e-001
Pu241	2.6e+000	1.5e-003	1.7e+005	2.2e+000	1.9e-004	2.0e-004	-7.5e+000	-2.8e-005	3.6e-005	3.9e-005	-7.4e+000	-9.0e-006
Pu242	2.7e-001	2.7e-001	-1.1e+000	-2.5e-003	2.5e-001	2.6e-001	-1.2e+000	-5.6e-003	2.5e-001	2.5e-001	-1.6e+000	-1.2e-002
Ra226	1.0e-001	1.0e-001	-9.9e-001	-8.5e-004	2.2e-001	2.1e-001	2.8e+000	1.1e-002	2.9e-001	2.8e-001	3.9e+000	3.4e-002
Ra228	1.1e-007	1.1e-007	0.0e+000	0.0e+000	2.8e-007	2.8e-007	1.4e+000	7.5e-009	4.2e-007	4.1e-007	1.7e+000	2.2e-008
Se 79	1.3e-001	1.3e-001	3.2e+000	3.4e-003	7.7e-002	7.5e-002	3.1e+000	4.3e-003	5.1e-002	4.9e-002	3.1e+000	4.6e-003
Sm151	8.0e-001	0.0e+000	N/A	6.8e-001	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000
Sn126	1.2e-001	1.2e-001	2.5e+000	2.5e-003	1.0e-001	1.0e-001	2.0e+000	3.8e-003	9.1e-002	8.8e-002	2.5e+000	6.8e-003
Tc 99	3.8e+000	3.7e+000	2.2e+000	6.8e-002	3.5e+000	3.4e+000	2.1e+000	1.3e-001	3.3e+000	3.2e+000	1.9e+000	1.9e-001
Th229	1.6e-002	1.6e-002	-6.1e-001	-8.5e-005	5.1e-002	5.1e-002	-3.9e-001	-3.8e-004	7.8e-002	7.8e-002	1.3e-001	3.1e-004
Th230	1.1e-001	1.1e-001	-8.8e-001	-8.5e-004	2.3e-001	2.2e-001	2.7e+000	1.1e-002	3.0e-001	2.9e-001	3.8e+000	3.4e-002
Th232	1.1e-007	1.1e-007	0.0e+000	0.0e+000	2.8e-007	2.8e-007	1.4e+000	7.5e-009	4.2e-007	4.1e-007	1.7e+000	2.2e-008
U233	3.1e-002	3.1e-002	-1.9e+000	-5.1e-004	6.7e-002	6.7e-002	-1.5e-001	-1.9e-004	9.3e-002	9.3e-002	3.2e-001	9.3e-004
U234	6.9e-001	6.6e-001	5.3e+000	3.0e-002	6.6e-001	6.3e-001	5.3e+000	6.2e-002	6.3e-001	6.0e-001	5.2e+000	9.6e-002
U235	1.6e-002	1.6e-002	-1.9e+000	-2.5e-004	1.8e-002	1.8e-002	-1.1e+000	-3.8e-004	1.8e-002	1.8e-002	-1.6e+000	-9.3e-004
U236	1.3e-001	1.3e-001	1.6e+000	1.7e-003	1.4e-001	1.3e-001	2.2e+000	5.6e-003	1.4e-001	1.3e-001	2.2e+000	9.3e-003
U238	1.5e-001	1.5e-001	0.0e+000	0.0e+000	1.5e-001	1.5e-001	0.0e+000	0.0e+000	1.5e-001	1.5e-001	0.0e+000	0.0e+000
Zr 93	3.5e-001	3.5e-001	2.0e+000	5.9e-003	3.5e-001	3.4e-001	2.0e+000	1.3e-002	3.5e-001	3.4e-001	2.1e+000	2.2e-002
36 Iso. Totals	1.4e+002	1.2e+002	1.5e+001	0.0e+000	5.5e+001	5.3e+001	4.2e+000	0.0e+000	3.3e+001	3.2e+001	3.7e+000	0.0e+000

Table 7.2.1-6. Effects of 10,000 Year Criticality on the Radionuclide Inventory of a PWR Fuel Assembly (Ref. 5.54)

	25,000 yr Act. (Ci) Critical	Act. (Ci) Decay Only	% Diff. Isotope	% Diff. Total	45,000 yr Act. (Ci) Critical	Act. (Ci) Decay Only	% Diff. Isotope	% Diff. Total	65,000 yr Act. (Ci) Critical	Act. (Ci) Decay Only	% Diff. Isotope	% Diff. Total
Ac227	1.4e-002	6.3e-003	1.2e+002	8.0e-003	1.5e-002	1.0e-002	4.9e+001	9.2e-003	1.6e-002	1.3e-002	2.4e+001	9.6e-003
Am241	2.1e+000	1.1e-003	2.0e+005	2.2e+000	1.7e-004	2.0e-004	-1.4e+001	-5.5e-005	3.4e-005	3.9e-005	-1.5e+001	-1.8e-005
Am242m	1.9e-003	0.0e+000	N/A	2.0e-003	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000
Am243	4.1e-001	1.9e-001	1.1e+002	2.2e-001	6.3e-002	2.9e-002	1.1e+002	6.3e-002	9.5e-003	4.5e-003	1.1e+002	1.6e-002
C14	2.4e-006	1.6e-006	4.8e+001	8.0e-007	2.1e-007	1.4e-007	4.9e+001	1.3e-007	1.9e-008	1.3e-008	4.8e+001	1.9e-008
Cm244	1.5e-002	0.0e+000	N/A	1.6e-002	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000
Cm245	8.8e-004	1.0e-003	-1.4e+001	-1.5e-004	1.7e-004	2.0e-004	-1.4e+001	-5.5e-005	3.4e-005	3.9e-005	-1.5e+001	-1.8e-005
Cm246	5.2e-005	2.4e-005	1.2e+002	2.9e-005	2.8e-006	1.3e-006	1.2e+002	2.8e-006	1.5e-007	6.7e-008	1.2e+002	2.5e-007
Cs135	2.2e-001	2.0e-001	8.4e+000	1.7e-002	2.2e-001	2.0e-001	9.0e+000	3.4e-002	2.2e-001	2.0e-001	8.5e+000	5.3e-002
I129	9.2e-003	8.8e-003	4.1e+000	3.7e-004	9.2e-003	8.8e-003	4.1e+000	6.8e-004	9.2e-003	8.8e-003	4.0e+000	1.1e-003
Nb 93m	3.6e-001	3.4e-001	4.1e+000	1.4e-002	3.6e-001	3.4e-001	4.1e+000	2.6e-002	3.5e-001	3.4e-001	3.8e+000	4.0e-002
Nb 94	7.4e-005	1.0e-005	6.4e+002	6.5e-005	3.7e-005	5.0e-006	6.4e+002	6.1e-005	1.9e-005	2.5e-006	6.4e+002	5.0e-005
Np237	3.9e-001	3.8e-001	2.1e+000	8.2e-003	3.9e-001	3.8e-001	2.1e+000	1.5e-002	3.8e-001	3.8e-001	2.4e+000	2.8e-002
Pa231	1.4e-002	6.3e-003	1.2e+002	8.0e-003	1.5e-002	1.0e-002	4.9e+001	9.2e-003	1.6e-002	1.3e-002	2.4e+001	9.6e-003
Pb210	1.3e-001	1.3e-001	-7.9e-001	-1.0e-003	2.2e-001	2.1e-001	4.7e+000	1.9e-002	3.1e-001	2.8e-001	1.1e+001	9.9e-002
Pd107	2.7e-002	2.6e-002	3.8e+000	1.0e-003	2.7e-002	2.6e-002	3.8e+000	1.9e-003	2.7e-002	2.6e-002	4.2e+000	3.4e-003
Pu238	3.1e+000	0.0e+000	N/A	3.1e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000
Pu239	8.7e+001	8.0e+001	8.6e+000	7.0e+000	4.9e+001	4.5e+001	8.9e+000	7.5e+000	2.8e+001	2.5e+001	9.1e+000	7.1e+000
Pu240	1.8e+001	1.1e+001	6.9e+001	7.7e+000	2.2e+000	1.3e+000	6.8e+001	1.7e+000	2.7e-001	1.6e-001	6.9e+001	3.4e-001
Pu241	2.1e+000	1.0e-003	2.1e+005	2.2e+000	1.7e-004	2.0e-004	-1.4e+001	-5.5e-005	3.4e-005	3.9e-005	-1.5e+001	-1.8e-005
Pu242	2.6e-001	2.7e-001	-2.6e+000	-7.1e-003	2.5e-001	2.6e-001	-2.7e+000	-1.3e-002	2.4e-001	2.5e-001	-2.8e+000	-2.2e-002
Ra226	1.3e-001	1.3e-001	-7.9e-001	-1.0e-003	2.2e-001	2.1e-001	4.7e+000	1.9e-002	3.1e-001	2.8e-001	1.1e+001	9.9e-002
Ra228	1.5e-007	1.5e-007	6.8e-001	1.0e-009	2.8e-007	2.8e-007	2.2e+000	1.1e-008	4.2e-007	4.1e-007	2.9e+000	3.7e-008
Se 79	1.2e-001	1.1e-001	6.1e+000	7.1e-003	7.9e-002	7.5e-002	6.3e+000	8.8e-003	5.2e-002	4.9e-002	6.3e+000	9.6e-003
Sm151	8.1e-001	0.0e+000	N/A	8.2e-001	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000	0.0e+000
Sn126	1.2e-001	1.2e-001	5.1e+000	6.1e-003	1.1e-001	1.0e-001	4.9e+000	9.4e-003	9.3e-002	8.8e-002	5.0e+000	1.4e-002
Tc 99	3.8e+000	3.6e+000	4.1e+000	1.5e-001	3.5e+000	3.4e+000	4.1e+000	2.6e-001	3.3e+000	3.2e+000	3.8e+000	3.7e-001
Th229	2.3e-002	2.3e-002	-1.7e+000	-4.1e-004	5.1e-002	5.1e-002	-1.2e+000	-1.1e-003	7.8e-002	7.8e-002	-1.3e-001	-3.1e-004
Th230	1.4e-001	1.4e-001	0.0e+000	0.0e+000	2.3e-001	2.2e-001	5.0e+000	2.1e-002	3.1e-001	2.9e-001	7.3e+000	6.5e-002
Th232	1.5e-007	1.5e-007	6.8e-001	1.0e-009	2.8e-007	2.8e-007	2.2e+000	1.1e-008	4.2e-007	4.1e-007	2.9e+000	3.7e-008
U233	3.7e-002	3.9e-002	-3.1e+000	-1.2e-003	6.7e-002	6.7e-002	-6.0e-001	-7.5e-004	9.3e-002	9.3e-002	3.2e-001	9.3e-004
U234	7.2e-001	6.5e-001	1.1e+001	7.4e-002	6.9e-001	6.3e-001	1.1e+001	1.3e-001	6.6e-001	6.0e-001	1.1e+001	2.0e-001
U235	1.6e-002	1.6e-002	-3.6e+000	-6.1e-004	1.7e-002	1.8e-002	-2.8e+000	-9.4e-004	1.8e-002	1.8e-002	-2.7e+000	-1.5e-003
U236	1.4e-001	1.3e-001	3.1e+000	4.1e-003	1.4e-001	1.3e-001	4.5e+000	1.1e-002	1.4e-001	1.3e-001	4.5e+000	1.9e-002
U238	1.5e-001	1.5e-001	0.0e+000	0.0e+000	1.5e-001	1.5e-001	0.0e+000	0.0e+000	1.5e-001	1.5e-001	0.0e+000	0.0e+000
Zr 93	3.6e-001	3.4e-001	4.1e+000	1.4e-002	3.6e-001	3.4e-001	4.1e+000	2.6e-002	3.5e-001	3.4e-001	3.8e+000	4.0e-002
36 Iso. Total	1.2e+002	9.8e+001	2.4e+001	0.0e+000	5.8e+001	5.3e+001	9.9e+000	0.0e+000	3.5e+001	3.2e+001	8.5e+000	0.0e+000

7.2.2 Compositions as a Function of Duration for Internal Criticality

Number densities for the fuel accounting for burnup and production of isotopes were calculated for a base case with decay out to 15,000 years and for the criticalities lasting 1000, 5000 and 10,000 years. The SAS2H and ORIGEN-S case descriptions which support these number density calculations are provided in Sections 7.5.1 and 7.5.2 of Reference 5.53. The grams/assembly compositions are taken from Attachments XI and XII of Reference 5.53. The grams/assembly output per appropriate time step ("initial" decay column for criticality cases) in conjunction with the assembly volume was used to calculate the number density of each of the required isotopes using a LOTUS 1-2-3 spreadsheet. The equation for number density is shown below (Ref. 5.20, p. 34):

$$N = \rho N_A / M$$

where, ρ is the physical density in g/cm^3, calculated as grams/assembly ÷ assembly volume (51575.24 cm^3, Ref. 5.54 Att. VIII),
N_A is Avagadro's Number - 0.602252E+24 atoms/mole (Ref. 5.43), and
M is the gram atomic weight.

The units of the resulting number density is in $atoms/cm^3$. The required units for subsequent use are atoms/barn-cm where 1 barn equals 10^{-24} cm^2. The calculations in the spreadsheet drops the E+24 from Avagadro's Number to account for the conversion. As a conservatism in the criticality calculations which will use these number densities, the values are adjusted up to a 96% theoretical density.

The Principal Isotopes previously established (Ref. 5.46, p. 4-4) were used with the addition of Cd, Gd-157, Xe-131, and Cs-133. These four additional isotopes were identified in the top 15 fission product absorber list for 1000 and 5000 year criticalities as described in Section 7.4.4. These four isotopes were added to provide a indication of realistic reactivity changes due to burnup in the long term low power criticality being analyzed.

The grams/assembly (Ref. 5.53, Attachments XI and XII) for each isotope and the results of the number density calculations are shown in Attachment II which is the LOTUS 1-2-3 spreadsheet used to generate the values.

The burnup associated with each of the criticality durations is shown in the Table 7.2.2-1 along with the masses of the major fissile isotopes (U-235 and Pu-239), Pu-240 (actinide absorber) and fission products absorbers. Note that while the mass of Pu-239 decreased by 19% (partially offset by U-235 mass increase), the mass of major absorbers such as Pu-240, Sm-149, and Eu-151 decreased by 41%, 51%, and 10%, respectively. The mass of the Pu isotopes decreased due to absorption and decay, while the mass of these two fission products decreased by absorption.

Table 7.2.2-1. Burnup and Composition Changes Associated with Criticality Duration

Duration of Criticality (years)	0	1000	5000	10,000
Burnup (MWd)	0	37.95	189.76	379.52
Mass of U-235 (g)	7.21E+3	7.23E+3	7.29E+3	7.35E+3
Mass of Pu-239 (g)	1.72E+3	1.68E+3	1.54E+3	1.40E+3
Mass of Pu-240 (g)	1.38E+2	1.30E+2	1.03E+2	8.09E+1
Mass of Sm-149 (g)	1.42E+0	1.18E+0	7.88E-1	6.96E-1
Mass of Nd-143 (g)	2.69E+2	2.70E+2	2.73E+2	2.77E+2
Mass of Eu-151 (g)	6.22E+0	6.12E+0	5.87E+0	5.60E+0
Mass of Rh-103 (g)	1.44E+2	1.44E+2	1.45E+2	1.47E+2
Mass of Xe-131 (g)	1.38E+2	1.38E+2	1.40E+2	1.42E+2

7.2.3 Check of Reactivity Changes With Time Due to Internal Criticality

The AUCF waste package design model in MCNP consists of ½ of the package with a reflective plane along the axis to represent the entire package. The AUCF waste package containment barriers are modeled as separate units in the MCNP model. The composition, thicknesses, radii, and lengths of the containment barriers are modeled explicitly as listed in Table 4.1-2. The outer containment barrier's skirt was not modeled in detail, since the skirt would not effect the criticality results. For this degraded model, no basket structure remains and a uniform mixture of iron oxide, water, and boron surrounds the fuel assemblies. The fuel assemblies are uniformly stacked together, with no separation, at the bottom of the waste package. The fuel assemblies in the AUCF waste package are modeled in a lattice. Each fuel assembly is treated as a heterogeneous system with the fuel pins, control rod guide tubes, and instrument guide tube modeled explicitly. The properties of the design basis B&W 15×15 Mark B5 assembly are used in the analyses as listed in Table 4.1-1. A cross-sectional view from the MCNP model is shown in Figure 7.2.3-1. The non-fuel material compositions were taken from a previous QAP-3-9 analysis on material compositions (Ref. 5.5).

A degraded configuration with 5371.1 kg of Fe and 1.6 kg of B was identified as appropriate for determination of the reactivity effect of burnup because it represented the Fe, B combination at the earliest possible time of criticality (the last case in Table 7.4-2 of Reference 5.54, with the specific Fe, B amounts given in Attachment II, p. II-3 of that document). To be consistent with previous calculations (Ref. 5.54, p. 10), the masses were rounded to whole percentages. The moderator was modeled as 26% Fe_2O_3 (based on the mass conversion equation in Reference 5.54, p. VIII-6: Fe mass=20.94 x void %) displacing water in the void space within the waste package with 5% of the original B-10 (based on total mass of B in Reference 5.54, p. VIII-5: 30.474 kg) also incorporated into the moderator. The calculation for the number densities for the

moderator composition is shown in Attachment II.

The fuel compositions described in Section 7.2.2 were inserted into the MCNP model and the cases were run to generate values of k_{eff} as a function of criticality duration. The results of the cases are shown in Table 7.2.3-1. The corresponding attachments containing the input and relevant output for each case are shown in parentheses.

Table 7.2.3-1. MCNP Case Results to Demonstrate Reactivity Changes Due to an Internal Criticality

Criticality Duration (years)	0	1000	5000	10,000
k_{eff}	0.8967 ± 0.0020 (III)	0.8989 ± 0.0019 (IV)	0.9006 ± 0.0021 (V)	0.9002 ± 0.0022 (VI)

The slight increase in k_{eff} with burnup comparing 0 and 10,000 years can be attributed to the higher relative burnup/decay of absorbers compared to fissile isotopes as discussed in Section 7.2.1.

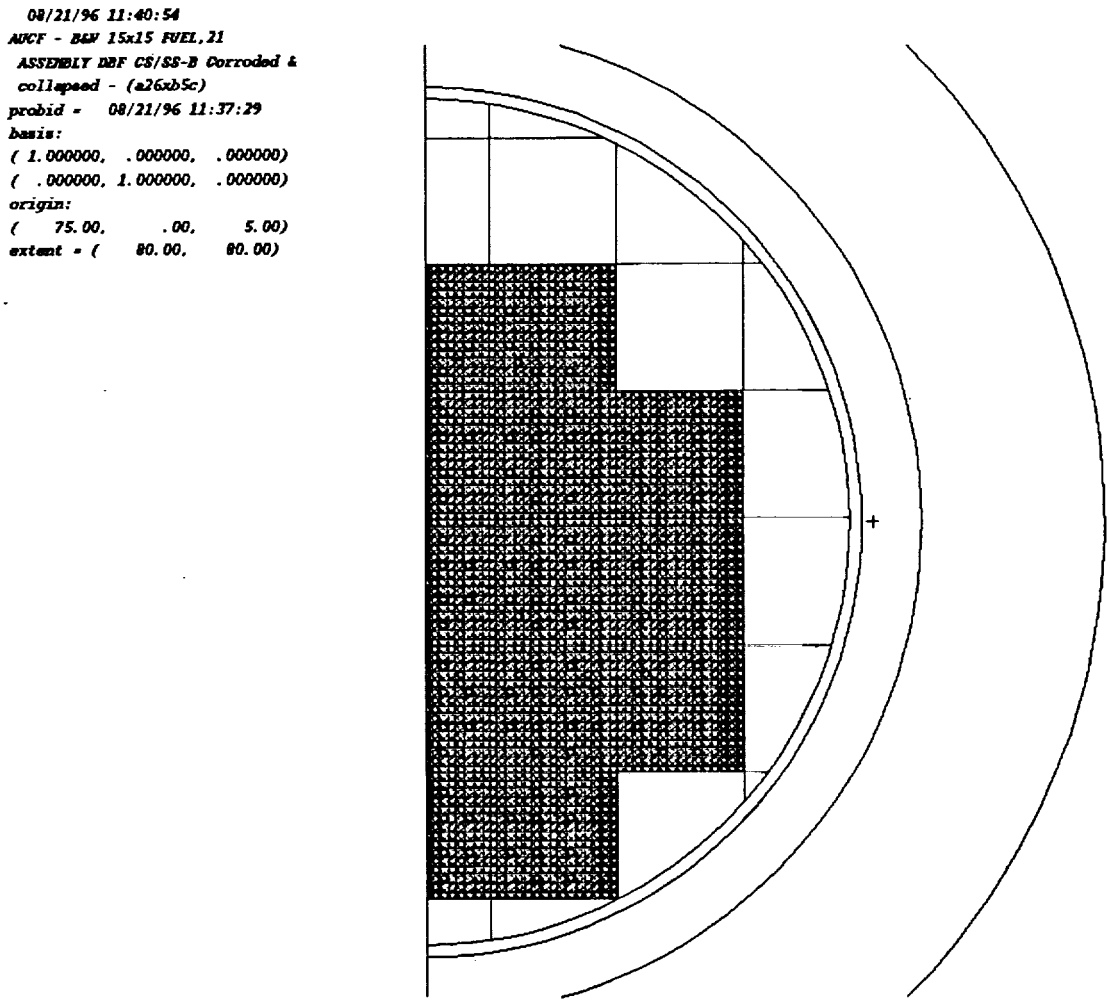


Figure 7.2.3-1. MCNP Model of 21 PWR AUCF WP with Fully Degraded Basket

7.3 External Criticality, Basic Parameters

7.3.1 Geometry and Material Composition

The concentrations of water and UO_2 used for this analysis are chosen with the following considerations:

- The maximum porosity of the rock beneath the repository site, in the saturated zone, is taken to be the sample maximum, 40%, explained in the footnote to Table 4.1-4. Since the sample size was over 100, the probability of some random location exceeding this value is taken to be less than 0.01. (This is conservative, since the probability that 1% of the true population exceed a porosity of 40% is $0.99^{126} = 0.28$. Restated in probability terms, the probability that the 99 percentile of the true population is greater than 40% porosity is 0.28. It should be noted, however, that the sample comes from a limited number of boreholes, so there could be a greater variation than is estimated here.) If a value of porosity larger than 40% were selected, the probability would have to be reduced by a factor smaller than 0.01. Since there are no new probability calculations in this analysis to which to apply such a factor, it is reasonably conservative to take 40% as the porosity.
- The water volume percent plus UO_2 volume percent should equal the porosity.
- The very conservative value of 8% UO_2 by volume with 32% water by volume is equivalent to 32% UO_2 by weight according to the formula in the third footnote to Table 7.5-1 of Reference 5.52; this weight percent is higher than any known natural uranium deposit of 1m radius. There are smaller size regions of well known uranium deposits (e.g., Oklo, Cigar Lake, Pena Blanca) which have higher concentrations (Ref. 5.52, p. 26, and references cited therein).

Of the alternative concentrations evaluated in Reference 5.52 (Table 7.5-1), the parameter set falls between the 4th and 7th cases, indicating a critical mass above 10.1 metric tons of U, but less than 18 tons. Such a large mass implies a very small probability of accumulation, according to the methodology of Reference 5.52; in fact, several of the cases in Reference 5.52, Table 7.5-1, have a higher probability, according to the probabilities given in Table 7.6-1 of Reference 5.52. This apparent contradiction, of taking a case which the methodology estimates to have a significantly lower probability, results from the principal inadequacy of the methodology of Reference 5.52, which is the lack of correlation between size of reducing zone and the maximum amount of UO_2 it can extract or concentrate. The cases in Reference 5.52 which appear to have higher probabilities than the one selected here, actually require a porosity higher than is consistent with physical reality; with additional data on the joint distribution of concentration of UO_2 (or grade) and areal extent (or deposit size) these cases with apparently higher probability may be seen to be impossible and not considered any further.

The compositions in the form of number densities for UO_2, 30.6% porosity tuff, and water were taken from Attachment VIII of Reference 5.55 and entered into a LOTUS 1-2-3 spreadsheet which is included as Attachment VII. The 30.6% porosity tuff number densities were converted to those representative of 40% porosity tuff by the ratio (1-0.4)/(1-0.306). The corresponding

weight percents of the components in the UO_2 feed were calculated by multiplying the component atom density by the component atomic weight and dividing by the sum of this product for all the components. The homogeneous mixture number densities for the combination of 40% porosity tuff with 8 volume percent UO_2 and 32 volume percent H_2O occupying the pore/fracture space (porosity) were calculated as shown in the spreadsheet by multiplying the UO_2 number densities by 0.08 and the water number densities by 0.32.

The critical radius for a similar composition in a spherical geometry was found to be 140 cm (Ref. 5.55, p. 35).

7.3.2 Relation Between Power and Temperature

For this analysis the relation between the steady state power output of an external criticality and the resulting temperature is determined primarily by heat conduction from the spherical mass to the distant environment. Since there are no free surfaces in the external far-field, there can be no cooling by radiation. It is further assumed that cooling by convection is small by comparison with conduction, for the reasons given in Assumption 4.3.5. The temperature is then determined by solving the steady state heat conduction equation; the details of this process are given in Attachment I. The results are as follows.

Within a sphere generating total power P, uniformly throughout its volume, at a power density of $3P/(4\pi R^3)$, where R is the radius of the sphere, the solution for temperature given in Attachment I is:

$$T = T_s + P(1-r^2/R^2)/(8k\pi R),$$

where k is the thermal conductivity in W/m·K, r is the distance from the center of the sphere, and T_s is the temperature of the surface of the sphere, assumed to be constant (Assumption 4.3.7). The consequence of this general result is that the temperature at the center of the sphere is:

$$T_c = T_s + P/(8k\pi R),$$

and the average temperature (computed in Attachment I) is:

$$T_{av} = T_s + P/(20k\pi R).$$

If the power, P, is parabolically distributed throughout the sphere, with peak power at the center, the power density will be, $15P(1-r^2/R^2)/(8\pi R^3)$, which is normalized so that multiplying the power density by $4\pi r^2$ and integrating over r from 0 to R gives P. The general solution for temperature within the sphere is derived in Attachment I as:

$$T = T_s + 7P/(32k\pi R) - 15P[r^2/(6R^2) - r^4/(20R^4)]/(8k\pi R),$$

which leads to the center temperature:

$$T_c = T_s + 7P/(32k\pi R),$$

and the average temperature:

$$T_{av} = T_s + P/(14k\pi R).$$

For any spherically symmetric power density inside the sphere, the solution for the temperature outside the sphere can be used to determine the surface temperature in terms of the temperature of the rock far from the sphere, T_∞:

$$T_s = T_\infty + P/(4k\pi R).$$

7.3.3 Maximum Possible Power and Temperature

The maximum possible temperature under isobaric conditions is the boiling temperature of water, at 50 atmospheres (735 psia, 5.07 MPa) pressure (hydrostatic pressure at approximately 500 meters below the water table, Assumption 4.3.6) because bulk boiling will drive the power down based on previous results (Ref. 5.55, p. 40). The saturated temperature and density of liquid water at 50 atm pressure were linearly interpolated from the values in Table 4.1-5 to be 265 °C (508.7 °F) and 0.776 g/cm^3 (48.45 lb/ft^3). The depth from the surface to the saturated zone is taken to be 611 m (approximate, from Ref 5.18, Fig 2.3-7). The temperature of the rock can be determined from the following relation (Ref. 5.44, p. 6-168) assuming that the last thermal gradient extends 500 m below the saturated zone level (total of 1111 m; see Assumption 4.3.6):

$T_\infty =$ 18.7 °C + 0.019 °C/m (0 to 150 m) + 0.018 °C/m (150 to 400 m)
+ 0.030 °C/m (400 to 541 m),

$T_\infty =$ 47.4 °C.

The average thermal conductivity, k, of the rock at a depth of 535.2 m has been estimated to be 1.38 W/m·K (Ref. 5.31, p. 6). This value will be used for the tuff in this analysis.

Based on the temperature equations for a parabolic power density in a sphere in Section 7.3.2, the average temperature can be determined from the following equation:

$$T_{av} = T_\infty + P/(4k\pi R) + P/(14k\pi R).$$

Power corresponding to a given average temperature can be determined by manipulating this equation to the following form:

$$P = (T_{av} - T_\infty) \cdot (1/(4k\pi R) + 1/(14k\pi R))^{-1}.$$

Using the values described above and limiting the power based on an average temperature of 265 °C, a value of 4.1 kW is calculated for the maximum power.

7.3.4 Maximum Sustainable Power, Temperature, and Duration

Maximum mobilization rate of uranium and plutonium in SNF:

It is assumed that mobilization is much slower than dissolution so that removal is solubility limited (Assumption 4.3.20).

WP area (horizontal cross section through the axis) = 6.62 m^2.

Infiltration rate = 10 mm/yr (or 1 mm/yr with 10x concentration) (Ref. 5.18 and Assumption 4.3.16).

Solubility of U and Pu = 2000 ppm (g UO_2/ton water) (conservatively taken to be approximately the maximum of solubility for both U and Pu, Ref. 5.18, p. 6-29).

Mass mobilized/yr = (2000 g UO_2/ton water) x (6.62x0.01 tons/yr) = 132 g/yr, for a single waste package.

For reference: Time to remove 10 tons of U plus Pu: $10^7/132$ = 75,800 years (note: more than 1 waste package of SNF).

Maximum sustainable power:

Approximately 1.23 g/day of U-235 is consumed per megawatt of power if the fissions are induced primarily by thermal neutrons (Ref. 5.20, p. 78) and the production of other fissile isotopes is ignored. The maximum infiltration rate of UO_2 was calculated to be 132 g/year per WP above and the weight fraction of U-235 in the UO_2 was calculated to be 0.017 as shown in the spreadsheet included in Attachment VII. Multiplying these two numbers together provides a U-235 infiltration rate of 2.244 g/year which would support a burnup of 1.824 MWd. Dividing the burnup possible for the maximum infiltration rate by the number of days in the year (365.25) provides a maximum steady state power of 0.004995 MW (4.995 kW) which can be maintained by the criticality. This result indicates that 22% more fissile material could enter the critical volume than could be consumed based on the temperature limited power calculated above.

However, the Oklo experience suggests that a natural reactor can only be burned down to an effective enrichment $^{235}U/(^{238}U+^{235}U)$ of 1.37% (see Assumption 4.3.8) so the sustainable power is limited to:

$$4995*(1.94-1.37)/1.94 = 1468 \text{ W},$$

where 1.94 is the % fissile content in the design basis fuel after discharge (Ref. 5.52, p. 40).

The criticality duration is determined by the 100,000 year hydrologic cycle divided into four subcycles having power levels determined by the cycle average for that 25,000 year time period.

25,000 years at 132 g/yr UO_2 infiltration rate and power of 1468 W (125 °C)
25,000 years at 2/3*(132 g/yr) UO_2 infiltration rate and power of 979 W (99.0 °C)
25,000 years at 1/3*(132 g/yr) UO_2 infiltration rate and power of 489 W (73.0 °C)
25,000 years at 0 g/yr UO_2 infiltration rate and power of 0 W (47.4 °C)

The temperatures indicated above are the average temperatures of the critical spheres as calculated from the equations listed in Section 7.3.2. This cycle requires 6.6 metric tons of UO_2 from a second waste package to sustain the criticality under this scenario.

7.4 External Criticality, Neutronics Evaluation

The neutronic evaluation procedure for the far-field criticality involves five tasks as indicated below:

1) MCNP model and k_{eff} calculation based on initial composition.

2) SAS2H model and burn calculation for 1, 10, 100, 1000, 5000, and 10,000 year events.

3) ORIGEN-S decay calculations for the 1000, 5000, and 10,000 year events.

4) Spreadsheet calculations of compositions from various duration criticality events.

5) MCNP calculations (recomputation of k_{eff}) based on compositions from the various duration criticality events.

The details of each task, along with the results, are provided in the following five subsections.

7.4.1 Reference MCNP Calculation for Initial Composition

A reference MCNP case using the initial homogeneous composition was set up based on a previously developed MCNP model (Ref. 5.55, Sections 7.4.2, 7.4.3). The model is composed of an inner spherical region 140 cm in radius containing the tuff/water/UO_2 mixture and an outer reflector region 60 cm thick containing a 40% porosity tuff/water mixture. This initial case was run based on compositions representative of a temperature of 300 K. A second case was run based on the ambient conditions described in Section 7.3.1 in which water densities were adjusted to a density of 0.990 g/cm^3 corresponding to a temperature of 50 °C (323 K) and a pressure of 5.07 MPa (50 atm). A third case was run based on the average temperature of 538 K (265 °C) in the fuel region which corresponds to the 4 kW power level. Cross sections are not available for exactly the 4 kW power conditions so the closest available were used. Hydrogen thermal cross section data representative of 400 K (lwtr.02t) was used for the reflector and of 500 K (lwtr.03t) for the inner region. Cross sections for H, O, U-235, and U-238 representative of 600 K were used in the inner region. The k_{eff} results are shown in Table 7.4.1-1. The input and pertinent output are included in Attachments IX, X, and XI. These results indicate that the temperature calculated for a 4 kW power level would drive the criticality on a negative transient

(reduce power). Determination of actual powers would require dynamic analysis which is beyond the scope of the present report and the capability of MCNP with the limited temperature dependance of the current library. These results do indicate that operation at this temperature (power) will provide conservative overestimates of any radioisotopes which may be produced.

Table 7.4.1-1. Variation of k_{eff} with Temperature for an External Criticality

Temperature (K)	300	323	538
$k_{eff} \pm 2\sigma$	0.9776 ± 0.0016	0.9772 ± 0.0015	0.9424 ± 0.0020

The previous external criticality analysis (Ref. 5.55) used a fresh fuel bias and uncertainty of -0.015 in k_{eff}, because power level and duration of criticalities were not considered. The burnup of fuel and the production of fission products will introduce additional bias and uncertainty. For this analysis, an additional bias and uncertainty of -0.005 in k_{eff} is applied to account for burnup effects. This bias and uncertainty is applied uniformly to all results, fresh and burned, in order to provide a consistent comparison base between results. As will be shown in Section 7.4.5, the additional bias and uncertainty of -0.005 in k_{eff} bounds the worth of fission products at 1000 years. With the application of a total bias and uncertainty of -0.020 in k_{eff}, the 300 K and the 323 K cases would be slightly supercritical.

7.4.2 SAS2H Burnup Calculations

SAS2H cases were set up for critical events lasting 1, 10, 100, 1000, 5000 and 10,000 years at a power level which was rounded to 4 kW corresponding to the scenario described in Section 7.3.4 where power is limited by the boiling point of water. The material descriptions in weight fractions and densities were taken directly from print table 40 in the MCNP case output included in Attachment XI. The isotopes and corresponding weight fractions from Attachment XI are listed in Table 7.4.2-1. The density of the tuff/water/UO_2 region is 2.6344 g/cm^3 and the density of the reflector region is 1.9053 g/cm^3. The temperatures for materials are entered in Kelvin and are 538 K (265 °C) for the fuel region and 323 K (50 °C) for the reflector region. SAS2H does not have a spherical geometry option. The most suitable cell geometry option available in SAS2H for the burnup calculation is an infinite slab (symmslabcell option). The fuel region is modeled as a 280 cm thick slab and a 60 cm thick reflector region is added on each side. Because three regions are required in the model, the reflector is broken into two regions. The volume of the fuel region is calculated as $4/3\pi(140\text{ cm})^3$ and is entered as "volfueltot=1.1494E7." All grams and curies tables for the isotopes in the output are normalized to this volume.

Table 7.4.2-1. Isotopic/Elemental Weight Fractions for External Criticality SAS2H Cases

Material ID	Weight Fraction	Material ID	Weight Fraction	Material ID	Weight Fraction	Material ID	Weight Fraction
Tuff/Water/UO_2 Region							
1001	0.01055	8016	0.40755	11023	0.00570	12000	0.00354
13027	0.04434	14000	0.20193	19000	0.01370	20000	0.01439
26000	0.00494	92234	0.00007	92235	0.00567	92236	0.00136
92238	0.28593	93237	0.00033	-	-	-	-
Tuff/Water Reflector Region							
1001	0.02326	8016	0.57779	11023	0.00789	12000	0.00490
13027	0.06130	14000	0.27919	19000	0.01894	20000	0.01989
26000	0.00683	-	-	-	-	-	-

The operating time was adjusted for each of the burn cases. A five year (1826.25 day) down time was added to the end of each case to provide decay compositions for comparison with those from the follow-on ORIGEN-S cases described in Section 7.4.3. Note that the infiltration of UO_2 during the criticality cannot be modeled in SAS2H and is accounted for in the number density calculations described in Section 7.4.4.

The input and relevant output from each of the six SAS2H cases are listed in Attachments XIII through XVIII.

As a check of the effect of burn step size, the 1000 year case with a step size of 100 years was compared with the 1000 year print of the 10,000 year case with a step size of 1000 years. The order of ranking per absorption rate of the top 15 fission products listed in the "fraction of total absorption rate" tables in the outputs for the 1000 year time print included in Attachments XVI and XVIII are the same and the absorption rates vary between cases less than 3%. The actinides "nuclide concentrations" in gram atoms for the same times also indicate that the major nuclides U-233, U-234, U-235, U-236, U-238, and Np-237 match. The Pu isotopes are overpredicted by 4% or less in the 10,000 year case (1000 year timesteps). These results are acceptable and conservative.

The burnup associated with each of the criticality durations is shown in the Table 7.4.2-2 along with the masses of the major fissile isotopes (U-235 and Pu-239).

Table 7.4.2-2. Burnup and Fissile Composition Changes Associated with Criticality Duration

Duration of Criticality (Years)	1	10	100	1000	5000	10,000
Burnup (MWd)	1.461E00	1.461E01	1.461E02	1.461E03	7.305E03	1.461E04
Mass of U-235 (kg)	1.72E02	1.72E02	1.71E02	1.70E02	1.63E02	1.56E02
Mass of Pu-239 (kg)	1.18E-3	1.21E-2	1.19E-1	1.15E00	5.18E00	9.03E00

A SAS2H case was set up for critical event corresponding to the 100,000 year hydrologic cycle described in Section 7.3.4 where power is limited by a time dependent UO_2 infiltration rate. The case models three 25,000 year periods of decreasing power as described in Section 7.3.4 followed by a 25,000 year decay period. The base material description was the same as described above. The average temperature for each period was set with the temkcyc variable for the corresponding power level. The total burnup for this case is 2.681E4 MWd. At the end of the 75,000 years at power the U-235 and Pu-239 masses are 154 and 5.81 kg, respectively. The input and summarized output for this case is included in Attachment XIX.

7.4.3 ORIGEN-S Decay Calculations

Simple, decay only, ORIGEN-S cases were set up with decay times out to 999,999 years for the 1000, 5000, and 10,000 year duration criticality cases. The input was the same for each case except for titles which include the criticality duration for the 1000 and 5000 year cases. The entire output (including echo of input) is included in Attachments XX through XXII for the 1000, 5000, and 10,000 year duration criticalities, respectively. The ORIGEN-S case was run immediately after the corresponding SAS2H case and utilized the final binary cross section file on unit 21 from the SAS2H case. The case correspondence by attachment number is XVI/XX, XVII/XXI, and XVIII/XXII. The fact that the correct library is used (unit 21) is verified by comparing the final downtime print of concentrations in the SAS2H output with the concentrations in the corresponding decay times in the ORIGEN-S output (compositions will match). The library contains only the final cycle step (1 position in library). The library unit number and data position are entered in the input (3$$ card).

The decay times are grouped in 10 steps with the units changing from days to years as appropriate. The activity of isotopes of concern are shown in Tables 7.4.3-1, -2, and -3. The activities are listed for 0, 10,000, 20,000, 50,000, 100,000, and 250,000 year decay times. Data for additional decay times and isotopes can be found in the outputs included in Attachments XX through XXII. Because the SAS2H case was set up on the appropriate volume, the activities and masses listed in the output are per critical volume.

The same ORIGEN decay case was run in conjunction with the 100,000 year geologic cycle and the activity of isotopes of concern are shown in Table 7.4.3-4. Data for additional decay times and isotopes can be found in the output included in Attachment XXIII. The input and output for the case is included in Attachment XXIII and was run in conjunction with the SAS2H case

included in Attachment XIX.

7.4.4 Burnup Compositions

Number densities for the homogeneous mixtures accounting for burnup and production of isotopes were calculated for each criticality from 1 to 10,000 years duration as well as the 100,000 year geologic cycle criticality. The tuff composition portion of the mixture remained constant. The component densities for UO_2 with burnup and fission products were calculated from the grams/assembly output for the "initial" decay column of data from the SAS2H outputs included in Attachments XIII through XIX by dividing by the volume of the criticality. The component density was incorporated into the equation for number density as shown below (Ref. 5.20, p. 34):

$$N = \rho N_A / M$$

where, ρ is the physical density in g/cm^3, N_A is Avagadro's Number - 0.602252E+24 atoms/mole (Ref. 5.43), and M is the gram atomic weight.

The units of the resulting number density is in atoms/cm^3. The required units for subsequent use are atoms/barn-cm where 1 barn equals 10^{-24} cm^2. The calculations in the spreadsheet (Attachment VII) drop the E+24 from Avagadro's Number to account for the conversion.

The top 15 fission products from the standpoint of absorption were identified from the "fraction of total absorption rate" tables for the last burn step of each case which can be found in the SAS2H outputs included in Attachments XIII through XIX. Two exceptions to this were made in the 1 and 10 year duration criticality cases. Pm-147 and Eu-155 show up in the top 15 absorbers for these cases but no cross sections exist in the MCNP library. Sm-147 and Gd-155, which are the daughter products of Pm-147 and Eu-155, respectively, were substituted. An isotopic cross section for Cd-113 is not available in the MCNP cross sections, so the Cd isotopes from 110 to 116 were summed and the Cd elemental cross section was used in all cases. In addition, the mass of Xe-135 was not printed in the SAS2H outputs because it falls below a threshold for listing, even though its absorption rate is significant and it shows up in the absorption rate tables. The Xe-135 mass used in the 1 year and 10 year compositions was taken from the first "nuclide concentrations, grams" for fission products in the charge column in the 1000 year duration criticality ORIGEN-S case (Attachment XX), which has a significantly lower print threshold. Because of its short half-life (~ 9 hours) the mass of Xe-135 will remain relatively constant through all the cases. The value was rounded to 8.7E-5 grams of X-135.

Two variations of the number density calculations were run to account for the extreme UO_2 infiltration cases of 132 g/year and 0 g/year after initiation of the criticality. In the maximum infiltration rate case, the number densities for the UO_2 feed isotopes U-234, U-235, U-236, U-238, and Np-237 were multiplied by the quantity (132 g/fuel region volume (cm^3)/10.96 g/cm^3)

Table 7.4.3-1. Additional TSPA-95 Radionuclide Inventory (in Ci) Generated by a 1000 Year External Criticality (initial inventory at the end of criticality with subsequent decay)

Isotope	Initial	10,000yr	20,000yr	50,000yr	100,000yr	250,000yr
ac227	7.62E-03	7.65E-02	1.32E-01	2.44E-01	3.26E-01	3.68E-01
am241	8.40E-02	1.01E-08	1.14E-15	3.53E-18	5.97E-20	2.90E-25
am242m	7.96E-05	3.56E-26	0.00E+00	0.00E+00	0.00E+00	0.00E+00
am243	1.19E-08	4.66E-09	1.82E-09	1.08E-10	9.83E-13	7.34E-19
c 14	5.01E-06	1.49E-06	4.46E-07	1.18E-08	2.79E-11	3.66E-19
cm244	5.20E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cm245	2.08E-16	9.20E-17	4.07E-17	3.52E-18	5.96E-20	2.90E-25
cm246	3.19E-19	7.37E-20	1.70E-20	2.10E-22	1.38E-25	0.00E+00
cs135	6.67E-02	6.65E-02	6.63E-02	6.57E-02	6.48E-02	6.19E-02
i129	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.13E-03
nb 93m	6.26E-02	6.38E-02	6.35E-02	6.27E-02	6.13E-02	5.72E-02
nb 94	1.92E-06	1.36E-06	9.68E-07	3.47E-07	6.30E-08	3.76E-10
np237	7.03E+00	7.01E+00	6.99E+00	6.92E+00	6.81E+00	6.48E+00
pa231	7.87E-03	7.65E-02	1.32E-01	2.43E-01	3.26E-01	3.68E-01
pb210	2.15E-02	1.02E+00	2.07E+00	4.57E+00	7.27E+00	8.69E+00
pd107	7.17E-04	7.16E-04	7.16E-04	7.13E-04	7.10E-04	6.98E-04
pu238	9.54E+01	7.82E-26	0.00E+00	0.00E+00	0.00E+00	0.00E+00
pu239	7.15E+01	5.36E+01	4.02E+01	1.70E+01	4.03E+00	5.40E-02
pu240	1.25E+00	4.33E-01	1.51E-01	6.34E-03	3.22E-05	4.24E-12
pu241	2.25E-01	9.21E-17	4.07E-17	3.53E-18	5.97E-20	2.90E-25
pu242	8.70E-08	9.05E-08	8.88E-08	8.40E-08	7.66E-08	5.80E-08
ra226	2.28E-02	1.02E+00	2.07E+00	4.57E+00	7.27E+00	8.70E+00
ra228	1.31E-07	1.45E-06	2.78E-06	6.74E-06	1.33E-05	3.31E-05
se 79	3.12E-03	3.06E-03	2.99E-03	2.81E-03	2.53E-03	1.85E-03
sm151	1.44E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
sn126	1.03E-02	9.66E-03	9.01E-03	7.32E-03	5.17E-03	1.83E-03
tc 99	6.76E-01	6.54E-01	6.33E-01	5.74E-01	4.87E-01	2.98E-01
th229	1.30E-03	1.19E-01	3.37E-01	1.10E+00	2.23E+00	4.35E+00
th230	1.21E-01	1.27E+00	2.30E+00	4.73E+00	7.17E+00	8.58E+00
th232	1.32E-07	1.45E-06	2.78E-06	6.74E-06	1.33E-05	3.31E-05
u233	3.04E-02	3.28E-01	6.12E-01	1.39E+00	2.46E+00	4.46E+00
u234	1.34E+01	1.31E+01	1.28E+01	1.20E+01	1.08E+01	8.09E+00
u235	3.67E-01	3.68E-01	3.68E-01	3.69E-01	3.70E-01	3.70E-01
u236	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.67E+00	2.66E+00
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
zr 93	6.41E-02	6.38E-02	6.35E-02	6.27E-02	6.13E-02	5.72E-02
Total	2.10E+02	8.50E+01	7.50E+01	6.00E+01	5.50E+01	5.70E+01

Table 7.4.3-2. Additional TSPA-95 Radionuclide Inventory (in Ci) Generated By a 5000 Year External Criticality (initial inventory at the end of criticality with subsequent decay)

Isotope	Initial	10,000yr	20,000yr	50,000yr	100,000yr	250,000yr
ac227	3.97E-02	9.99E-02	1.49E-01	2.48E-01	3.23E-01	3.63E-01
am241	3.62E+00	4.14E-07	1.94E-13	1.24E-14	2.09E-16	1.02E-21
am242m	5.17E-03	2.31E-24	0.00E+00	0.00E+00	0.00E+00	0.00E+00
am243	6.76E-06	2.64E-06	1.03E-06	6.13E-08	5.56E-10	4.16E-16
c 14	1.99E-05	5.94E-06	1.77E-06	4.70E-08	1.11E-10	1.45E-18
cm244	3.28E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cm245	7.28E-13	3.22E-13	1.43E-13	1.23E-14	2.09E-16	1.02E-21
cm246	6.12E-15	1.41E-15	3.27E-16	4.03E-18	2.65E-21	7.53E-31
cs135	3.34E-01	3.33E-01	3.32E-01	3.29E-01	3.24E-01	3.10E-01
i129	5.83E-03	5.83E-03	5.83E-03	5.82E-03	5.81E-03	5.77E-03
nb 93m	3.17E-01	3.15E-01	3.14E-01	3.09E-01	3.03E-01	2.83E-01
nb 94	1.08E-05	7.70E-06	5.47E-06	1.96E-06	3.56E-07	2.12E-09
np237	6.98E+00	6.96E+00	6.94E+00	6.87E+00	6.76E+00	6.44E+00
pa231	3.97E-02	9.98E-02	1.49E-01	2.48E-01	3.23E-01	3.63E-01
pb210	3.61E-01	1.53E+00	2.61E+00	5.15E+00	7.89E+00	9.21E+00
pd107	5.05E-03	5.04E-03	5.04E-03	5.02E-03	4.99E-03	4.91E-03
pu238	9.40E+01	5.08E-24	0.00E+00	0.00E+00	0.00E+00	0.00E+00
pu239	3.22E+02	2.41E+02	1.81E+02	7.64E+01	1.81E+01	2.43E-01
pu240	2.45E+01	8.53E+00	2.97E+00	1.25E-01	6.34E-04	8.34E-11
pu241	4.61E+00	3.23E-13	1.43E-13	1.24E-14	2.09E-16	1.02E-21
pu242	2.07E-05	2.06E-05	2.02E-05	1.91E-05	1.74E-05	1.32E-05
ra226	3.61E-01	1.53E+00	2.61E+00	5.16E+00	7.89E+00	9.21E+00
ra228	6.67E-07	2.02E-06	3.38E-06	7.45E-06	1.42E-05	3.45E-05
se 79	1.55E-02	1.52E-02	1.49E-02	1.40E-02	1.26E-02	9.19E-03
sm151	1.53E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
sn126	5.69E-02	5.31E-02	4.95E-02	4.02E-02	2.84E-02	1.01E-02
tc 99	3.35E+00	3.24E+00	3.14E+00	2.84E+00	2.41E+00	1.47E+00
th229	2.85E-02	1.96E-01	4.31E-01	1.19E+00	2.30E+00	4.36E+00
th230	6.12E-01	1.79E+00	2.84E+00	5.32E+00	7.78E+00	9.09E+00
th232	6.67E-07	2.02E-06	3.38E-06	7.45E-06	1.42E-05	3.45E-05
u233	1.48E-01	4.38E-01	7.16E-01	1.47E+00	2.52E+00	4.47E+00
u234	1.42E+01	1.39E+01	1.36E+01	1.27E+01	1.14E+01	8.48E+00
u235	3.53E-01	3.56E-01	3.58E-01	3.62E-01	3.64E-01	3.64E-01
u236	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.73E+00
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
zr 93	3.17E-01	3.15E-01	3.14E-01	3.09E-01	3.03E-01	2.83E-01
Total	5.00E+02	2.90E+02	2.20E+02	1.20E+02	7.50E+01	6.10E+01

Table 7.4.3-3. Additional TSPA-95 Radionuclide Inventory (in Ci) Generated By a 10,000 Year External Criticality (initial inventory at the end of criticality with subsequent decay)

Isotope	Initial	10,000yr	20,000yr	50,000yr	100,000yr	250,000yr
ac227	8.05E-02	1.30E-01	1.71E-01	2.55E-01	3.21E-01	3.56E-01
am241	1.21E+01	1.38E-06	3.08E-12	2.43E-13	4.11E-15	2.00E-20
am242m	1.79E-02	8.02E-24	0.00E+00	0.00E+00	0.00E+00	0.00E+00
am243	6.91E-05	2.70E-05	1.05E-05	6.27E-07	5.69E-09	4.25E-15
c 14	3.08E-05	9.18E-06	2.74E-06	7.26E-08	1.71E-10	2.25E-18
cm244	3.35E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cm245	1.43E-11	6.33E-12	2.80E-12	2.42E-13	4.11E-15	1.99E-20
cm246	2.26E-13	5.22E-14	1.21E-14	1.49E-16	9.79E-20	2.79E-29
cs135	6.70E-01	6.68E-01	6.66E-01	6.60E-01	6.50E-01	6.21E-01
i129	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.18E-02
nb 93m	6.25E-01	6.22E-01	6.20E-01	6.11E-01	5.98E-01	5.58E-01
nb 94	2.74E-05	1.95E-05	1.38E-05	4.97E-06	9.01E-07	5.37E-09
np237	6.93E+00	6.91E+00	6.89E+00	6.82E+00	6.71E+00	6.39E+00
pa231	8.04E-02	1.30E-01	1.71E-01	2.55E-01	3.21E-01	3.56E-01
pb210	9.53E-01	2.18E+00	3.28E+00	5.88E+00	8.64E+00	9.83E+00
pd107	1.31E-02	1.30E-02	1.30E-02	1.30E-02	1.29E-02	1.27E-02
pu238	9.30E+01	1.76E-23	0.00E+00	0.00E+00	0.00E+00	0.00E+00
pu239	5.61E+02	4.21E+02	3.16E+02	1.33E+02	3.16E+01	4.24E-01
pu240	7.28E+01	2.53E+01	8.81E+00	3.70E-01	1.88E-03	2.48E-10
pu241	1.36E+01	6.34E-12	2.81E-12	2.43E-13	4.11E-15	2.00E-20
pu242	1.51E-04	1.49E-04	1.47E-04	1.39E-04	1.26E-04	9.57E-05
ra226	9.53E-01	2.18E+00	3.28E+00	5.88E+00	8.65E+00	9.83E+00
ra228	1.35E-06	2.75E-06	4.16E-06	8.37E-06	1.54E-05	3.64E-05
se 79	3.09E-02	3.03E-02	2.97E-02	2.78E-02	2.51E-02	1.83E-02
sm151	1.61E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
sn126	1.24E-01	1.15E-01	1.08E-01	8.75E-02	6.18E-02	2.19E-02
tc 99	6.62E+00	6.41E+00	6.20E+00	5.62E+00	4.77E+00	2.91E+00
th229	9.73E-02	3.02E-01	5.49E-01	1.30E+00	2.37E+00	4.38E+00
th230	1.24E+00	2.45E+00	3.52E+00	6.04E+00	8.53E+00	9.70E+00
th232	1.35E-06	2.75E-06	4.16E-06	8.37E-06	1.54E-05	3.64E-05
u233	2.85E-01	5.68E-01	8.37E-01	1.57E+00	2.59E+00	4.48E+00
u234	1.51E+01	1.48E+01	1.45E+01	1.35E+01	1.21E+01	8.96E+00
u235	3.38E-01	3.43E-01	3.47E-01	3.53E-01	3.56E-01	3.57E-01
u236	2.83E+00	2.84E+00	2.85E+00	2.85E+00	2.84E+00	2.83E+00
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
zr 93	6.25E-01	6.22E-01	6.20E-01	6.11E-01	5.98E-01	5.58E-01
Total	8.10E+02	4.90E+02	3.70E+02	1.90E+02	9.50E+01	6.60E+01

Table 7.4.3-4. Additional TSPA-95 Radionuclide Inventory (in Ci) Generated By a 100,000 Year External Criticality (initial inventory at the end of criticality with subsequent decay)

Isotope	Initial	10,000yr	20,000yr	50,000yr	100,000yr	250,000yr
ac227	3.40E-01	3.39E-01	3.38E-01	3.39E-01	3.42E-01	3.44E-01
am241	3.03E-01	3.44E-08	5.18E-14	3.99E-15	6.75E-17	3.28E-22
am242m	5.40E-05	2.41E-26	0.00E+00	0.00E+00	0.00E+00	0.00E+00
am243	8.31E-06	3.24E-06	1.27E-06	7.54E-08	6.84E-10	5.11E-16
c 14	5.62E-06	1.68E-06	5.00E-07	1.33E-08	3.13E-11	4.10E-19
cm244	4.94E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cm245	2.35E-13	1.04E-13	4.60E-14	3.98E-15	6.74E-17	3.27E-22
cm246	2.84E-15	6.56E-16	1.52E-16	1.87E-18	1.23E-21	3.42E-31
cs135	1.21E+00	1.21E+00	1.21E+00	1.20E+00	1.18E+00	1.13E+00
i129	2.18E-02	2.18E-02	2.18E-02	2.17E-02	2.17E-02	2.15E-02
nb 93m	1.13E+00	1.12E+00	1.12E+00	1.10E+00	1.08E+00	1.01E+00
nb 94	1.03E-04	7.31E-05	5.19E-05	1.86E-05	3.38E-06	2.02E-08
np237	6.72E+00	6.70E+00	6.67E+00	6.61E+00	6.50E+00	6.20E+00
pa231	3.40E-01	3.39E-01	3.38E-01	3.39E-01	3.42E-01	3.44E-01
pb210	7.06E+00	7.73E+00	8.32E+00	9.63E+00	1.09E+01	1.02E+01
pd107	2.33E-02	2.33E-02	2.33E-02	2.32E-02	2.31E-02	2.27E-02
pu238	1.12E+01	5.30E-26	0.00E+00	0.00E+00	0.00E+00	0.00E+00
pu239	3.60E+02	2.70E+02	2.03E+02	8.56E+01	2.03E+01	2.72E-01
pu240	1.33E+01	4.64E+00	1.61E+00	6.78E-02	3.45E-04	4.53E-11
pu241	3.05E-01	1.04E-13	4.60E-14	3.99E-15	6.75E-17	3.28E-22
pu242	4.65E-05	4.56E-05	4.48E-05	4.24E-05	3.86E-05	2.92E-05
ra226	7.06E+00	7.73E+00	8.32E+00	9.63E+00	1.09E+01	1.03E+01
ra228	1.06E-05	1.21E-05	1.35E-05	1.80E-05	2.53E-05	4.74E-05
se 79	5.22E-02	5.11E-02	5.01E-02	4.70E-02	4.23E-02	3.09E-02
sm151	2.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
sn126	1.73E-01	1.61E-01	1.50E-01	1.22E-01	8.63E-02	3.05E-02
tc 99	1.06E+01	1.03E+01	9.94E+00	9.01E+00	7.65E+00	4.67E+00
th229	1.57E+00	1.77E+00	1.98E+00	2.55E+00	3.34E+00	4.79E+00
th230	7.23E+00	7.88E+00	8.44E+00	9.71E+00	1.07E+01	1.01E+01
th232	1.06E-05	1.21E-05	1.35E-05	1.80E-05	2.53E-05	4.74E-05
u233	1.80E+00	2.01E+00	2.21E+00	2.75E+00	3.50E+00	4.86E+00
u234	1.48E+01	1.45E+01	1.42E+01	1.33E+01	1.19E+01	8.79E+00
u235	3.32E-01	3.35E-01	3.37E-01	3.41E-01	3.44E-01	3.44E-01
u236	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.98E+00	2.97E+00
u238	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
zr 93	1.13E+00	1.12E+00	1.12E+00	1.10E+00	1.08E+00	1.01E+00
Total	4.50E+02	3.40E+02	2.80E+02	1.60E+02	9.60E+01	7.00E+01

and the resulting product was added to the number density calculated from the mass entered from the SAS2H output shown in the spreadsheet. Oxygen was adjusted for the additional material while also being adjusted down for the displaced water. Hydrogen was adjusted down to account for the displaced water by the volume fraction of UO_2 added (quantity described above). In the 0 g/yr infiltration rate case, number densities were calculated directly from the SAS2H masses for actinides and fission products and the water number densities were maintained constant.

The calculations and results are shown in the LOTUS 1-2-3 spreadsheet included in Attachment VII.

7.4.5 Check of Reactivity Changes With Time Due to Criticality

The MCNP base case for 538 K described in Section 7.4.1 was used with the number densities calculated in the previous section for the 3 criticality durations from 1000 to 10,000 years. The results of the MCNP cases are shown in Table 7.4.5-1 (Attachment numbers shown in parentheses). These cases demonstrate that the system reactivity is not significantly affected by the continued infiltration of material or by the burnup of fissile material and generation of fission products. The burnup is only 1.45 GWd/MTU (1.461E4 GWd/ 10.1 MTU) even after 10,000 years and at the maximum infiltration rate only adds 1.3 metric tons of UO_2. As indicated by the results in Reference 5.55, very large changes in the characteristics of these very large thermal systems are required to significantly change the k_{eff} value.

Table 7.4.5-1. MCNP Case Results to Demonstrate Reactivity Changes with Time

Time (years)	132 g/yr UO_2 Infiltration	0 g/yr UO_2 Infiltration
0.00	0.9424 ± 0.0020 (XI)	-
1000	0.9395 ± 0.0019 (XXV)	0.9373 ± 0.0018 (XXVIII)
5000	0.9417 ± 0.0016 (XXVI)	0.9348 ± 0.0016 (XXIX)
10,000	0.9453 ± 0.0019 (XXVII)	0.9336 ± 0.0016 (XXX)

Two additional cases were run for the 1000 year duration criticality with high UO_2 infiltration. In one case the fission products were removed providing a k_{eff} of 0.9440 ± 0.0018 (XXXI). In the other case Pu-238, Pu-239, and U-233 were removed providing a k_{eff} of 0.9349 ± 0.0016 (XXXII). This represents a nominal worth compared to the reference case above (XXV) of -0.48% and 0.49% for fission products and Pu, respectively at 1000 years. These same two cases were also run for the 10,000 year duration criticality with high UO_2 infiltration. For the case with fission products removed, a k_{eff} of 0.9556 ± 0.0019 (XXXIII) was calculated and for the case with Pu-238, Pu-239, and U-233 removed, a k_{eff} of 0.9090 ± 0.0018 (XXXIV) was calculated. This represents a nominal worth compared to the reference case above (XXVII) of -1.09% and +3.84% for fission products and Pu, respectively at 10,000 years.

In order to demonstrate that the top 15 fission product absorbers were sufficient to cover fission

product effects, the next 16 highest fission product absorbers were reviewed for inclusion in an additional case based on the 10,000 year duration criticality with high UO_2 infiltration. The "fraction of total absorption rate" table for the last burn step of the 10,000 year duration case which can be found in the SAS2H output included in Attachments XVIII provides the absorption data. Five of these next highest fission product absorbers do not have cross sections available for MCNP and were discarded. The other eleven of these absorbers were added to the 10,000 year composition in the MCNP case providing a k_{eff} of 0.9448 ± 0.0018 (XXXV). Comparison of this result with that which included only 15 fission products demonstrates that the 15 fission products are sufficient.

The MCNP base case for 323 K (50 °C) described in Section 7.4.1 was used with the number densities calculated in the previous section for the 100,000 year hydrologic cycle. The results of the MCNP cases are a k_{eff} of 0.9994 ± 0.0019 (XXXVI) for the UO_2 infiltration case and 0.9477 ± 0.0017 (XXXVII) for no UO_2 infiltration. Note that these calculations are performed at 323 K while those reported above were performed at 538 K, representative of the respective power levels. At the variable infiltration rate, 6.6 metric tons of UO_2 are added displacing water over the 75,000 years of operation.

7.5 Probability Estimates

7.5.1 Summary of Prior Probability Estimates

The principal contribution to the probability of internal criticality (Refs. 5.8 and 5.9) came from a combination of the following events or processes:

- A given waste package has sufficiently reactive fuel.
- Hydraulically conductive fracture, or focusing, over the waste package.
- Increased infiltration rate (at least 10 times present value) within some time, T_1.
- Given the increased flow, the waste package barriers are breached within some time, T_2, after T_1.
- Given the barrier breach, a sufficient quantity of neutron absorber is removed from the waste package within some time, T_3, after $T_1 + T_2$.
- Water which has filled the waste package does not corrode through the inner barrier at the bottom of the waste package lying on its side.

The result, for the uncanistered fuel waste package was an expectation of less than 1 criticality in 80,000 years (Ref. 5.8, p. 55).

The principal contribution to the probability of external criticality (Ref. 5.52) came from a combination of the following events or processes:

- The number of waste packages having sufficient fissile content to provide a critical mass for a reducing zone in the repository far-field.
- The probability that a fissile bearing stream from a waste package having sufficient fissile content will encounter a single reducing zone, based on the distribution of

organic/carbonaceous deposits on the Colorado Plateau.
- The probability of the reducing zone being of sufficient size (based on the random juxtaposition of individual organic/carbonaceous deposits) to trap a critical mass.

The result is that the expected number of external criticalities from commercial SNF, over an arbitrarily long time period, is less than $2x10^{-7}$ (Ref. 5.52, p. 41, which was the highest value found in that analysis, although it was for a configuration different from the principal case in this analysis).

7.5.2 Data Needs for Future Probability Estimates

The following paragraphs identify the items of information which are expected to become available within the next year and will enable improvement of the accuracy of the probability estimates.

Internal criticality:

- Actual fracture density data from the Yucca Mountain tunnel at the repository horizon to more realistically estimate the probability of dripping on a given waste package and the associated concentration factor.
- Improved model of aqueous corrosion rate of the corrosion resistant inner barrier of the waste package, particularly as a function of temperature. This will facilitate the calculation of a probability density function for the criticality duration which is based on the length of time water can be contained in the WP to a depth sufficient to provide moderator for a critical mass of assemblies, including consideration of the increased temperature caused by the criticality (e.g., a peak temperature of 57 °C versus the drift wall temperature of less than 50 °C beyond 10,000 years given in the TSPA-95 data (Ref 5.18).
- Improved model for corrosion of borated stainless steel and the metal borides contained in the stainless steel matrix.

External criticality:

- Fissile mobilization rate, which consists of the waste form dissolution rate and the solubility of the fissile species (since the solution is the medium for the removal of the fissile material from the waste package).
- Systematic identification of organic (carbonaceous) deposits and other reducing zones in tuff, characterizing their size and density. These parameters could replace the hypothetical log combination methodology used in Reference 5.52, particularly at the base of tuff layers.
- Identification of exceptionally high permeability formations below the water table which could focus the fissile bearing water from more than one waste package at a time (assuming that it could reach the water table without any lateral spreading).
- More data on the areal extent of highest grade ores at Oklo, to be used to generate a joint probability distribution for the occurrence of possible values of concentration and size, which will, in turn be used for an alternative estimate of the maximum possible size and concentration of any individual reducing zone. This may also serve to eliminate the

possibility of the high uranium, high water cases which were considered in Reference 5.52, but were rejected for the nominal case in this analysis for the reasons given in Section 7.3.1, above.

8. Conclusions

In compliance with the M&O Quality Administrative Procedures, the design results presented in this document should not be used for procurement, fabrication, or construction unless properly identified, tracked as TBV, and controlled by the appropriate procedures.

The purpose of this probabilistic evaluation was to estimate the consequences of a criticality event, both internal and external to a waste package. As a result of the calculations performed in this analysis, it can be concluded that:

- Maximum power determined by the boiling temperature of water is less than 5 kW.
- Duration is nominally less than 10,000 years, but can be cycled up to 100,000 years.
- Maximum sustainable power, as determined by the inflow of the worst case high concentration of fissile bearing water, is less than 1.5 kW.
- Change in k_{eff} over the duration of the criticality is small, for nominal 10,000 year duration and even for 100,000 year cycling due to temperature and UO_2 infiltration limited power.
- Increase in radionuclide inventory is small (both for a single package and for the number of packages which are likely to go critical).

9. Attachments -

List of Attachments

Attachment	Description	Date	Number of Pages
I	Derivation of Power-Temperature Relationship	8/28/96	2
II	LOTUS 1-2-3 Spreadsheet - Number Densities for Internal Criticality (ucfcalcs.wk4 sheet F)	8/30/96	4
III	MCNP Case - Internal Criticality 0 Year Duration (a26xb5cO.sum)	8/22/96	10
IV	MCNP Case - Internal Criticality 1000 Year Duration (a26xb5dO.sum)	8/23/96	10
V	MCNP Case - Internal Criticality 5000 Year Duration (a26xb5eO.sum)	8/22/96	10
VI	MCNP Case - Internal Criticality 10,000 Year Duration (a26xb5fO.sum)	8/22/96	10
VII	LOTUS 1-2-3 Spreadsheet - Tuff/Water/UO2 Mixture Number Densities (leshpher2.wk4 Sheet C)	8/29/96	10
VIII	LOTUS 1-2-3 Spreadsheet - Internal Criticality Radionuclide Inventory Comparisons	9/4/96	3
IX	MCNP Case - External Criticality 0 Year Duration, 300K (sp40aO.sum)	8/22/96	4
X	MCNP Case - External Criticality 0 Year Duration, 323K (sp40a2O.sum)	8/23/96	4
XI	MCNP Case - External Criticality 0 Year Duration, 538K (sp40a1O.sum)	8/22/96	4
XII	Not Used	n/a	n/a
XIII	SAS2H Case - External Criticality 1 Year Duration (tuff7.sum)	8/29/96	54
XIV	SAS2H Case - External Criticality 10 Year Duration (tuff6.sum)	8/29/96	56
XV	SAS2H Case - External Criticality 100 Year Duration (tuff5.sum)	8/29/96	59
XVI	SAS2H Case - External Criticality 1000 Year Duration (tuff3.sum)	8/29/96	100

Attachment	Description	Date	Number of Pages
XVII	SAS2H Case - External Criticality 5000 Year Duration (tuff2.sum)	8/29/96	64
XVIII	SAS2H Case - External Criticality 10,000 Year Duration (tuff1.sum)	8/29/96	102
XIX	SAS2H Case - External Criticality 100,000 Year Hydrologic Cycle (tuff9.sum)	9/3/96	231
XX	ORIGEN-S Case - Decay of 1000 Year Criticality (origen3.output)	8/28/96	231
XXI	ORIGEN-S Case - Decay of 5000 Year Criticality (origen2.output)	8/28/96	231
XXII	ORIGEN-S Case - Decay of 10,000 Year Criticality (origen1.output)	8/28/96	231
XXIII	ORIGEN-S Case - Decay of 100,000 Year Hydrologic Cycle Criticality (origen9.output)	8/29/96	231
XXIV	Not Used	n/a	n/a
XXV	MCNP Case - External Criticality 1000 Year Duration, 538K, UO_2 infiltration (sp40e1O.sum)	8/30/96	4
XXVI	MCNP Case - External Criticality 5000 Year Duration, 538K, UO_2 infiltration (sp40f1P.sum)	8/22/96	4
XXVII	MCNP Case - External Criticality 10,000 Year Duration, 538K, UO_2 infiltration (sp40g1O.sum)	8/30/96	4
XXVIII	MCNP Case - External Criticality 1000 Year Duration, 538K, No UO_2 infiltration (sp40e1nO.sum)	8/30/96	4
XXIX	MCNP Case - External Criticality 5000 Year Duration, 538K, No UO_2 infiltration (sp40f1nP.sum)	8/22/96	4
XXX	MCNP Case - External Criticality 10,000 Year Duration, 538K, No UO_2 infiltration (sp40g1nO.sum)	8/30/96	4
XXXI	MCNP Case - External Criticality 1000 Year Duration, 538K, UO_2 infiltration, No FP (sp40e1yO.sum)	8/30/96	4
XXXII	MCNP Case - External Criticality 1000 Year Duration, 538K, UO_2 infiltration, No U-233, Pu-238, Pu-239 (sp40e1zO.sum)	8/30/96	4
XXXIII	MCNP Case - External Criticality 10,000 Year Duration, 538K, UO_2 infiltration, No FP (sp40g1yO.sum)	8/30/96	4

Attachment	Description	Date	Number of Pages
XXXIV	MCNP Case - External Criticality 10,000 Year Duration, 538K, UO_2 infiltration, No U-233, Pu-238, Pu-239 (sp40g1zO.sum)	8/30/96	4
XXXV	MCNP Case - External Criticality 10,000 Year Duration, 538K, UO_2 infiltration, Extended FP (sp40g1xO.sum)	8/30/96	4
XXXVI	MCNP Case - External Criticality 100,000 Year Duration, 323K, UO_2 infiltration (sp40lO.sum)	8/30/96	4
XXXVII	MCNP Case - External Criticality 100,000 Year Duration, 323K, No UO_2 infiltration (sp40lnO.sum)	8/30/96	4

Derivation of Power-Temperature Relationship for External Criticality

The following formulas are valid in any consistent set of units. However SI (or MKS) is recommended, for which the units of distance is meters, temperature is Kelvin or Centigrade, and thermal conductivity is W/m·C.

The heat conduction equation in spherical coordinates, assuming spherical symmetry so that the derivatives with respect to angle are zero, and the system is in a steady state, is given in Reference 5.14, p. 6, Eq. 1-3(c):

$$\frac{1}{r}\frac{d^2}{dr^2}(rT) = -\frac{\dot{q}}{k},$$

where $\dot{q}$ is the power (heat generation rate) per unit volume and k is the thermal conductivity. Three forms of the solution are of interest:

Outside a sphere

There are no heat sources outside the sphere, so the right side of the heat conduction equation is zero. The solution is of the form:

$$T = c_1 + c_2/r.$$

This assumes a fixed temperature at large distances from the sphere, $c_1 = T_\infty$.

At the surface of the sphere, the temperature gradient is determined by the heat outflow per unit area. If the power generated inside the sphere is P, the boundary condition at the surface of the sphere (r=R) becomes:

$$\frac{dT}{dr}\Big|_{r=R} = -\frac{P}{4\pi k R^2},$$

which is satisfied if $c_2 = P/(4\pi k)$, so that the solution outside the sphere becomes:

$$T = T_\infty + P/(4k\pi r),$$

so that the temperature at the surface is determined by the temperature at infinity and the total power generated within the sphere as:

$$T_s = T_\infty + P/(4k\pi R).$$

Inside a sphere which is homogeneously heated

If the total power generated is P, homogeneously distributed in a sphere of radius R, the power per unit volume is $3P/(4\pi R^3)$. Integrating the heat conduction equation gives the solution:

$$T = T_s + P(1-r^2/R^2)/(8k\pi R),$$

where the two integration constants have been determined by the conditions that the temperature be finite at the center of the sphere (r=0) and that the temperature at the surface (r=R) be T_s.

The average temperature is computed by multiplying by $4\pi r^2$ and integrating from r=0 to r=R, and dividing the result by the volume of the sphere, $4\pi R^3/3$, to get:

$$T_{av} = T_s + P/(20k\pi R).$$

Inside a sphere with parabolic power density

The parabolic power density normalized to integrate to the total power P through the volume of a sphere of radius R is:

$$15P(1-r^2/R^2)/(8\pi R^3).$$

Using this power density on the right side of the heat conduction equation leads to the solution:

$$T = T_s + 7P/(32k\pi R) - 15P[r^2/(6R^2) - r^4/(20R^4)]/(8k\pi R),$$

where the two integration constants have been determined in the same manner as for the homogeneously heated case described above. Averaging this form over the sphere gives:

$$T_{av} = T_s + P/(14k\pi R).$$

SAS2H Number Density Worksheet: Consequence Analysis - Internal Criticality

Number Density = (mass/assembly) / (volume) * (Na) / (Aw) * correction to 96% density for fresh fu
Avogadro's Number [Na 0.602252
Atomic Weight [Aw]

Volume= Pi X .468122 X .468122 X 360.172 X 208
= 51575.24

SAS2H UO2 density=10.206
U mass=.464kg Correction to 96% density
UO2 mass= 526.38 kg 1.0309278
(REF. 5.43)

Isotope List:

	Element	Symbol	Isotope	MCNP ID	Atomic Wei	ORIGINS ID
8	Oxygen	O	O-16	8016.50C	15.99492	
42	Molybdenu	Mo	nat.	42000.50C	95.94	
		Mo	Mo-95	42095.50C	94.90584	mo 95
43	Technetium	Tc	Tc-99*	43099.50C	98.90628	tc 99
44	Ruthenium	Ru	Ru-101	44101.50C	100.9056	ru101
45	Rhodium	Rh	Rh-103	45103.50C	102.9055	rh103
47	Silver	Ag	Ag-109	47109.50C	108.9048	ag109
48	Cadmium	Cd	nat.	48000.50C	112.4	
55	Cesium	Cs	Cs-133	55133.50C	132.9054	cs133
		Cs	Cs-135	55135.50C	134.9058	cs135
60	Neodymiu	Nd	Nd-143	60143.50C	142.9098	nd143
		Nd	Nd-145	60145.50C	144.9125	nd145
62	Samarium	Sm	Sm-147	62147.50C	146.9149	sm147
		Sm	Sm-149	62149.50C	148.9172	sm149
		Sm	Sm-150	62150.50C	149.9173	sm150
		Sm	Sm-151	62151.50C	150.9199	sm151
		Sm	Sm-152	62152.50C	151.9198	sm152
63	Europium	Eu	Eu-151	63151.55C	150.9198	eu151
		Eu	Eu-153	63153.55C	152.9212	eu153
		Eu	Eu-154	63154.50C	153.9231	eu154
64	Gadolinium	Gd	nat.	64000.35C	157.25	
		Gd	Gd-155	64155.50C	154.9227	gd155
		Gd	Gd-157	64157.50C	156.924	gd157
72	Hafnium	Hf	nat.	72000.50C	178.49	
92	Uranium	U	U-233	92233.50C	233.0395	u233
		U	U-234	92234.50C	234.0409	u234
		U	U-235	92235.50C	235.0439	u235
		U	U-236	92236.50C	236.0456	u236
		U	U-238	92238.50C	238.0508	u238
93	Neptunium	Np	Np-237	93237.55C	237.0481	np237
94	Plutonium	Pu	Pu-238	94238.50C	238.0495	pu238
		Pu	Pu-239	94239.55C	239.0521	pu239
		Pu	Pu-240	94240.50C	240.0539	pu240
		Pu	Pu-241	94241.50C	241.0567	pu241
		Pu	Pu-242	94242.50C	242.0587	pu242
		Pu	Pu-243	94243.35C	243.062	pu243
95	Americium	Am	Am-241	95241.50C	241.0567	am241
		Am	Am-242m	95242.50C	242.0595	am242m
		Am	Am-243	95243.50C	243.0614	am243
96	Curium	Cm	Cm-243	96243.35C	243.0614	cm243
		Cm	Cm-245	96245.35C	245.0654	cm245
		Cm	Cm-248	96248.35C	248.0722	cm248
	Xenon	Xe	Xe-131 *	54131.50c	130.9051	* AW from Chart of the Nuclides
		Xe	Xe-135 *	54135.50c	134.9063	

Number Density = grams/assembly / Assembly Volume * Avagadro's Number / Atomic Weight
* (Density Correction to 96% TD) * (Isotopic Correction Factor)

Time Effects Curve
BURNUP: PWR 20 GWd/MT PWR B&W 15x15, 3.00% , Burnup 20 GWd/MTHM
ENRICHMENT: 3.00% DECAY TIME: 15,000 YEARS
DECAY TIME: 15,000 YEARS Volume 51575.24 pwr 3.0% 20 G

ISOTOPE	GRAMS/	fraction		Aw	MCNP ID	Number Density
O 16	62377.29	0.120501	1	15.99492	8016.50C	4.6947E-02
mo 95	224	0.000433	1	94.90584	42095.50C	2.8413E-05
tc 99	219	0.000423	1	98.90628	43099.50C	2.6655E-05
ru101	218	0.000421	1	100.9056	44101.50C	2.6008E-05
rh103	144	0.000278	1	102.9055	45103.50C	1.6846E-05
ag109	21.9	0.000042	1	108.9048	47109.50C	2.4208E-06
nd143	269	0.00052	1	142.9098	60143.50C	2.2660E-05
nd145	203	0.000392	1	144.9125	60145.50C	1.6864E-05
sm147	89.7	0.000173	1	146.9149	62147.50C	7.3501E-06
sm149	1.42	2.7E-06	1	148.9172	62149.50C	1.1479E-07
sm150	80.4	0.000155	1	149.9173	62150.50C	6.4561E-06
sm151	0	0	1	150.9199	62151.50C	0.0000E+00
eu151	6.22	0.000012	1	150.9198	63151.55C	4.9615E-07
sm152	37.4	0.000072	1	151.9198	62152.50C	2.9636E-06
eu153	27	0.000052	1	152.9212	63153.55C	2.1255E-06
gd155	3.18	6.1E-06	1	154.9227	64155.50C	2.4710E-07
u233	2.43	4.7E-06	1	233.0395	92233.50C	1.2553E-07
u234	107	0.000207	1	234.0409	92234.50C	5.5037E-06
u235	7210	0.013928	1	235.0439	92235.50C	3.6928E-04
u236	1940	0.003748	1	236.0456	92236.50C	9.8940E-05
u238	442000	0.853857	1	238.0508	92238.50C	2.2352E-02
np237	541	0.001045	1	237.0481	93237.55C	2.7474E-05
pu238	0	0	1	238.0495	94238.50C	0.0000E+00
pu239	1720	0.003323	1	239.0521	94239.55C	8.6617E-05
pu240	138	0.000267	1	240.0539	94240.50C	6.9205E-06
pu241	2.24E-05	4.3E-11	1	241.0567	94241.50C	1.1186E-12
pu242	68.9	0.000133	1	242.0587	94242.50C	3.4266E-06
am241	7.04E-04	1.4E-09	1	241.0567	95241.50C	3.5158E-11
am242m	0	0	1	242.0595	95242.50C	0.0000E+00
am243	2.46	4.8E-06	1	243.0614	95243.50C	1.2184E-07
total	517651.3	1			Total	7.0057E-02

oxygen mass/assembly = 464000 g UO / (1-11.8503E-2) * 11.8503E-2 fraction of O in UO2
62377.29
Effective density = 10.03682

Time Effects Curve
BURNUP: PWR 20 GWd/MT PWR B&W 15x15, 3.00% , Burnup 20 GWd/MTHM
ENRICHMENT: 3.00% DECAY TIME: 15000 YEARS
DECAY TIME: 15000 YEARS Volume 51575.24 pwr 3.0% 20 GWd/MT
CRITICALITY| DURATION 0 Years 0 yr crit

ISOTOPE	GRAMS/	%		Aw	MCNP ID	Number Density
O 16	62377.29	0.120385	1	15.99492	8016.50C	4.6947E-02
mo 95	224	0.000432	1	94.90584	42095.50C	2.8413E-05
tc 99	219	0.000423	1	98.90628	43099.50C	2.6655E-05
ru101	218	0.000421	1	100.9056	44101.50C	2.6008E-05
rh103	144	0.000278	1	102.9055	45103.50C	1.6846E-05
ag109	21.9	0.000042	1	108.9048	47109.50C	2.4208E-06
nd143	269	0.000519	1	142.9098	60143.50C	2.2660E-05
nd145	2.03E+02	0.039%	1	144.9125	60145.50C	1.6864E-05
sm147	8.97E+01	0.017%	1	146.9149	62147.50C	7.3501E-06
sm149	1.42E+00	0.000%	1	148.9172	62149.50C	1.1479E-07
sm150	8.04E+01	0.016%	1	149.9173	62150.50C	6.4561E-06

For Time Effects Cases, the Isotopic Correction Factor is set to 1.0.

Number Density Calculation for 26 volume% Fe2O3 in Water
density of Fe2O3 is 5.24 g/cc from Handbook of Chemistry and Physics (Ref. 5.17)
Note: O is O-16 66 Edition, page B-104
AW of Fe= 55.847 AW of O= 15.99492 from Nuclear Chemical Engineering (Ref. 5.43)

Molecular Density = 5.24 X .602252 / (2x55.847 + 3x15.9949)

=	0.019763	ND for 26%
ND of Fe=2x.019762=	0.039527	0.010277
ND of O=3x.019762=	0.05929	0.0154155

Water Number Density
ND of H= 0.066878 from Material Compositions and Number Densities...
ND of O= 0.033439 BBA000000-01717-0200-00002 Rev 00

	ND for 74%
H	0.0494897
O	0.0247449

Total ND for O = .024745+.015414= 0.040160

B-10 Number Density (Assume no volume offset)
mass of B= 30.474 kg from Second WP Probabilistic Criticality Analysis...
void space 5.714E6 cc BBA000000-01717-2200-00005 REV 00 (Ref. 5.54)

AW of B-10 10.0129 from page I-10 of Material Compositions and Number Densities...
WT Fractio .288/1.6= 0.18 BBA000000-01717-0200-00002 Rev 00 (Ref. 5.5)

ND of B-10=30.474E3*.18/5.714E6*.602252/10.0129= 5.7740E-05
ND for 5% 2.8870E-06

TOTAL ND =sum of O, Fe, H, B-10 0.09993

mass density=1.00x.74 + 5.24x.26= 2.1024

sm151	0.00E+00	0.000%	1	150.9199	62151.50C	0.0000E+00
eu151	6.22E+00	0.001%	1	150.9198	63151.55C	4.9615E-07
sm152	3.74E+01	0.007%	1	151.9198	62152.50C	2.9636E-06
eu153	2.70E+01	0.005%	1	152.9212	63153.55C	2.1255E-06
gd155	3.18E+00	0.001%	1	154.9227	64155.50C	2.4710E-07
gd157	3.11E-02	0.000%	1	156.924	64157.50C	2.3858E-09
cd(113)	1.77E+01	0.003%	1	112.4	48000.50C	1.8989E-06
xe131	1.38E+02	0.027%	1	130.9051	54131.50C	1.2691E-05
cs133	3.41E+02	0.066%	1	132.9054	55133.50C	3.0887E-05
u233	2.43E+00	0.000%	1	233.0395	92233.50C	1.2553E-07
u234	1.07E+02	0.021%	1	234.0409	92234.50C	5.5037E-06
u235	7.21E+03	1.391%	1	235.0439	92235.50C	3.6928E-04
u236	1.94E+03	0.374%	1	236.0456	92236.50C	9.8940E-05
u238	4.42E+05	85.304%	1	238.0508	92238.50C	2.2352E-02
np237	5.41E+02	0.104%	1	237.0481	93237.55C	2.7474E-05
pu238	0.00E+00	0.000%	1	238.0495	94238.50C	0.0000E+00
pu239	1.72E+03	0.332%	1	239.0521	94239.55C	8.6617E-05
pu240	1.38E+02	0.027%	1	240.0539	94240.50C	6.9205E-06
pu241	2.24E-05	0.000%	1	241.0567	94241.50C	1.1186E-12
pu242	6.89E+01	0.013%	1	242.0587	94242.50C	3.4266E-06
am241	7.04E-04	0.000%	1	241.0567	95241.50C	3.5158E-11
am242m	0.00E+00	0.000%	1	242.0595	95242.50C	0.0000E+00
am243	2.46E+00	0.000%	1	243.0614	95243.50C	1.2184E-07
total	518148.1	100.00%			Total	7.010280E-02

oxygen mass/assembly = 464000 g UO / (1-11.8503E-2) * 11.8503E-2 fraction of O in UO2
62377.29
Effective density = 10.04645

Time Effects Curve

BURNUP: PWR 20 GWd/MT PWR B&W 15x15, 3.00% , Burnup 20 GWd/MTHM
ENRICHMENT: 3.00% DECAY TIME: 15000 YEARS
DECAY TIME: 15000 YEARS Volume 51575.24 pwr 3.0% 20 GWd/MT
CRITICALITY| DURATION 1000 Years 1000 yr crit

ISOTOPE	GRAMS/	%		Aw	MCNP ID	Number Density
O 16	62377.29	0.120385	1	15.99492	8016.50C	4.6947E-02
mo 95	225	0.000434	1	94.90584	42095.50C	2.8540E-05
tc 99	220	0.000425	1	98.90628	43099.50C	2.6777E-05
ru101	219	0.000423	1	100.9056	44101.50C	2.6127E-05
rh103	144	0.000278	1	102.9055	45103.50C	1.6846E-05
ag109	21.9	0.000042	1	108.9048	47109.50C	2.4208E-06
nd143	270	0.000521	1	142.9098	60143.50C	2.2744E-05
nd145	2.04E+02	0.039%	1	144.9125	60145.50C	1.6947E-05
sm147	9.01E+01	0.017%	1	146.9149	62147.50C	7.3829E-06
sm149	1.18E+00	0.000%	1	148.9172	62149.50C	9.5390E-08
sm150	8.08E+01	0.016%	1	149.9173	62150.50C	6.4882E-06
sm151	3.01E-02	0.000%	1	150.9199	62151.50C	2.4010E-09
eu151	6.12E+00	0.001%	1	150.9198	63151.55C	4.8817E-07
sm152	3.75E+01	0.007%	1	151.9198	62152.50C	2.9715E-06
eu153	2.71E+01	0.005%	1	152.9212	63153.55C	2.1334E-06
gd155	2.73E+00	0.001%	1	154.9227	64155.50C	2.1214E-07
gd157	2.36E-02	0.000%	1	156.924	64157.50C	1.8105E-09
cd(113)	1.78E+01	0.003%	1	112.4	48000.50C	1.9107E-06
xe131	1.38E+02	0.027%	1	130.9051	54131.50C	1.2691E-05
cs133	3.42E+02	0.066%	1	132.9054	55133.50C	3.0978E-05
u233	2.58E+00	0.000%	1	233.0395	92233.50C	1.3328E-07
u234	1.08E+02	0.021%	1	234.0409	92234.50C	5.5552E-06
u235	7.23E+03	1.395%	1	235.0439	92235.50C	3.7030E-04
u236	1.96E+03	0.378%	1	236.0456	92236.50C	9.9960E-05

u238	4.42E+05	85.304%	1	238.0508	92238.50C	2.2352E-02
np237	5.41E+02	0.104%	1	237.0481	93237.55C	2.7474E-05
pu238	1.69E-01	0.000%	1	238.0495	94238.50C	8.5464E-09
pu239	1.68E+03	0.324%	1	239.0521	94239.55C	8.4602E-05
pu240	1.30E+02	0.025%	1	240.0539	94240.50C	6.5193E-06
pu241	3.14E-02	0.000%	1	241.0567	94241.50C	1.5681E-09
pu242	6.86E+01	0.013%	1	242.0587	94242.50C	3.4117E-06
am241	7.54E-01	0.000%	1	241.0567	95241.50C	3.7655E-08
am242m	1.90E-04	0.000%	1	242.0595	95242.50C	9.4492E-12
am243	2.40E+00	0.000%	1	243.0614	95243.50C	1.1887E-07
total	518148.1	100.00%			Total	7.010317E-02

oxygen mass/assembly = 464000 g UO / (1-11.8503E-2) * 11.8503E-2 fraction of O in UO2

62377.29

Effective density = 10.04645

Time Effects Curve

BURNUP: PWR 20 GWd/MT PWR B&W 15x15, 3.00% , Burnup 20 GWd/MTHM

ENRICHMENT: 3.00% DECAY TIME: 15000 YEARS

DECAY TIME: 15000 YEARS Volume 51575.24 pwr 3.0% 20 GWd/MT

CRITICALITY| DURATION 5000 Years 5000 yr crit

ISOTOPE	GRAMS/	%		Aw	MCNP ID	Number Density
O 16	62377.29	0.120385	1	15.99492	8016.50C	4.6947E-02
mo 95	229	0.000442	1	94.90584	42095.50C	2.9047E-05
tc 99	220	0.000425	1	98.90628	43099.50C	2.6777E-05
ru101	223	0.00043	1	100.9056	44101.50C	2.6604E-05
rh103	145	0.00028	1	102.9055	45103.50C	1.6963E-05
ag109	22.2	0.000043	1	108.9048	47109.50C	2.4540E-06
nd143	273	0.000527	1	142.9098	60143.50C	2.2997E-05
nd145	2.07E+02	0.040%	1	144.9125	60145.50C	1.7196E-05
sm147	9.16E+01	0.018%	1	146.9149	62147.50C	7.5058E-06
sm149	7.88E-01	0.000%	1	148.9172	62149.50C	6.3701E-08
sm150	8.21E+01	0.016%	1	149.9173	62150.50C	6.5926E-06
sm151	3.04E-02	0.000%	1	150.9199	62151.50C	2.4249E-09
eu151	5.87E+00	0.001%	1	150.9198	63151.55C	4.6823E-07
sm152	3.77E+01	0.007%	1	151.9198	62152.50C	2.9874E-06
eu153	2.77E+01	0.005%	1	152.9212	63153.55C	2.1806E-06
gd155	1.51E+00	0.000%	1	154.9227	64155.50C	1.1733E-07
gd157	1.63E-02	0.000%	1	156.924	64157.50C	1.2504E-09
cd(113)	1.83E+01	0.004%	1	112.4	48000.50C	1.9600E-06
xe131	1.40E+02	0.027%	1	130.9051	54131.50C	1.2875E-05
cs133	3.47E+02	0.067%	1	132.9054	55133.50C	3.1431E-05
u233	3.16E+00	0.001%	1	233.0395	92233.50C	1.6324E-07
u234	1.12E+02	0.022%	1	234.0409	92234.50C	5.7609E-06
u235	7.29E+03	1.407%	1	235.0439	92235.50C	3.7337E-04
u236	2.02E+03	0.390%	1	236.0456	92236.50C	1.0302E-04
u238	4.42E+05	85.304%	1	238.0508	92238.50C	2.2352E-02
np237	5.46E+02	0.105%	1	237.0481	93237.55C	2.7728E-05
pu238	1.74E-01	0.000%	1	238.0495	94238.50C	8.7993E-09
pu239	1.54E+03	0.297%	1	239.0521	94239.55C	7.7552E-05
pu240	1.03E+02	0.020%	1	240.0539	94240.50C	5.1653E-06
pu241	2.54E-02	0.000%	1	241.0567	94241.50C	1.2685E-09
pu242	6.74E+01	0.013%	1	242.0587	94242.50C	3.3520E-06
am241	7.77E-01	0.000%	1	241.0567	95241.50C	3.8803E-08
am242m	2.27E-04	0.000%	1	242.0595	95242.50C	1.1289E-11
am243	2.21E+00	0.000%	1	243.0614	95243.50C	1.0946E-07
total	518133.9	100.00%			Total	7.010379E-02

oxygen mass/assembly = 464000 g UO / (1-11.8503E-2) * 11.8503E-2 fraction of O in UO2

62377.29

Effective density = 10.04617

Time Effects Curve

BURNUP: PWR 20 GWd/MT PWR B&W 15x15, 3.00% , Burnup 20 GWd/MTHM

ENRICHMENT: 3.00% DECAY TIME: 15000 YEARS

DECAY TIME: 15000 YEARS Volume 51575.24 pwr 3.0% 20 GWd/MT

CRITICALITY DURATION 10,000 Years 10,000 yr crit Number

ISOTOPE	GRAMS/	%		Aw	MCNP ID	Density
O 16	62377.29	0.120385	1	15.99492	8016.50C	4.6947E-02
mo 95	233	0.00045	1	94.90584	42095.50C	2.9555E-05
tc 99	221	0.000427	1	98.90628	43099.50C	2.6899E-05
ru101	227	0.000438	1	100.9056	44101.50C	2.7082E-05
rh103	147	0.000284	1	102.9055	45103.50C	1.7197E-05
ag109	22.5	0.000043	1	108.9048	47109.50C	2.4871E-06
nd143	277	0.000535	1	142.9098	60143.50C	2.3334E-05
nd145	2.11E+02	0.041%	1	144.9125	60145.50C	1.7528E-05
sm147	9.34E+01	0.018%	1	146.9149	62147.50C	7.6533E-06
sm149	6.96E-01	0.000%	1	148.9172	62149.50C	5.6264E-08
sm150	8.32E+01	0.016%	1	149.9173	62150.50C	6.6809E-06
sm151	3.06E-02	0.000%	1	150.9199	62151.50C	2.4408E-09
eu151	5.60E+00	0.001%	1	150.9198	63151.55C	4.4669E-07
sm152	3.79E+01	0.007%	1	151.9198	62152.50C	3.0032E-06
eu153	2.84E+01	0.005%	1	152.9212	63153.55C	2.2357E-06
gd155	7.60E-01	0.000%	1	154.9227	64155.50C	5.9056E-08
gd157	1.55E-02	0.000%	1	156.924	64157.50C	1.1891E-09
cd(113)	1.89E+01	0.004%	1	112.4	48000.50C	2.0221E-06
xe131	1.42E+02	0.027%	1	130.9051	54131.50C	1.3059E-05
cs133	3.53E+02	0.068%	1	132.9054	55133.50C	3.1974E-05
u233	3.88E+00	0.001%	1	233.0395	92233.50C	2.0043E-07
u234	1.16E+02	0.022%	1	234.0409	92234.50C	5.9667E-06
u235	7.35E+03	1.419%	1	235.0439	92235.50C	3.7645E-04
u236	2.09E+03	0.403%	1	236.0456	92236.50C	1.0659E-04
u238	4.42E+05	85.304%	1	238.0508	92238.50C	2.2352E-02
np237	5.50E+02	0.106%	1	237.0481	93237.55C	2.7931E-05
pu238	1.80E-01	0.000%	1	238.0495	94238.50C	9.1027E-09
pu239	1.40E+03	0.270%	1	239.0521	94239.55C	7.0502E-05
pu240	8.09E+01	0.016%	1	240.0539	94240.50C	4.0570E-06
pu241	2.05E-02	0.000%	1	241.0567	94241.50C	1.0238E-09
pu242	6.59E+01	0.013%	1	242.0587	94242.50C	3.2774E-06
am241	6.23E-01	0.000%	1	241.0567	95241.50C	3.1112E-08
am242m	1.86E-04	0.000%	1	242.0595	95242.50C	9.2503E-12
am243	2.05E+00	0.000%	1	243.0614	95243.50C	1.0153E-07
total	518139.2	100.00%			Total	7.010568E-02

oxygen mass/assembly = 464000 g UO / (1-11.8503E-2) * 11.8503E-2 fraction of O in UO2

62377.29

Effective density = 10.04628

```
1mcnp     version 4a    ld=10/01/93                          08/20/96 17:19:50
*************************************************************************                probid =   08/20/96 17:19:50
 inp=a26xb5c outp=a26xb5c0

        AUCF - B&W 15x15 FUEL,21 ASSEMBLY DBF CS/SS-B Corroded & collapsed - (a26xb5c)
        C     Advanced Uncanistered Fuel Waste Package, collapsed basket 10k 26%/5%B
        C     15000 year decay  0 yr criticality
        C     CELL SPECIFICATIONS
        C       Assembly Sub-lattices - 1/2 Model
        1     0       1  3 -13 -20   FILL=1 (0 -74 0) IMP:N=1
        C     1     0       1  3  -4 -13 -20   FILL=1 (0 -73.8 0) IMP:N=1
        C     2     0       3  4  -5 -13 -20   FILL=1 (0 -73.8 0) IMP:N=1
        C     3     0       3  5 -13 -20       FILL=1 (0 -73.8 0) IMP:N=1
        C       Assembly Sub-lattices - 1/4 Model
        C     1     0       1   2   3  -4 -13 -20   FILL=1 (0 -12.3 0) IMP:N=1
        C     2     0       2   3   4  -5 -13 -20   FILL=1 (0 -12.3 0) IMP:N=1
        C     3     0       2   3   5 -13 -20       FILL=1 (0 -12.3 0) IMP:N=1
        C     ASSEMBLY LATTICE DESCRIPTION
        5     1  -2.1024  -61  60 -63  62  IMP:N=1 LAT=1 U=1
              FILL=0:3 0:7 0:0  1 1  1  1  56 56 1  1  56 56 56 1
                                56 56 56 1  56 56 56 1  56 56 1  1
                                1 1  1  1   1 1 1 1       $ 1/2 model
        C     5     1  -2.1024   60 -61  62 -63  IMP:N=1 LAT=1 U=1
        C           FILL=0:3 0:3 0:0  58 58 64 70  58 58 62 70
        C                             60 62 70  1  70 70  1  1 $ 1/4 model
        C     BARRIER CELLS
        C     Basket Material-Lid Gap
        76    3  -1.0000    1 -20  13  -14     IMP:N=1 $ 1/2 model
        C     76    1  -2.1024    1   2 -20  13  -14     IMP:N=1 $ 1/4 model
        C     Inner Barrier
        77    5  -8.1400    1   3  20 -21 -14  IMP:N=1 $ 1/2 model
        C     77    5  -8.1400    1   2   3  20 -21 -14  IMP:N=1 $ 1/4 model
        C     Inner Lid
        78    5  -8.1400    1  14 -15 -21      IMP:N=1 $ 1/2 model
        C     78    5  -8.1400    1   2  14 -15 -21      IMP:N=1 $ 1/4 model
        C      Gap between Inner and Outer Barrier Lids
        79    3  -1.0000    1  15 -16 -21      IMP:N=1 $ 1/2 model
        C     79    1  -2.1024    1   2  15 -16 -21      IMP:N=1 $ 1/4 model
        C      Gap between Inner and Outer Barriers
        80    3  -1.0000   21 -22   1   3 -16  IMP:N=1 $ 1/2 model
        C     80    1  -2.1024   21 -22   1   2   3 -16  IMP:N=1 $ 1/4 model
        C     Outer Barrier
        81    7  -7.8320   22 -24   1   3 -16  IMP:N=1 $ 1/2 model
        C     81    7  -7.8320   22 -24   1   2   3 -16  IMP:N=1 $ 1/4 model
        C     Outer Barrier Lid
        82    7  -7.8320    1 -24  16 -17      IMP:N=1 $ 1/2 model
        C     82    7  -7.8320    1   2 -24  16 -17      IMP:N=1 $ 1/4 model
        C     12" of Water around Container
        83    3  -1.0000   24 -25   1   3 -17  IMP:N=1 $ 1/2 model
        C     83    1  -2.1024   24 -25   1   2   3 -17  IMP:N=1 $ 1/4 model
        C     12" of Water above Container
        84    3  -1.0000   17 -19   1 -25      IMP:N=1 $ 1/2 model
        C     84    1  -2.1024   17 -58   1   2 -59      IMP:N=1 $ 1/4 model
        C     OUTSIDE WORLD
        85    0  -1:-3:19:25  IMP:N=0  $ 1/2 model
        C     85    0  -1:-2:-3:19:25  IMP:N=0  $ 1/4 model
        C     WET PIN LATTICE DESCRIPTION
        86    1  -2.1024  -26 27 -28  29  IMP:N=1 LAT=1  U=56
              FILL -8:8 -8:8 0:0  56 16R  56 2 14R 56  56 2 14R 56
                                  56 2 4R 4 2 2R 4 2 4R 56
```

```
                                  56 2 2R 4 2 6R 4 2 2R 56  56 2 14R 56
                                  56 2 2 4 2 2 4 2 2R 4 2 2 4 2 2 56
                                  56 2 14R 56
                                  56 2 6R 6 2 6R 56
                                  56 2 14R 56
                                  56 2 2 4 2 2 4 2 2R 4 2 2 4 2 2 56
                                  56 2 14R 56  56 2 2R 4 2 6R 4 2 2R 56
                                  56 2 4R 4 2 2R 4 2 4R 56
                                  56 2 14R 56  56 2 14R 56  56 16R
C       MIXED PIN LATTICE DESCRIPTION
C       87    3  -0.001225  -26 27 -28  29  IMP:N=1 LAT=1  U=72
C        FILL -8:8 -8:8 0:0  57 16R  57 3 14R 57  57 3 14R 57
C                            57 3 4R 5 3 2R 5 3 4R 57
C                            57 3 2R 5 3 6R 5 3 2R 57  57 3 14R 57
C                            57 3 3 5 3 3 5 3 2R 5 3 3 5 3 3 57
C                            57 3 14R 57
C                            57 3 6R 7 3 6R 57
C                            57 2 14R 57
C                            57 2 2 4 2 2 4 2 2R 4 2 2 4 2 2 57
C                            57 2 14R 57  57 2 2R 4 2 6R 4 2 2R 57
C                            57 2 4R 4 2 2R 4 2 4R 57
C                            57 2 14R 57  57 2 14R 57  57 16R
C       DRY PIN LATTICE DESCRIPTION
88      3  -0.001225  -26 27 -28  29  IMP:N=1 LAT=1  U=57
        FILL -8:8 -8:8 0:0  57 16R  57 3 14R 57  57 3 14R 57
                            57 3 4R 5 3 2R 5 3 4R 57
                            57 3 2R 5 3 6R 5 3 2R 57  57 3 14R 57
                            57 3 3 5 3 3 5 3 2R 5 3 3 5 3 3 57
                            57 3 14R 57
                            57 3 6R 7 3 6R 57
                            57 3 14R 57
                            57 3 3 5 3 3 5 3 2R 5 3 3 5 3 3 57
                            57 3 14R 57  57 3 2R 5 3 6R 5 3 2R 57
                            57 3 4R 5 3 2R 5 3 4R 57
                            57 3 14R 57  57 3 14R 57  57 16R
C       WET FUEL ROD
89      2   7.0103E-02   -30 -10     IMP:N=1 U=2
90      4  -6.5600   -30  10 -11 IMP:N=1 U=2
91      1  -2.1024   -30  11     IMP:N=1 U=2
92      1  -2.1024    30 -31 -11 IMP:N=1 U=2
93      1  -2.1024    30 -31  11 IMP:N=1 U=2
94      4  -6.5600    31 -32 -11 IMP:N=1 U=2
95      1  -2.1024    31 -32  11 IMP:N=1 U=2
96      1  -2.1024    32         IMP:N=1 U=2
C       DRY FUEL ROD
97      2   7.0103E-02   -30 -10     IMP:N=1 U=3
98      4  -6.5600   -30  10 -11 IMP:N=1 U=3
99      3  -0.001225   -30  11     IMP:N=1 U=3
100     3  -0.001225    30 -31 -11 IMP:N=1 U=3
101     3  -0.001225    30 -31  11 IMP:N=1 U=3
102     4  -6.5600    31 -32 -11 IMP:N=1 U=3
103     3  -0.001225    31 -32  11 IMP:N=1 U=3
104     3  -0.001225    32         IMP:N=1 U=3
C       WET CONTROL ROD/GUIDE TUBE
105     1  -2.1024  -33       IMP:N=1 U=4  $ No DCRA Rod
C       105   9  -7.8300  -33       IMP:N=1 U=4  $ DCRA Rod
106     1  -2.1024   33  -34  IMP:N=1 U=4
107     1  -2.1024   34  -35  IMP:N=1 U=4  $ No DCRA Cladding
C       107   4  -6.5600   34  -35  IMP:N=1 U=4  $ DCRA Cladding
108     1  -2.1024   35  -36  IMP:N=1 U=4
```

```
117-        109   4  -6.5600   36  -37  IMP:N=1 U=4
118-        110   1  -2.1024   37       IMP:N=1 U=4
119-        C     DRY CONTROL ROD/GUIDE TUBE
120-        111   3  -0.001225  -33        IMP:N=1 U=5  $ No DCRA Rod
121-        C     111    9  -7.8300  -33        IMP:N=1 U=5  $ DCRA Rod
122-        112   3  -0.001225   33  -34  IMP:N=1 U=5
123-        113   3  -0.001225   34  -35  IMP:N=1 U=5  $ No DCRA Cladding
124-        C     113    4  -6.5600   34  -35  IMP:N=1 U=5  $ DCRA Cladding
125-        114   3  -0.001225   35  -36  IMP:N=1 U=5
126-        115   4  -6.5600   36  -37  IMP:N=1 U=5
127-        116   3  -0.001225   37       IMP:N=1 U=5
128-        C     WET INSTRUMENTATION TUBE
129-        117   1  -2.1024  -38         IMP:N=1 U=6
130-        118   4  -6.5600   38 -39     IMP:N=1 U=6
131-        119   1  -2.1024   39         IMP:N=1 U=6
132-        C     DRY INSTRUMENTATION TUBE
133-        120   3  -0.001225  -38         IMP:N=1 U=7
134-        121   4  -6.5600   38 -39     IMP:N=1 U=7
135-        122   3  -0.001225   39         IMP:N=1 U=7
136-        C     FUEL CELL BASKET STRUCTURE
137-        C     Code: boron in [B=] all panels [all], left [l], bottom, [b], right [r], to
138-        C     FUEL CELL BASKET STRUCTURE -        WET - Borated panels
139-        C        WATER GAP      - ASSEMBLY LEFT
140-        123   1  -2.1024   52              IMP:N=1 U=8
141-        C     123    1  -2.1024   48              IMP:N=1 U=8
142-        C        OXIDATION LAYER CS TUBE - ASSEMBLY LEFT
143-        C     124    6  -7.8320  -48  52       IMP:N=1 U=8
144-        C        CS TUBE - ASSEMBLY LEFT
145-        C     125    7  -7.8320  -52  56       IMP:N=1 U=8
146-        C        SS PANEL - ASSEMBLY LEFT
147-        126   8  -7.7700  -52          IMP:N=1 U=8
148-        C        WATER GAP      - ASSEMBLY BOTTOM
149-        127   1  -2.1024   53              IMP:N=1 U=9
150-        C     127    1  -2.1024   49              IMP:N=1 U=9
151-        C        OXIDATION LAYER CS TUBE - ASSEMBLY BOTTOM
152-        C     128    6  -7.8320  -49  53       IMP:N=1 U=9
153-        C        CS TUBE - ASSEMBLY BOTTOM
154-        C     129    7  -7.8320  -53  57       IMP:N=1 U=9
155-        C        SS PANEL - ASSEMBLY BOTTOM
156-        130   8  -7.7700  -53          IMP:N=1 U=9
157-        C        WATER GAP      - ASSEMBLY RIGHT
158-        131   1  -2.1024  -54              IMP:N=1 U=10
159-        C     131    1  -2.1024  -50              IMP:N=1 U=10
160-        C        OXIDATION LAYER CS TUBE - ASSEMBLY RIGHT
161-        C     132    6  -7.8320   50 -54       IMP:N=1 U=10
162-        C        CS TUBE - ASSEMBLY RIGHT
163-        C     133    7  -7.8320   54 -58        IMP:N=1 U=10
164-        C        SS PANEL - ASSEMBLY RIGHT
165-        134   8  -7.7700   54             IMP:N=1 U=10
166-        C        WATER GAP      - ASSEMBLY TOP
167-        135   1  -2.1024  -55              IMP:N=1 U=11
168-        C     135    1  -2.1024  -51              IMP:N=1 U=11
169-        C        OXIDATION LAYER CS TUBE - ASSEMBLY TOP
170-        C     136    6  -7.8320   51 -55       IMP:N=1 U=11
171-        C        CS TUBE - ASSEMBLY TOP
172-        C     137    7  -7.8320   55 -59       IMP:N=1 U=11
173-        C        SS PANEL - ASSEMBLY TOP
174-        138   8  -7.7700   55          IMP:N=1 U=11
175-        C     FUEL CELL BASKET STRUCTURE -          DRY - Borated panels
176-        C        GAP      - ASSEMBLY LEFT
```

```
177-        139   3  -0.001225   52              IMP:N=1 U=12
178-        C     139   3  -0.001225   48              IMP:N=1 U=12
179-        C        OXIDATION LAYER CS TUBE - ASSEMBLY LEFT
180-        C     140   6  -7.8320  -48  52       IMP:N=1 U=12
181-        C        CS TUBE - ASSEMBLY LEFT
182-        C     141   7  -7.8320  -52  56       IMP:N=1 U=12
183-        C        SS PANEL - ASSEMBLY LEFT
184-        142   8  -7.7700  -52           IMP:N=1 U=12
185-        C        GAP      - ASSEMBLY BOTTOM
186-        143  3  -0.001225   53              IMP:N=1 U=13
187-        C     143   3  -0.001225   49              IMP:N=1 U=13
188-        C        OXIDATION LAYER CS TUBE - ASSEMBLY BOTTOM
189-        C     144   6  -7.8320  -49  53       IMP:N=1 U=13
190-        C        CS TUBE - ASSEMBLY BOTTOM
191-        C     145   7  -7.8320  -53  57       IMP:N=1 U=13
192-        C        SS PANEL - ASSEMBLY BOTTOM
193-        146   8  -7.7700  -53           IMP:N=1 U=13
194-        C        GAP      - ASSEMBLY RIGHT
195-        147   3  -0.001225  -54              IMP:N=1 U=14
196-        C     147   3  -0.001225  -50              IMP:N=1 U=14
197-        C        OXIDATION LAYER CS TUBE - ASSEMBLY RIGHT
198-        C     148   6  -7.8320   50 -54        IMP:N=1 U=14
199-        C        CS TUBE - ASSEMBLY RIGHT
200-        C     149   7  -7.8320   54 -58        IMP:N=1 U=14
201-        C        SS PANEL - ASSEMBLY RIGHT
202-        150   8  -7.7700   54           IMP:N=1 U=14
203-        C        GAP      - ASSEMBLY TOP
204-        151   3  -0.001225  -55              IMP:N=1 U=15
205-        C     151   3  -0.001225  -51              IMP:N=1 U=15
206-        C        OXIDATION LAYER CS TUBE - ASSEMBLY TOP
207-        C     152   6  -7.8320   51 -55       IMP:N=1 U=15
208-        C        CS TUBE - ASSEMBLY TOP
209-        C     153   7  -7.8320   55 -59       IMP:N=1 U=15
210-        C        SS PANEL - ASSEMBLY TOP
211-        154   8  -7.7700   55           IMP:N=1 U=15
212-        C     FUEL CELL BASKET STRUCTURE -         WET - Unborated panels
213-        C        WATER GAP      - ASSEMBLY LEFT
214-        155   1  -2.1024   52              IMP:N=1 U=16
215-        C     155   1  -2.1024   48              IMP:N=1 U=16
216-        C        OXIDATION LAYER CS TUBE - ASSEMBLY LEFT
217-        C     156   6  -7.8320  -48  52       IMP:N=1 U=16
218-        C        CS TUBE - ASSEMBLY LEFT
219-        C     157   7  -7.8320  -52  56       IMP:N=1 U=16
220-        C        PANEL - ASSEMBLY LEFT
221-        158   1  -2.1024  -52           IMP:N=1 U=16
222-        C        WATER GAP      - ASSEMBLY BOTTOM
223-        159   1  -2.1024   53              IMP:N=1 U=17
224-        C     159   1  -2.1024   49              IMP:N=1 U=17
225-        C        OXIDATION LAYER CS TUBE - ASSEMBLY BOTTOM
226-        C     160   6  -7.8320  -49  53       IMP:N=1 U=17
227-        C        CS TUBE - ASSEMBLY BOTTOM
228-        C     161   7  -7.8320  -53  57       IMP:N=1 U=17
229-        C        PANEL - ASSEMBLY BOTTOM
230-        162   1  -2.1024  -53           IMP:N=1 U=17
231-        C        WATER GAP      - ASSEMBLY RIGHT
232-        163   1  -2.1024  -54              IMP:N=1 U=18
233-        C     163   1  -2.1024  -50              IMP:N=1 U=18
234-        C        OXIDATION LAYER CS TUBE - ASSEMBLY RIGHT
235-        C     164   6  -7.8320   50 -54       IMP:N=1 U=18
236-        C        CS TUBE - ASSEMBLY RIGHT
```

```
237-        C     165   7  -7.8320   54 -58       IMP:N=1 U=18
238-        C        PANEL - ASSEMBLY RIGHT
239-        166   1  -2.1024   54          IMP:N=1 U=18
240-        C        WATER GAP     - ASSEMBLY TOP
241-        167   1  -2.1024  -55          IMP:N=1 U=19
242-        C     167   1  -2.1024  -51          IMP:N=1 U=19
243-        C        OXIDATION LAYER CS TUBE - ASSEMBLY TOP
244-        C     168   6  -7.8320   51 -55       IMP:N=1 U=19
245-        C        CS TUBE - ASSEMBLY TOP
246-        C     169   7  -7.8320   55 -59       IMP:N=1 U=19
247-        C        PANEL - ASSEMBLY TOP
248-        170   1  -2.1024   55          IMP:N=1 U=19
249-        C     FUEL CELL BASKET STRUCTURE -          DRY - Unborated panels
250-        C        GAP     - ASSEMBLY LEFT
251-        171   3  -0.001225   52          IMP:N=1 U=20
252-        C     171   3  -0.001225   48          IMP:N=1 U=20
253-        C        OXIDATION LAYER CS TUBE - ASSEMBLY LEFT
254-        C     172   6  -7.8320  -48  52       IMP:N=1 U=20
255-        C        CS TUBE - ASSEMBLY LEFT
256-        C     173   7  -7.8320  -52  56       IMP:N=1 U=20
257-        C        PANEL - ASSEMBLY LEFT
258-        174   3  -0.001225  -52          IMP:N=1 U=20
259-        C        GAP     - ASSEMBLY BOTTOM
260-        175   3  -0.001225   53          IMP:N=1 U=21
261-        C     175   3  -0.001225   49          IMP:N=1 U=21
262-        C        OXIDATION LAYER CS TUBE - ASSEMBLY BOTTOM
263-        C     176   6  -7.8320  -49  53       IMP:N=1 U=21
264-        C        CS TUBE - ASSEMBLY BOTTOM
265-        C     177   7  -7.8320  -53  57       IMP:N=1 U=21
266-        C        PANEL - ASSEMBLY BOTTOM
267-        178   3  -0.001225  -53          IMP:N=1 U=21
268-        C        GAP     - ASSEMBLY RIGHT
269-        179   3  -0.001225  -54          IMP:N=1 U=22
270-        C     179   3  -0.001225  -50          IMP:N=1 U=22
271-        C        OXIDATION LAYER CS TUBE - ASSEMBLY RIGHT
272-        C     180   6  -7.8320   50 -54       IMP:N=1 U=22
273-        C        CS TUBE - ASSEMBLY RIGHT
274-        C     181   7  -7.8320   54 -58       IMP:N=1 U=22
275-        C        PANEL - ASSEMBLY RIGHT
276-        182   3  -0.001225   54          IMP:N=1 U=22
277-        C        GAP     - ASSEMBLY TOP
278-        183   3  -0.001225  -55          IMP:N=1 U=23
279-        C     183   3  -0.001225  -51          IMP:N=1 U=23
280-        C        OXIDATION LAYER CS TUBE - ASSEMBLY TOP
281-        C     184   6  -7.8320   51 -55       IMP:N=1 U=23
282-        C        CS TUBE - ASSEMBLY TOP
283-        C     185   7  -7.8320   55 -59       IMP:N=1 U=23
284-        C        PANEL - ASSEMBLY TOP
285-        186   3  -0.001225   55          IMP:N=1 U=23
286-
287-        C     SURFACE SPECIFICATIONS
288-        1*    PX     0.0
289-        C     2*    PY     0.00       $ For 1/4 Model
290-        3*    PZ     0.00
291-        C     4     PX    12.30       $ For Collapsed Model
292-        C     5     PX    36.90       $ For Collapsed Model
293-        C     6     PY    12.30       $ Water Level Surface
294-        C     7     PY    36.90       $ Water Level Surface
295-        C     8     PY   -12.30       $ Water Level Surface
296-        C     9     PY   -36.90       $ Water Level Surface
```

```
297-        10   PZ  180.0860     $ TOP ACTIVE FUEL
298-        11   PZ  201.2360     $ TOP FUEL HARDWARE
299-        C    12   PZ  226.75       $ TOP TUBE - (Shielding Model)
300-        13   PZ  228.75       $ TOP OF BASKET MATERIAL
301-        14   PZ  229.25       $ TOP RING/WATER GAP
302-        15   PZ  231.75       $ TOP INNER LID
303-        16   PZ  234.75       $ TOP LID GAP
304-        17   PZ  245.75       $ TOP OUTER LID
305-        C    18   PZ  268.25       $ TOP SKIRT - (Shielding Model)
306-        19   PZ  298.75       $ TOP REFLECTOR REGION
307-        20   CZ   71.095      $ ID OF INNER BARRIER
308-        21   CZ   73.095      $ OD OF INNER BARRIER
309-        22   CZ   73.10       $ ID OF OUTER BARRIER
310-        C    23   CZ   76.45       $ ID OF SKIRT LIP - (Shielding Model)
311-        24   CZ   83.10       $ OD OF OUTER BARRIER
312-        25   CZ  113.60       $ OD OF REFLECTOR REGION
313-        C    PIN LATTICE BOUNDS
314-        26   PX  0.72136
315-        27   PX -0.72136
316-        28   PY  0.72136
317-        29   PY -0.72136
318-        C     FUEL ROD
319-        30   CZ  0.468122
320-        31   CZ  0.478790
321-        32   CZ  0.546100
322-        C     CONTROL ROD/GUIDE TUBE
323-        33   CZ  0.45340  $ 0.49022
324-        34   CZ  0.46990  $ 0.50292
325-        35   CZ  0.54610  $ 0.56007
326-        36   CZ  0.62230  $ 0.63246
327-        37   CZ  0.67310
328-        C     INSTRUMENTATION TUBE
329-        38   CZ  0.56007
330-        39   CZ  0.62611
331-        C    ASSEMBLY LATTICE BOUNDS Actual
332-        44   PX  -10.65  $ ACTUAL 10.82025
333-        45   PY  -10.65
334-        46   PX   10.65
335-        47   PY   10.65
336-        C    48   PX  -11.0  $ Corrosion Expansion Cards
337-        C    49   PY  -11.0
338-        C    50   PX   11.0
339-        C    51   PY   11.0
340-        52   PX  -10.650001  $ UCF Intact Inside Tube ID
341-        53   PY  -10.650001
342-        54   PX   10.650001
343-        55   PY   10.650001
344-        56   PX  -11.95   $ UCF Intact Outside Tube ID
345-        57   PY  -11.95
346-        58   PX   11.95
347-        59   PY   11.95
348-        C    FUEL CELL LATTICE BOUNDS
349-        60   PX  -10.65    $ ACTUAL 12.30
350-        61   PX   10.65
351-        62   PY  -10.65
352-        63   PY   10.65
353-        C    45 degree planes
354-        64   P    1. -1.  0. 0.
355-        65   P    1.  1.  0. 0.
356-        C    EXTRA CARDS
```

```
357-
358-        MODE  N
359-        C     VOL   88J
360-        KCODE   4000 1. 7 97
361-        C        KSRC   -4.3  -5.7 1.  -2.8  -5.7 5.  -1.4  -5.7 10.   0.   -5.7  5.
362-        C         1.44 -5.7 3.   2.88 -5.7 8.   4.32 -5.7  9.
363-        C        -5.7  -4.3 2.  -4.3  -4.3 1.  -2.8  -4.3  5.  -1.4  -4.3 10.
364-        C         0.   -4.3 5.   1.44 -4.3 3.   2.88 -4.3  8.   4.32 -4.3  9.
365-        C        -5.7  -2.9 2.  -4.3  -2.9 1.                    -1.4  -2.9 10.
366-        C         0.   -2.9 5.                   2.88 -2.9  8.   4.32 -2.0  9.
367-        C        -5.7  -1.4 2.  -4.3  -1.4 1.  -2.8  -1.4  5.  -1.4  -1.4 10.
368-        C         0.   -1.4 5.   1.44 -1.4 3.   2.88 -1.4  8.   4.32 -1.4  9.
369-        C        -5.7   0.0 2.  -4.3   0.0 1.  -2.8   0.0  5.  -1.4   0.0 10.
370-        C                     1.44  0.0 3.   2.88  0.0  8.   4.32  0.0  9.
371-        C        -5.7   1.4 2.                -2.8   1.4  5.  -1.4   1.4 10.
372-        C         0.    1.4 5.   1.44  1.4 3.   2.88  1.4  8.   4.32  1.4  9.
373-        C        -5.7   2.9 2.  -4.3   2.9 1.  -2.8   2.9  5.  -1.4   2.9 10.
374-        C         0.    2.9 5.   1.44  2.9 3.   2.88  2.9  8.   4.32  2.9  9.
375-        C        -5.7   4.3 2.  -4.3   4.3 1.  -2.8   4.3  5.  -1.4   4.3 10.
376-        C         0.    4.3 5.   1.44  4.3 3.   2.88  4.3  8.   4.32  4.3  9.
377-        C       MATERIAL SPECIFICATIONS
378-        C          WATER AT 300 K d=1.0000 g/cc w/ 26% Fe2O3 w/ 5% B10
379-        M1     1001.50C  4.9490-2     8016.50C  4.0160-2  26000.55C 1.0277-2
380-               5010.50C  2.8870-6
381-        MT1    LWTR.01T
382-        C           3.00%/20 GWD  15000 yr decay  0 yr crit
383-        M2          8016.50C     4.6947E-02
384-              42095.50C    2.8413E-05
385-              43099.50C    2.6655E-05
386-              44101.50C    2.6008E-05
387-              45103.50C    1.6846E-05
388-              47109.50C    2.4208E-06
389-              60143.50C    2.2660E-05
390-              60145.50C    1.6864E-05
391-              62147.50C    7.3501E-06
392-              62149.50C    1.1479E-07
393-              62150.50C    6.4561E-06
394-              63151.55C    4.9615E-07
395-              62152.50C    2.9636E-06
396-              63153.55C    2.1255E-06
397-              64155.50C    2.4710E-07
398-              64157.50C    2.3858E-09
399-              48000.50C    1.8989E-06
400-              54131.50C    1.2691E-05
401-              55133.50C    3.0887E-05
402-              92233.50C    1.2553E-07
403-              92234.50C    5.5037E-06
404-              92235.50C    3.6928E-04
405-              92236.50C    9.8940E-05
406-              92238.50C    2.2352E-02
407-              93237.55C    2.7474E-05
408-              94239.55C    8.6617E-05
409-              94240.50C    6.9205E-06
410-              94241.50C    1.1186E-12
411-              94242.50C    3.4266E-06
412-              95241.50C    3.5158E-11
413-              95243.50C    1.2184E-07
414-        C          WATER AT 300 K d=1.0000 g/cc
415-        M3     1001.50C  6.6878-2     8016.50C  3.3439-2
416-        MT3    LWTR.01T
```

```
C          Air d=0.001225 g/cc
C     M3    7014.50C  -0.80   8016.50C  -0.20
C          ZIRCALOY-4 d=6.56 g/cc
M4    8016.50C -0.0012  24000.50C -0.0010  26000.55C -0.0020
     40000.50C -0.9818  50000.35C -0.0140
C          ALLOY 825 d=8.14 g/cc
M5    6000.50C -0.0005  13027.50C -0.0020  14000.50C -0.0050
     16032.50C -0.0003  22000.50C -0.0090  24000.50C -0.2150
     25055.50C -0.0100  26000.55C -0.2857  28000.50C -0.4200
     29000.50C -0.0225  42000.50C -0.0300
C          Oxidized A516 CARBON STEEL and Water Mixture d=7.832 g/cc
C     M6    6000.50C -0.00220  14000.50C -0.002750  15031.50C -0.00035
C          16032.50C -0.00035  25055.50C -0.0090
C          26000.55C -0.98535
C          A516 CARBON STEEL d=7.832 g/cc
M7    6000.50C -0.00220  14000.50C -0.002750  15031.50C -0.00035
     16032.50C -0.00035  25055.50C -0.0090
     26000.55C -0.98535
C          SS316B6A  1.6%  d=7.77 g/cc
M8    5010.50C -0.00288  5011.50C -0.013120
      6000.50C -0.00030  7014.50C -0.00100 14000.50C -0.0075
     15031.50C -0.00045 16032.50C -0.00030 24000.50C -0.19000
     25055.50C -0.02000 26000.55C -0.60445 28000.50C -0.13500
     42000.50C -0.02500
C          SS316B3A 0.87wt% B d=7.83 g/cc
C     M9    5010.50C -0.001566 5011.50C -0.007134
C           6000.50C -0.00030  7014.50C -0.00100 14000.50C -0.00750
C          15031.50C -0.00045 16032.50C -0.00030 24000.50C -0.19000
C          25055.50C -0.02000 26000.55C -0.60445 28000.50C -0.13500
C          42000.50C -0.02500
C          Al 6063 d=2.69 g/cc
C     M10  12000.50C -0.00675  13027.50C -0.98125  14000.50C -0.00400
C          22000.50C -0.00150  24000.50C -0.00100  25055.50C -0.00100
C          26000.55C -0.00350  29000.50C -0.00100
C     TALLIES
PRINT
```

1 initial source from file srctp

1problem summary

run terminated when 97 kcode cycles were done.

+ 08/20/96 19:10:37

AUCF - B&W 15x15 FUEL,21 ASSEMBLY DBF CS/SS-B Corroded & collapsed - (a26xb5c) probid = 08/20/96 17:19:50

0

neutron creation	tracks	weight (per source particle)	energy (per source particle)	neutron loss	tracks	weight (per source particle)	energy (per source particle)
source	387087	1.0024E+00	2.0572E+00	escape	5	7.0869E-06	1.8240E-05
				energy cutoff	0	0.	0.
				time cutoff	0	0.	0.
weight window	0	0.	0.	weight window	0	0.	0.
cell importance	0	0.	0.	cell importance	0	0.	0.
weight cutoff	0	4.9996E-02	6.1536E-06	weight cutoff	387745	4.9806E-02	8.3240E-06
energy importance	0	0.	0.	energy importance	0	0.	0.
dxtran	0	0.	0.	dxtran	0	0.	0.
forced collisions	0	0.	0.	forced collisions	0	0.	0.
exp. transform	0	0.	0.	exp. transform	0	0.	0.

upscattering	0	0.	7.3602E-08	downscattering	0	0.	1.9223E+00
				capture	0	6.5791E-01	3.5810E-02
(n,xn)	1324	2.7042E-03	2.1498E-03	loss to (n,xn)	661	1.3507E-03	1.1386E-02
fission	0	0.	0.	loss to fission	0	3.4598E-01	8.9877E-02
total	388411	1.0551E+00	2.0594E+00	total	388411	1.0551E+00	2.0594E+00

number of neutrons banked	663	average lifetime, shakes		cutoffs	
neutron tracks per source particle	1.0034E+00	escape	1.9585E+04	tco	1.0000E+34
neutron collisions per source particle	4.6254E+01	capture	2.3100E+03	eco	.0000E+00
total neutron collisions	17904367	capture or escape	2.3101E+03	wc1	-5.0000E-01
net multiplication	1.0014E+00 .0001	any termination	2.4720E+03	wc2	-2.5000E-01

computer time so far in this run	110.41 minutes	maximum number ever in bank	2
computer time in mcrun	110.31 minutes	bank overflows to backup file	0
source particles per minute	3.5090E+03	field length	0
random numbers generated	251075470	most random numbers used was	8243 in history 186679

range of sampled source weights = 9.5648E-01 to 1.1034E+00

1keff results for: AUCF - B&W 15x15 FUEL,21 ASSEMBLY DBF CS/SS-B Corroded & collapsed - (a26xb5c) probid = 08/20/96 17:19:50

the initial fission neutron source distribution was read from the srctp file named srctp .
the criticality problem was scheduled to skip 7 cycles and run a total of 97 cycles with nominally 4000 neutrons per cycle.
this problem has run 7 inactive cycles with 27818 neutron histories and 90 active cycles with 359269 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 387087 fission neutron source histories.

xxxx

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.89604	.00130	.89474 to .89734	.89346 to .89862	.89262 to .89946	
absorption	.89705	.00120	.89584 to .89825	.89464 to .89945	.89386 to .90023	
track length	.89634	.00139	.89495 to .89773	.89357 to .89910	.89267 to .90000	
col/absorp	.89661	.00107	.89554 to .89768	.89448 to .89874	.89378 to .89943	.4478
abs/trk len	.89676	.00102	.89573 to .89778	.89472 to .89879	.89406 to .89945	.2475
col/trk len	.89615	.00124	.89492 to .89739	.89369 to .89862	.89289 to .89942	.6950
col/abs/trk len	.89668	.00102	.89565 to .89770	.89464 to .89871	.89398 to .89938	

```
1mcnp     version 4a    ld=10/01/93                          08/22/96 17:36:25
*************************************************************************          probid =   08/22/96 17:36:25
 inp=a26xb5d outp=a26xb5d0

      AUCF - B&W 15x15 FUEL,21 ASSEMBLY DBF CS/SS-B Corroded & collapsed - (a26xb5d)
      C     Advanced Uncanistered Fuel Waste Package, collapsed basket 10k 26%/5%B
      C     15000 year decay  1000 yr criticality
      C     CELL SPECIFICATIONS
      C       Assembly Sub-lattices - 1/2 Model
      1     0       1  3 -13 -20   FILL=1 (0 -74 0) IMP:N=1
      C     1     0       1  3  -4 -13 -20   FILL=1 (0 -73.8 0) IMP:N=1
      C     2     0       3  4  -5 -13 -20   FILL=1 (0 -73.8 0) IMP:N=1
      C     3     0       3  5 -13 -20       FILL=1 (0 -73.8 0) IMP:N=1
      C       Assembly Sub-lattices - 1/4 Model
      C     1     0       1   2   3  -4 -13 -20   FILL=1 (0 -12.3 0) IMP:N=1
      C     2     0       2   3   4  -5 -13 -20   FILL=1 (0 -12.3 0) IMP:N=1
      C     3     0       2   3   5 -13 -20       FILL=1 (0 -12.3 0) IMP:N=1
      C     ASSEMBLY LATTICE DESCRIPTION
      5     1  -2.1024  -61  60 -63  62  IMP:N=1 LAT=1 U=1
            FILL=0:3 0:7 0:0  1 1  1  1  56 56 1  1  56 56 56 1
                              56 56 56 1  56 56 56 1  56 56 1  1
                              1 1  1  1   1 1 1 1       $ 1/2 model
      C     5     1  -2.1024   60 -61  62 -63  IMP:N=1 LAT=1 U=1
      C           FILL=0:3 0:3 0:0  58 58 64 70  58 58 62 70
      C                             60 62 70  1  70 70  1  1 $ 1/4 model
      C     BARRIER CELLS
      C     Basket Material-Lid Gap
      76    3  -1.0000    1 -20  13  -14     IMP:N=1 $ 1/2 model
      C     76    1  -2.1024    1   2 -20  13  -14     IMP:N=1 $ 1/4 model
      C     Inner Barrier
      77    5  -8.1400    1   3  20 -21 -14  IMP:N=1 $ 1/2 model
      C     77    5  -8.1400    1   2   3  20 -21 -14  IMP:N=1 $ 1/4 model
      C     Inner Lid
      78    5  -8.1400    1  14 -15 -21      IMP:N=1 $ 1/2 model
      C     78    5  -8.1400    1   2  14 -15 -21      IMP:N=1 $ 1/4 model
      C      Gap between Inner and Outer Barrier Lids
      79    3  -1.0000    1  15 -16 -21      IMP:N=1 $ 1/2 model
      C     79    1  -2.1024    1   2  15 -16 -21      IMP:N=1 $ 1/4 model
      C      Gap between Inner and Outer Barriers
      80    3  -1.0000   21 -22   1   3 -16  IMP:N=1 $ 1/2 model
      C     80    1  -2.1024   21 -22   1   2   3 -16  IMP:N=1 $ 1/4 model
      C     Outer Barrier
      81    7  -7.8320   22 -24   1   3 -16  IMP:N=1 $ 1/2 model
      C     81    7  -7.8320   22 -24   1   2   3 -16  IMP:N=1 $ 1/4 model
      C     Outer Barrier Lid
      82    7  -7.8320    1 -24  16 -17      IMP:N=1 $ 1/2 model
      C     82    7  -7.8320    1   2 -24  16 -17      IMP:N=1 $ 1/4 model
      C     12" of Water around Container
      83    3  -1.0000   24 -25   1   3 -17  IMP:N=1 $ 1/2 model
      C     83    1  -2.1024   24 -25   1   2   3 -17  IMP:N=1 $ 1/4 model
      C     12" of Water above Container
      84    3  -1.0000   17 -19   1 -25      IMP:N=1 $ 1/2 model
      C     84    1  -2.1024   17 -58   1   2 -59      IMP:N=1 $ 1/4 model
      C     OUTSIDE WORLD
      85    0  -1:-3:19:25  IMP:N=0  $ 1/2 model
      C     85    0  -1:-2:-3:19:25  IMP:N=0  $ 1/4 model
      C     WET PIN LATTICE DESCRIPTION
      86    1  -2.1024  -26 27 -28  29  IMP:N=1 LAT=1  U=56
            FILL -8:8 -8:8 0:0  56 16R  56 2 14R 56  56 2 14R 56
                                56 2 4R 4 2 2R 4 2 4R 56
```

```
                                56 2 2R 4 2 6R 4 2 2R 56  56 2 14R 56
                                56 2 2 4 2 2 4 2 2R 4 2 2 4 2 2 56
                                56 2 14R 56
                                56 2 6R 6 2 6R 56
                                56 2 14R 56
                                56 2 2 4 2 2 4 2 2R 4 2 2 4 2 2 56
                                56 2 14R 56  56 2 2R 4 2 6R 4 2 2R 56
                                56 2 4R 4 2 2R 4 2 4R 56
                                56 2 14R 56  56 2 14R 56  56 16R
C       MIXED PIN LATTICE DESCRIPTION
87    3  -0.001225  -26 27 -28  29  IMP:N=1 LAT=1  U=72
 FILL -8:8 -8:8 0:0  57 16R  57 3 14R 57  57 3 14R 57
                                57 3 4R 5 3 2R 5 3 4R 57
                                57 3 2R 5 3 6R 5 3 2R 57  57 3 14R 57
                                57 3 3 5 3 3 5 3 2R 5 3 3 5 3 3 57
                                57 3 14R 57
                                57 3 6R 7 3 6R 57
                                57 2 14R 57
                                57 2 2 4 2 2 4 2 2R 4 2 2 4 2 2 57
                                57 2 14R 57  57 2 2R 4 2 6R 4 2 2R 57
                                57 2 4R 4 2 2R 4 2 4R 57
                                57 2 14R 57  57 2 14R 57  57 16R
C       DRY PIN LATTICE DESCRIPTION
88    3  -0.001225  -26 27 -28  29  IMP:N=1 LAT=1  U=57
        FILL -8:8 -8:8 0:0  57 16R  57 3 14R 57  57 3 14R 57
                                57 3 4R 5 3 2R 5 3 4R 57
                                57 3 2R 5 3 6R 5 3 2R 57  57 3 14R 57
                                57 3 3 5 3 3 5 3 2R 5 3 3 5 3 3 57
                                57 3 14R 57
                                57 3 6R 7 3 6R 57
                                57 3 14R 57
                                57 3 3 5 3 3 5 3 2R 5 3 3 5 3 3 57
                                57 3 14R 57  57 3 2R 5 3 6R 5 3 2R 57
                                57 3 4R 5 3 2R 5 3 4R 57
                                57 3 14R 57  57 3 14R 57  57 16R
C       WET FUEL ROD
89    2   7.0103E-02   -30 -10     IMP:N=1 U=2
90    4  -6.5600   -30  10 -11 IMP:N=1 U=2
91    1  -2.1024   -30  11     IMP:N=1 U=2
92    1  -2.1024    30 -31 -11 IMP:N=1 U=2
93    1  -2.1024    30 -31  11 IMP:N=1 U=2
94    4  -6.5600    31 -32 -11 IMP:N=1 U=2
95    1  -2.1024    31 -32  11 IMP:N=1 U=2
96    1  -2.1024    32         IMP:N=1 U=2
C       DRY FUEL ROD
97    2   7.0103E-02   -30 -10     IMP:N=1 U=3
98    4  -6.5600   -30  10 -11 IMP:N=1 U=3
99    3  -0.001225   -30  11     IMP:N=1 U=3
100   3  -0.001225    30 -31 -11 IMP:N=1 U=3
101   3  -0.001225    30 -31  11 IMP:N=1 U=3
102   4  -6.5600    31 -32 -11 IMP:N=1 U=3
103   3  -0.001225    31 -32  11 IMP:N=1 U=3
104   3  -0.001225    32         IMP:N=1 U=3
C       WET CONTROL ROD/GUIDE TUBE
105   1  -2.1024  -33       IMP:N=1 U=4  $ No DCRA Rod
C     105   9  -7.8300  -33       IMP:N=1 U=4  $ DCRA Rod
106   1  -2.1024   33  -34  IMP:N=1 U=4
107   1  -2.1024   34  -35  IMP:N=1 U=4  $ No DCRA Cladding
C     107   4  -6.5600   34  -35  IMP:N=1 U=4  $ DCRA Cladding
108   1  -2.1024   35  -36  IMP:N=1 U=4
```

```
117-        109   4  -6.5600   36  -37  IMP:N=1 U=4
118-        110   1  -2.1024   37       IMP:N=1 U=4
119-        C     DRY CONTROL ROD/GUIDE TUBE
120-        111   3  -0.001225  -33       IMP:N=1 U=5  $ No DCRA Rod
121-        C     111   9  -7.8300  -33       IMP:N=1 U=5  $ DCRA Rod
122-        112   3  -0.001225   33  -34  IMP:N=1 U=5
123-        113   3  -0.001225   34  -35  IMP:N=1 U=5  $ No DCRA Cladding
124-        C     113   4  -6.5600   34  -35  IMP:N=1 U=5  $ DCRA Cladding
125-        114   3  -0.001225   35  -36  IMP:N=1 U=5
126-        115   4  -6.5600   36  -37  IMP:N=1 U=5
127-        116   3  -0.001225   37       IMP:N=1 U=5
128-        C     WET INSTRUMENTATION TUBE
129-        117   1  -2.1024  -38         IMP:N=1 U=6
130-        118   4  -6.5600   38 -39     IMP:N=1 U=6
131-        119   1  -2.1024   39         IMP:N=1 U=6
132-        C     DRY INSTRUMENTATION TUBE
133-        120   3  -0.001225  -38         IMP:N=1 U=7
134-        121   4  -6.5600   38 -39     IMP:N=1 U=7
135-        122   3  -0.001225   39         IMP:N=1 U=7
136-        C     FUEL CELL BASKET STRUCTURE
137-        C     Code: boron in [B=] all panels [all], left [l], bottom, [b], right [r], to
138-        C     FUEL CELL BASKET STRUCTURE -        WET - Borated panels
139-        C        WATER GAP     - ASSEMBLY LEFT
140-        123   1  -2.1024   52              IMP:N=1 U=8
141-        C     123   1  -2.1024   48              IMP:N=1 U=8
142-        C        OXIDATION LAYER CS TUBE - ASSEMBLY LEFT
143-        C     124   6  -7.8320  -48  52       IMP:N=1 U=8
144-        C        CS TUBE - ASSEMBLY LEFT
145-        C     125   7  -7.8320  -52  56       IMP:N=1 U=8
146-        C        SS PANEL - ASSEMBLY LEFT
147-        126   8  -7.7700  -52          IMP:N=1 U=8
148-        C        WATER GAP     - ASSEMBLY BOTTOM
149-        127   1  -2.1024   53              IMP:N=1 U=9
150-        C     127   1  -2.1024   49              IMP:N=1 U=9
151-        C        OXIDATION LAYER CS TUBE - ASSEMBLY BOTTOM
152-        C     128   6  -7.8320  -49  53       IMP:N=1 U=9
153-        C        CS TUBE - ASSEMBLY BOTTOM
154-        C     129   7  -7.8320  -53  57       IMP:N=1 U=9
155-        C        SS PANEL - ASSEMBLY BOTTOM
156-        130   8  -7.7700  -53          IMP:N=1 U=9
157-        C        WATER GAP     - ASSEMBLY RIGHT
158-        131   1  -2.1024  -54              IMP:N=1 U=10
159-        C     131   1  -2.1024  -50              IMP:N=1 U=10
160-        C        OXIDATION LAYER CS TUBE - ASSEMBLY RIGHT
161-        C     132   6  -7.8320   50 -54       IMP:N=1 U=10
162-        C        CS TUBE - ASSEMBLY RIGHT
163-        C     133   7  -7.8320   54 -58        IMP:N=1 U=10
164-        C        SS PANEL - ASSEMBLY RIGHT
165-        134   8  -7.7700   54          IMP:N=1 U=10
166-        C        WATER GAP     - ASSEMBLY TOP
167-        135   1  -2.1024  -55              IMP:N=1 U=11
168-        C     135   1  -2.1024  -51              IMP:N=1 U=11
169-        C        OXIDATION LAYER CS TUBE - ASSEMBLY TOP
170-        C     136   6  -7.8320   51 -55       IMP:N=1 U=11
171-        C        CS TUBE - ASSEMBLY TOP
172-        C     137   7  -7.8320   55 -59       IMP:N=1 U=11
173-        C        SS PANEL - ASSEMBLY TOP
174-        138   8  -7.7700   55          IMP:N=1 U=11
175-        C     FUEL CELL BASKET STRUCTURE -          DRY - Borated panels
176-        C        GAP     - ASSEMBLY LEFT
```

```
177-        139   3  -0.001225   52                IMP:N=1 U=12
178-        C     139   3  -0.001225   48                IMP:N=1 U=12
179-        C        OXIDATION LAYER CS TUBE - ASSEMBLY LEFT
180-        C     140   6  -7.8320  -48  52       IMP:N=1 U=12
181-        C        CS TUBE - ASSEMBLY LEFT
182-        C     141   7  -7.8320  -52  56       IMP:N=1 U=12
183-        C        SS PANEL - ASSEMBLY LEFT
184-        142   8  -7.7700  -52           IMP:N=1 U=12
185-        C        GAP      - ASSEMBLY BOTTOM
186-        143  3  -0.001225   53                IMP:N=1 U=13
187-        C     143   3  -0.001225   49                IMP:N=1 U=13
188-        C        OXIDATION LAYER CS TUBE - ASSEMBLY BOTTOM
189-        C     144   6  -7.8320  -49  53       IMP:N=1 U=13
190-        C        CS TUBE - ASSEMBLY BOTTOM
191-        C     145   7  -7.8320  -53  57       IMP:N=1 U=13
192-        C        SS PANEL - ASSEMBLY BOTTOM
193-        146   8  -7.7700  -53           IMP:N=1 U=13
194-        C        GAP      - ASSEMBLY RIGHT
195-        147   3  -0.001225  -54                IMP:N=1 U=14
196-        C     147   3  -0.001225  -50                IMP:N=1 U=14
197-        C        OXIDATION LAYER CS TUBE - ASSEMBLY RIGHT
198-        C     148   6  -7.8320   50 -54        IMP:N=1 U=14
199-        C        CS TUBE - ASSEMBLY RIGHT
200-        C     149   7  -7.8320   54 -58        IMP:N=1 U=14
201-        C        SS PANEL - ASSEMBLY RIGHT
202-        150   8  -7.7700   54            IMP:N=1 U=14
203-        C        GAP      - ASSEMBLY TOP
204-        151   3  -0.001225  -55                IMP:N=1 U=15
205-        C     151   3  -0.001225  -51                IMP:N=1 U=15
206-        C        OXIDATION LAYER CS TUBE - ASSEMBLY TOP
207-        C     152   6  -7.8320   51 -55       IMP:N=1 U=15
208-        C        CS TUBE - ASSEMBLY TOP
209-        C     153   7  -7.8320   55 -59       IMP:N=1 U=15
210-        C        SS PANEL - ASSEMBLY TOP
211-        154   8  -7.7700   55           IMP:N=1 U=15
212-        C     FUEL CELL BASKET STRUCTURE -         WET - Unborated panels
213-        C        WATER GAP      - ASSEMBLY LEFT
214-        155   1  -2.1024   52                IMP:N=1 U=16
215-        C     155   1  -2.1024   48                IMP:N=1 U=16
216-        C        OXIDATION LAYER CS TUBE - ASSEMBLY LEFT
217-        C     156   6  -7.8320  -48  52       IMP:N=1 U=16
218-        C        CS TUBE - ASSEMBLY LEFT
219-        C     157   7  -7.8320  -52  56       IMP:N=1 U=16
220-        C        PANEL - ASSEMBLY LEFT
221-        158   1  -2.1024  -52           IMP:N=1 U=16
222-        C        WATER GAP      - ASSEMBLY BOTTOM
223-        159   1  -2.1024   53                IMP:N=1 U=17
224-        C     159   1  -2.1024   49                IMP:N=1 U=17
225-        C        OXIDATION LAYER CS TUBE - ASSEMBLY BOTTOM
226-        C     160   6  -7.8320  -49  53       IMP:N=1 U=17
227-        C        CS TUBE - ASSEMBLY BOTTOM
228-        C     161   7  -7.8320  -53  57       IMP:N=1 U=17
229-        C        PANEL - ASSEMBLY BOTTOM
230-        162   1  -2.1024  -53           IMP:N=1 U=17
231-        C        WATER GAP      - ASSEMBLY RIGHT
232-        163   1  -2.1024  -54                IMP:N=1 U=18
233-        C     163   1  -2.1024  -50                IMP:N=1 U=18
234-        C        OXIDATION LAYER CS TUBE - ASSEMBLY RIGHT
235-        C     164   6  -7.8320   50 -54       IMP:N=1 U=18
236-        C        CS TUBE - ASSEMBLY RIGHT
```

```
237-        C      165   7  -7.8320   54 -58        IMP:N=1 U=18
238-        C         PANEL - ASSEMBLY RIGHT
239-        166    1  -2.1024   54           IMP:N=1 U=18
240-        C         WATER GAP     - ASSEMBLY TOP
241-        167    1  -2.1024  -55              IMP:N=1 U=19
242-        C      167   1  -2.1024  -51              IMP:N=1 U=19
243-        C         OXIDATION LAYER CS TUBE - ASSEMBLY TOP
244-        C      168   6  -7.8320   51 -55       IMP:N=1 U=19
245-        C         CS TUBE - ASSEMBLY TOP
246-        C      169   7  -7.8320   55 -59       IMP:N=1 U=19
247-        C         PANEL - ASSEMBLY TOP
248-        170    1  -2.1024   55           IMP:N=1 U=19
249-        C      FUEL CELL BASKET STRUCTURE -           DRY - Unborated panels
250-        C         GAP     - ASSEMBLY LEFT
251-        171    3  -0.001225   52              IMP:N=1 U=20
252-        C      171   3  -0.001225   48              IMP:N=1 U=20
253-        C         OXIDATION LAYER CS TUBE - ASSEMBLY LEFT
254-        C      172   6  -7.8320  -48  52       IMP:N=1 U=20
255-        C         CS TUBE - ASSEMBLY LEFT
256-        C      173   7  -7.8320  -52  56       IMP:N=1 U=20
257-        C         PANEL - ASSEMBLY LEFT
258-        174    3  -0.001225  -52           IMP:N=1 U=20
259-        C         GAP     - ASSEMBLY BOTTOM
260-        175    3  -0.001225   53              IMP:N=1 U=21
261-        C      175   3  -0.001225   49              IMP:N=1 U=21
262-        C         OXIDATION LAYER CS TUBE - ASSEMBLY BOTTOM
263-        C      176   6  -7.8320  -49  53       IMP:N=1 U=21
264-        C         CS TUBE - ASSEMBLY BOTTOM
265-        C      177   7  -7.8320  -53  57       IMP:N=1 U=21
266-        C         PANEL - ASSEMBLY BOTTOM
267-        178    3  -0.001225  -53           IMP:N=1 U=21
268-        C         GAP     - ASSEMBLY RIGHT
269-        179    3  -0.001225  -54              IMP:N=1 U=22
270-        C      179   3  -0.001225  -50              IMP:N=1 U=22
271-        C         OXIDATION LAYER CS TUBE - ASSEMBLY RIGHT
272-        C      180   6  -7.8320   50 -54       IMP:N=1 U=22
273-        C         CS TUBE - ASSEMBLY RIGHT
274-        C      181   7  -7.8320   54 -58       IMP:N=1 U=22
275-        C         PANEL - ASSEMBLY RIGHT
276-        182    3  -0.001225   54           IMP:N=1 U=22
277-        C         GAP     - ASSEMBLY TOP
278-        183    3  -0.001225  -55              IMP:N=1 U=23
279-        C      183   3  -0.001225  -51              IMP:N=1 U=23
280-        C         OXIDATION LAYER CS TUBE - ASSEMBLY TOP
281-        C      184   6  -7.8320   51 -55       IMP:N=1 U=23
282-        C         CS TUBE - ASSEMBLY TOP
283-        C      185   7  -7.8320   55 -59       IMP:N=1 U=23
284-        C         PANEL - ASSEMBLY TOP
285-        186    3  -0.001225   55           IMP:N=1 U=23
286-
287-        C      SURFACE SPECIFICATIONS
288-        1*    PX     0.0
289-        C     2*    PY     0.00       $ For 1/4 Model
290-        3*    PZ     0.00
291-        C     4     PX    12.30       $ For Collapsed Model
292-        C     5     PX    36.90       $ For Collapsed Model
293-        C     6     PY    12.30       $ Water Level Surface
294-        C     7     PY    36.90       $ Water Level Surface
295-        C     8     PY   -12.30       $ Water Level Surface
296-        C     9     PY   -36.90       $ Water Level Surface
```

```
297-        10   PZ  180.0860     $ TOP ACTIVE FUEL
298-        11   PZ  201.2360     $ TOP FUEL HARDWARE
299-        C    12   PZ  226.75        $ TOP TUBE - (Shielding Model)
300-        13   PZ  228.75       $ TOP OF BASKET MATERIAL
301-        14   PZ  229.25       $ TOP RING/WATER GAP
302-        15   PZ  231.75       $ TOP INNER LID
303-        16   PZ  234.75       $ TOP LID GAP
304-        17   PZ  245.75       $ TOP OUTER LID
305-        C    18   PZ  268.25       $ TOP SKIRT - (Shielding Model)
306-        19   PZ  298.75       $ TOP REFLECTOR REGION
307-        20   CZ   71.095      $ ID OF INNER BARRIER
308-        21   CZ   73.095      $ OD OF INNER BARRIER
309-        22   CZ   73.10       $ ID OF OUTER BARRIER
310-        C    23   CZ   76.45        $ ID OF SKIRT LIP - (Shielding Model)
311-        24   CZ   83.10       $ OD OF OUTER BARRIER
312-        25   CZ  113.60       $ OD OF REFLECTOR REGION
313-        C    PIN LATTICE BOUNDS
314-        26   PX  0.72136
315-        27   PX -0.72136
316-        28   PY  0.72136
317-        29   PY -0.72136
318-        C     FUEL ROD
319-        30   CZ  0.468122
320-        31   CZ  0.478790
321-        32   CZ  0.546100
322-        C     CONTROL ROD/GUIDE TUBE
323-        33   CZ  0.45340  $ 0.49022
324-        34   CZ  0.46990  $ 0.50292
325-        35   CZ  0.54610  $ 0.56007
326-        36   CZ  0.62230  $ 0.63246
327-        37   CZ  0.67310
328-        C     INSTRUMENTATION TUBE
329-        38   CZ  0.56007
330-        39   CZ  0.62611
331-        C    ASSEMBLY LATTICE BOUNDS Actual
332-        44   PX  -10.65  $ ACTUAL 10.82025
333-        45   PY  -10.65
334-        46   PX   10.65
335-        47   PY   10.65
336-        C    48   PX  -11.0  $ Corrosion Expansion Cards
337-        C    49   PY  -11.0
338-        C    50   PX   11.0
339-        C    51   PY   11.0
340-        52   PX  -10.650001  $ UCF Intact Inside Tube ID
341-        53   PY  -10.650001
342-        54   PX   10.650001
343-        55   PY   10.650001
344-        56   PX  -11.95   $ UCF Intact Outside Tube ID
345-        57   PY  -11.95
346-        58   PX   11.95
347-        59   PY   11.95
348-        C    FUEL CELL LATTICE BOUNDS
349-        60   PX  -10.65    $ ACTUAL 12.30
350-        61   PX   10.65
351-        62   PY  -10.65
352-        63   PY   10.65
353-        C    45 degree planes
354-        64   P    1. -1.  0. 0.
355-        65   P    1.  1.  0. 0.
356-        C    EXTRA CARDS
```

```
357-
358-        MODE  N
359-        C     VOL    88J
360-        KCODE   4000 1. 7 97
361-        C        KSRC    -4.3  -5.7 1.   -2.8  -5.7 5.   -1.4  -5.7 10.    0.    -5.7  5.
362-        C         1.44 -5.7 3.    2.88 -5.7 8.    4.32 -5.7  9.
363-        C        -5.7  -4.3 2.   -4.3  -4.3 1.   -2.8  -4.3  5.   -1.4  -4.3 10.
364-        C         0.    -4.3 5.    1.44 -4.3 3.    2.88 -4.3  8.    4.32 -4.3  9.
365-        C        -5.7  -2.9 2.   -4.3  -2.9 1.                      -1.4  -2.9 10.
366-        C         0.    -2.9 5.                    2.88 -2.9  8.    4.32 -2.0  9.
367-        C        -5.7  -1.4 2.   -4.3  -1.4 1.   -2.8  -1.4  5.   -1.4  -1.4 10.
368-        C         0.    -1.4 5.    1.44 -1.4 3.    2.88 -1.4  8.    4.32 -1.4  9.
369-        C        -5.7   0.0 2.   -4.3   0.0 1.   -2.8   0.0  5.   -1.4   0.0 10.
370-        C                         1.44  0.0 3.    2.88  0.0  8.    4.32  0.0  9.
371-        C        -5.7   1.4 2.                   -2.8   1.4  5.   -1.4   1.4 10.
372-        C         0.    1.4 5.    1.44  1.4 3.    2.88  1.4  8.    4.32  1.4  9.
373-        C        -5.7   2.9 2.   -4.3   2.9 1.   -2.8   2.9  5.   -1.4   2.9 10.
374-        C         0.    2.9 5.    1.44  2.9 3.    2.88  2.9  8.    4.32  2.9  9.
375-        C        -5.7   4.3 2.   -4.3   4.3 1.   -2.8   4.3  5.   -1.4   4.3 10.
376-        C         0.    4.3 5.    1.44  4.3 3.    2.88  4.3  8.    4.32  4.3  9.
377-        C       MATERIAL SPECIFICATIONS
378-        C          WATER AT 300 K d=1.0000 g/cc w/ 26% Fe2O3 w/ 5% B10
379-        M1     1001.50C  4.9490-2     8016.50C  4.0160-2  26000.55C 1.0277-2
380-              5010.50C  2.8870-6
381-        MT1    LWTR.01T
382-        C          3.00%/20 GWD  15000 yr decay  1000 yr crit
383-        M2         8016.50C     4.6947E-02
384-              42095.50C   2.8540E-05
385-              43099.50C   2.6777E-05
386-              44101.50C   2.6127E-05
387-              45103.50C   1.6846E-05
388-              47109.50C   2.4208E-06
389-              60143.50C   2.2744E-05
390-              60145.50C   1.6947E-05
391-              62147.50C   7.3829E-06
392-              62149.50C   9.5390E-08
393-              62150.50C   6.4882E-06
394-              62151.50C   2.4010E-09
395-              63151.55C   4.8817E-07
396-              62152.50C   2.9715E-06
397-              63153.55C   2.1334E-06
398-              64155.50C   2.1214E-07
399-              64157.50C   1.8105E-09
400-              48000.50C   1.9107E-06
401-              54131.50C   1.2691E-05
402-              55133.50C   3.0978E-05
403-              92233.50C   1.3328E-07
404-              92234.50C   5.5552E-06
405-              92235.50C   3.7030E-04
406-              92236.50C   9.9960E-05
407-              92238.50C   2.2352E-02
408-              93237.55C   2.7474E-05
409-              94238.50C   8.5464E-09
410-              94239.55C   8.4602E-05
411-              94240.50C   6.5193E-06
412-              94241.50C   1.5681E-09
413-              94242.50C   3.4117E-06
414-              95241.50C   3.7655E-08
415-              95242.50C   9.4492E-12
416-              95243.50C   1.1887E-07
```

```
C          WATER AT 300 K d=1.0000 g/cc
M3     1001.50C  6.6878-2    8016.50C  3.3439-2
MT3    LWTR.01T
C          Air d=0.001225 g/cc
C     M3    7014.50C  -0.80   8016.50C  -0.20
C          ZIRCALOY-4 d=6.56 g/cc
M4     8016.50C -0.0012  24000.50C -0.0010  26000.55C -0.0020
      40000.50C -0.9818  50000.35C -0.0140
C          ALLOY 825 d=8.14 g/cc
M5     6000.50C -0.0005  13027.50C -0.0020  14000.50C -0.0050
      16032.50C -0.0003  22000.50C -0.0090  24000.50C -0.2150
      25055.50C -0.0100  26000.55C -0.2857  28000.50C -0.4200
      29000.50C -0.0225  42000.50C -0.0300
C          Oxidized A516 CARBON STEEL and Water Mixture d=7.832 g/cc
C     M6    6000.50C -0.00220  14000.50C -0.002750  15031.50C -0.00035
C          16032.50C -0.00035  25055.50C -0.0090
C          26000.55C -0.98535
C          A516 CARBON STEEL d=7.832 g/cc
M7     6000.50C -0.00220  14000.50C -0.002750  15031.50C -0.00035
      16032.50C -0.00035  25055.50C -0.0090
      26000.55C -0.98535
C          SS316B6A  1.6%  d=7.77 g/cc
M8     5010.50C -0.00288  5011.50C -0.013120
       6000.50C -0.00030  7014.50C -0.00100 14000.50C -0.0075
      15031.50C -0.00045 16032.50C -0.00030 24000.50C -0.19000
      25055.50C -0.02000 26000.55C -0.60445 28000.50C -0.13500
      42000.50C -0.02500
C          SS316B3A 0.87wt% B d=7.83 g/cc
C     M9    5010.50C -0.001566 5011.50C -0.007134
C           6000.50C -0.00030  7014.50C -0.00100 14000.50C -0.00750
C          15031.50C -0.00045 16032.50C -0.00030 24000.50C -0.19000
C          25055.50C -0.02000 26000.55C -0.60445 28000.50C -0.13500
C          42000.50C -0.02500
C          Al 6063 d=2.69 g/cc
C     M10  12000.50C -0.00675  13027.50C -0.98125  14000.50C -0.00400
C          22000.50C -0.00150  24000.50C -0.00100  25055.50C -0.00100
C          26000.55C -0.00350  29000.50C -0.00100
C     TALLIES
PRINT
```

```
1     initial source from file   srctp
1problem summary

      run terminated when    97 kcode cycles were done.
+                                                                                    08/22/96 21:47:49
      AUCF - B&W 15x15 FUEL,21 ASSEMBLY DBF CS/SS-B Corroded & collapsed - (a26xb5d)      probid =   08/22/96 17:36:25
0
```

neutron creation	tracks	weight (per source particle)	energy (per source particle)	neutron loss	tracks	weight (per source particle)	energy (per source particle)
source	387082	1.0024E+00	2.0569E+00	escape	3	4.2712E-06	2.1235E-05
				energy cutoff	0	0.	0.
				time cutoff	0	0.	0.
weight window	0	0.	0.	weight window	0	0.	0.
cell importance	0	0.	0.	cell importance	0	0.	0.
weight cutoff	0	5.0178E-02	2.3040E-06	weight cutoff	387754	5.0286E-02	6.6705E-06
energy importance	0	0.	0.	energy importance	0	0.	0.
dxtran	0	0.	0.	dxtran	0	0.	0.
forced collisions	0	0.	0.	forced collisions	0	0.	0.
exp. transform	0	0.	0.	exp. transform	0	0.	0.

upscattering	0	0.	7.4166E-08	downscattering	0	0.	1.9217E+00
				capture	0	6.5703E-01	3.6044E-02
(n,xn)	1349	2.7469E-03	2.0453E-03	loss to (n,xn)	674	1.3724E-03	1.1617E-02
fission	0	0.	0.	loss to fission	0	3.4660E-01	8.9473E-02
total	388431	1.0553E+00	2.0589E+00	total	388431	1.0553E+00	2.0589E+00

number of neutrons banked	675	average lifetime, shakes		cutoffs
neutron tracks per source particle	1.0035E+00	escape	9.9733E+03	tco 1.0000E+34
neutron collisions per source particle	4.6435E+01	capture	2.3235E+03	eco .0000E+00
total neutron collisions	17974161	capture or escape	2.3235E+03	wc1 -5.0000E-01
net multiplication	1.0014E+00 .0001	any termination	2.4866E+03	wc2 -2.5000E-01

computer time so far in this run	115.30 minutes	maximum number ever in bank	2
computer time in mcrun	115.19 minutes	bank overflows to backup file	0
source particles per minute	3.3603E+03	field length	0
random numbers generated	251752202	most random numbers used was	11029 in history 177534

range of sampled source weights = 9.4496E-01 to 1.1287E+00
1keff results for: AUCF - B&W 15x15 FUEL,21 ASSEMBLY DBF CS/SS-B Corroded & collapsed - (a26xb5d) probid = 08/22/96 17:36:25

the initial fission neutron source distribution was read from the srctp file named srctp .
the criticality problem was scheduled to skip 7 cycles and run a total of 97 cycles with nominally 4000 neutrons per cycle.
this problem has run 7 inactive cycles with 27659 neutron histories and 90 active cycles with 359423 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 387082 fission neutron source histories.

xxxx

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.89997	.00113	.89884 to .90110	.89772 to .90222	.89698 to .90296	
absorption	.89758	.00111	.89647 to .89870	.89537 to .89980	.89464 to .90052	
track length	.90063	.00134	.89928 to .90197	.89795 to .90330	.89708 to .90418	
col/absorp	.89874	.00097	.89778 to .89971	.89682 to .90067	.89619 to .90130	.4106
abs/trk len	.89872	.00099	.89773 to .89971	.89675 to .90069	.89611 to .90134	.2656
col/trk len	.90011	.00112	.89899 to .90123	.89788 to .90235	.89715 to .90307	.7102
col/abs/trk len	.89888	.00096	.89792 to .89984	.89696 to .90080	.89634 to .90142	

```
1mcnp     version 4a    ld=10/01/93                          08/20/96 21:00:04
*************************************************************************                probid =   08/20/96 21:00:04
 inp=a26xb5e outp=a26xb5e0

      AUCF - B&W 15x15 FUEL,21 ASSEMBLY DBF CS/SS-B Corroded & collapsed - (a26xb5e)
      C     Advanced Uncanistered Fuel Waste Package, collapsed basket 10k 26%/5%B
      C     15000 year decay  1000 yr criticality
      C     CELL SPECIFICATIONS
      C       Assembly Sub-lattices - 1/2 Model
      1     0       1  3 -13 -20   FILL=1 (0 -74 0) IMP:N=1
      C     1     0       1  3  -4 -13 -20   FILL=1 (0 -73.8 0) IMP:N=1
      C     2     0       3  4  -5 -13 -20   FILL=1 (0 -73.8 0) IMP:N=1
      C     3     0       3  5 -13 -20       FILL=1 (0 -73.8 0) IMP:N=1
      C       Assembly Sub-lattices - 1/4 Model
      C     1     0       1   2   3  -4 -13 -20   FILL=1 (0 -12.3 0) IMP:N=1
      C     2     0       2   3   4  -5 -13 -20   FILL=1 (0 -12.3 0) IMP:N=1
      C     3     0       2   3   5 -13 -20       FILL=1 (0 -12.3 0) IMP:N=1
      C     ASSEMBLY LATTICE DESCRIPTION
      5     1  -2.1024  -61  60 -63  62  IMP:N=1 LAT=1 U=1
            FILL=0:3 0:7 0:0  1 1  1  1  56 56 1  1  56 56 56 1
                              56 56 56 1  56 56 56 1  56 56 1  1
                              1 1  1  1   1 1 1 1       $ 1/2 model
      C     5     1  -2.1024   60 -61  62 -63  IMP:N=1 LAT=1 U=1
      C           FILL=0:3 0:3 0:0  58 58 64 70  58 58 62 70
      C                             60 62 70  1  70 70  1  1 $ 1/4 model
      C     BARRIER CELLS
      C     Basket Material-Lid Gap
      76    3  -1.0000    1 -20  13  -14     IMP:N=1 $ 1/2 model
      C     76    1  -2.1024    1   2 -20  13  -14     IMP:N=1 $ 1/4 model
      C     Inner Barrier
      77    5  -8.1400    1   3  20 -21 -14  IMP:N=1 $ 1/2 model
      C     77    5  -8.1400    1   2   3  20 -21 -14  IMP:N=1 $ 1/4 model
      C     Inner Lid
      78    5  -8.1400    1  14 -15 -21      IMP:N=1 $ 1/2 model
      C     78    5  -8.1400    1   2  14 -15 -21      IMP:N=1 $ 1/4 model
      C      Gap between Inner and Outer Barrier Lids
      79    3  -1.0000    1  15 -16 -21      IMP:N=1 $ 1/2 model
      C     79    1  -2.1024    1   2  15 -16 -21      IMP:N=1 $ 1/4 model
      C      Gap between Inner and Outer Barriers
      80    3  -1.0000   21 -22   1   3 -16  IMP:N=1 $ 1/2 model
      C     80    1  -2.1024   21 -22   1   2   3 -16  IMP:N=1 $ 1/4 model
      C     Outer Barrier
      81    7  -7.8320   22 -24   1   3 -16  IMP:N=1 $ 1/2 model
      C     81    7  -7.8320   22 -24   1   2   3 -16  IMP:N=1 $ 1/4 model
      C     Outer Barrier Lid
      82    7  -7.8320    1 -24  16 -17      IMP:N=1 $ 1/2 model
      C     82    7  -7.8320    1   2 -24  16 -17      IMP:N=1 $ 1/4 model
      C     12" of Water around Container
      83    3  -1.0000   24 -25   1   3 -17  IMP:N=1 $ 1/2 model
      C     83    1  -2.1024   24 -25   1   2   3 -17  IMP:N=1 $ 1/4 model
      C     12" of Water above Container
      84    3  -1.0000   17 -19   1 -25      IMP:N=1 $ 1/2 model
      C     84    1  -2.1024   17 -58   1   2 -59      IMP:N=1 $ 1/4 model
      C     OUTSIDE WORLD
      85    0  -1:-3:19:25  IMP:N=0  $ 1/2 model
      C     85    0  -1:-2:-3:19:25  IMP:N=0  $ 1/4 model
      C     WET PIN LATTICE DESCRIPTION
      86    1  -2.1024  -26 27 -28  29  IMP:N=1 LAT=1  U=56
            FILL -8:8 -8:8 0:0  56 16R  56 2 14R 56  56 2 14R 56
                                56 2 4R 4 2 2R 4 2 4R 56
```

```
 57-                                  56 2 2R 4 2 6R 4 2 2R 56  56 2 14R 56
 58-                                  56 2 2 4 2 2 4 2 2R 4 2 2 4 2 2 56
 59-                                  56 2 14R 56
 60-                                  56 2 6R 6 2 6R 56
 61-                                  56 2 14R 56
 62-                                  56 2 2 4 2 2 4 2 2R 4 2 2 4 2 2 56
 63-                                  56 2 14R 56  56 2 2R 4 2 6R 4 2 2R 56
 64-                                  56 2 4R 4 2 2R 4 2 4R 56
 65-                                  56 2 14R 56  56 2 14R 56  56 16R
 66-        C     MIXED PIN LATTICE DESCRIPTION
 67-        C     87    3  -0.001225  -26 27 -28  29  IMP:N=1 LAT=1  U=72
 68-        C      FILL -8:8 -8:8 0:0  57 16R  57 3 14R 57  57 3 14R 57
 69-        C                          57 3 4R 5 3 2R 5 3 4R 57
 70-        C                          57 3 2R 5 3 6R 5 3 2R 57  57 3 14R 57
 71-        C                          57 3 3 5 3 3 5 3 2R 5 3 3 5 3 3 57
 72-        C                          57 3 14R 57
 73-        C                          57 3 6R 7 3 6R 57
 74-        C                          57 2 14R 57
 75-        C                          57 2 2 4 2 2 4 2 2R 4 2 2 4 2 2 57
 76-        C                          57 2 14R 57  57 2 2R 4 2 6R 4 2 2R 57
 77-        C                          57 2 4R 4 2 2R 4 2 4R 57
 78-        C                          57 2 14R 57  57 2 14R 57  57 16R
 79-        C     DRY PIN LATTICE DESCRIPTION
 80-        88    3  -0.001225  -26 27 -28  29  IMP:N=1 LAT=1  U=57
 81-              FILL -8:8 -8:8 0:0  57 16R  57 3 14R 57  57 3 14R 57
 82-                                  57 3 4R 5 3 2R 5 3 4R 57
 83-                                  57 3 2R 5 3 6R 5 3 2R 57  57 3 14R 57
 84-                                  57 3 3 5 3 3 5 3 2R 5 3 3 5 3 3 57
 85-                                  57 3 14R 57
 86-                                  57 3 6R 7 3 6R 57
 87-                                  57 3 14R 57
 88-                                  57 3 3 5 3 3 5 3 2R 5 3 3 5 3 3 57
 89-                                  57 3 14R 57  57 3 2R 5 3 6R 5 3 2R 57
 90-                                  57 3 4R 5 3 2R 5 3 4R 57
 91-                                  57 3 14R 57  57 3 14R 57  57 16R
 92-        C     WET FUEL ROD
 93-        89    2   7.0104E-02   -30 -10     IMP:N=1 U=2
 94-        90    4  -6.5600   -30  10 -11 IMP:N=1 U=2
 95-        91    1  -2.1024   -30  11     IMP:N=1 U=2
 96-        92    1  -2.1024    30 -31 -11 IMP:N=1 U=2
 97-        93    1  -2.1024    30 -31  11 IMP:N=1 U=2
 98-        94    4  -6.5600    31 -32 -11 IMP:N=1 U=2
 99-        95    1  -2.1024    31 -32  11 IMP:N=1 U=2
100-        96    1  -2.1024    32         IMP:N=1 U=2
101-        C     DRY FUEL ROD
102-        97    2   7.0104E-02   -30 -10     IMP:N=1 U=3
103-        98    4  -6.5600   -30  10 -11 IMP:N=1 U=3
104-        99    3  -0.001225   -30  11     IMP:N=1 U=3
105-        100   3  -0.001225    30 -31 -11 IMP:N=1 U=3
106-        101   3  -0.001225    30 -31  11 IMP:N=1 U=3
107-        102   4  -6.5600    31 -32 -11 IMP:N=1 U=3
108-        103   3  -0.001225    31 -32  11 IMP:N=1 U=3
109-        104   3  -0.001225    32         IMP:N=1 U=3
110-        C     WET CONTROL ROD/GUIDE TUBE
111-        105   1  -2.1024  -33       IMP:N=1 U=4  $ No DCRA Rod
112-        C     105   9  -7.8300  +33       IMP:N=1 U=4  $ DCRA Rod
113-        106   1  -2.1024   33  -34  IMP:N=1 U=4
114-        107   1  -2.1024   34  -35  IMP:N=1 U=4  $ No DCRA Cladding
115-        C     107   4  -6.5600   34  -35  IMP:N=1 U=4  $ DCRA Cladding
116-        108   1  -2.1024   35  -36  IMP:N=1 U=4
```

```
117-        109   4  -6.5600   36  -37  IMP:N=1 U=4
118-        110   1  -2.1024   37       IMP:N=1 U=4
119-        C     DRY CONTROL ROD/GUIDE TUBE
120-        111   3  -0.001225  -33        IMP:N=1 U=5  $ No DCRA Rod
121-        C     111   9  -7.8300  -33        IMP:N=1 U=5  $ DCRA Rod
122-        112   3  -0.001225   33  -34  IMP:N=1 U=5
123-        113   3  -0.001225   34  -35  IMP:N=1 U=5  $ No DCRA Cladding
124-        C     113   4  -6.5600   34  -35  IMP:N=1 U=5  $ DCRA Cladding
125-        114   3  -0.001225   35  -36  IMP:N=1 U=5
126-        115   4  -6.5600   36  -37  IMP:N=1 U=5
127-        116   3  -0.001225   37       IMP:N=1 U=5
128-        C     WET INSTRUMENTATION TUBE
129-        117   1  -2.1024  -38         IMP:N=1 U=6
130-        118   4  -6.5600   38 -39     IMP:N=1 U=6
131-        119   1  -2.1024   39         IMP:N=1 U=6
132-        C     DRY INSTRUMENTATION TUBE
133-        120   3  -0.001225  -38         IMP:N=1 U=7
134-        121   4  -6.5600   38 -39     IMP:N=1 U=7
135-        122   3  -0.001225   39         IMP:N=1 U=7
136-        C     FUEL CELL BASKET STRUCTURE
137-        C     Code: boron in [B=] all panels [all], left [l], bottom, [b], right [r], to
138-        C     FUEL CELL BASKET STRUCTURE -        WET - Borated panels
139-        C        WATER GAP      - ASSEMBLY LEFT
140-        123   1  -2.1024   52              IMP:N=1 U=8
141-        C     123   1  -2.1024   48              IMP:N=1 U=8
142-        C        OXIDATION LAYER CS TUBE - ASSEMBLY LEFT
143-        C     124   6  -7.8320  -48  52      IMP:N=1 U=8
144-        C        CS TUBE - ASSEMBLY LEFT
145-        C     125   7  -7.8320  -52  56      IMP:N=1 U=8
146-        C        SS PANEL - ASSEMBLY LEFT
147-        126   8  -7.7700  -52          IMP:N=1 U=8
148-        C        WATER GAP      - ASSEMBLY BOTTOM
149-        127   1  -2.1024   53              IMP:N=1 U=9
150-        C     127   1  -2.1024   49              IMP:N=1 U=9
151-        C        OXIDATION LAYER CS TUBE - ASSEMBLY BOTTOM
152-        C     128   6  -7.8320  -49  53      IMP:N=1 U=9
153-        C        CS TUBE - ASSEMBLY BOTTOM
154-        C     129   7  -7.8320  -53  57      IMP:N=1 U=9
155-        C        SS PANEL - ASSEMBLY BOTTOM
156-        130   8  -7.7700  -53          IMP:N=1 U=9
157-        C        WATER GAP      - ASSEMBLY RIGHT
158-        131   1  -2.1024  -54              IMP:N=1 U=10
159-        C     131   1  -2.1024  -50              IMP:N=1 U=10
160-        C        OXIDATION LAYER CS TUBE - ASSEMBLY RIGHT
161-        C     132   6  -7.8320   50 -54      IMP:N=1 U=10
162-        C        CS TUBE - ASSEMBLY RIGHT
163-        C     133   7  -7.8320   54 -58       IMP:N=1 U=10
164-        C        SS PANEL - ASSEMBLY RIGHT
165-        134   8  -7.7700   54          IMP:N=1 U=10
166-        C        WATER GAP      - ASSEMBLY TOP
167-        135   1  -2.1024  -55              IMP:N=1 U=11
168-        C     135   1  -2.1024  -51              IMP:N=1 U=11
169-        C        OXIDATION LAYER CS TUBE - ASSEMBLY TOP
170-        C     136   6  -7.8320   51 -55      IMP:N=1 U=11
171-        C        CS TUBE - ASSEMBLY TOP
172-        C     137   7  -7.8320   55 -59      IMP:N=1 U=11
173-        C        SS PANEL - ASSEMBLY TOP
174-        138   8  -7.7700   55          IMP:N=1 U=11
175-        C     FUEL CELL BASKET STRUCTURE -          DRY - Borated panels
176-        C        GAP      - ASSEMBLY LEFT
```

```
177-        139   3  -0.001225   52                IMP:N=1 U=12
178-        C     139   3  -0.001225   48                IMP:N=1 U=12
179-        C        OXIDATION LAYER CS TUBE - ASSEMBLY LEFT
180-        C     140   6  -7.8320  -48  52       IMP:N=1 U=12
181-        C        CS TUBE - ASSEMBLY LEFT
182-        C     141   7  -7.8320  -52  56       IMP:N=1 U=12
183-        C        SS PANEL - ASSEMBLY LEFT
184-        142   8  -7.7700  -52            IMP:N=1 U=12
185-        C        GAP      - ASSEMBLY BOTTOM
186-        143  3  -0.001225   53                IMP:N=1 U=13
187-        C     143   3  -0.001225   49                IMP:N=1 U=13
188-        C        OXIDATION LAYER CS TUBE - ASSEMBLY BOTTOM
189-        C     144   6  -7.8320  -49  53       IMP:N=1 U=13
190-        C        CS TUBE - ASSEMBLY BOTTOM
191-        C     145   7  -7.8320  -53  57       IMP:N=1 U=13
192-        C        SS PANEL - ASSEMBLY BOTTOM
193-        146   8  -7.7700  -53           IMP:N=1 U=13
194-        C        GAP      - ASSEMBLY RIGHT
195-        147   3  -0.001225  -54                IMP:N=1 U=14
196-        C     147   3  -0.001225  -50                IMP:N=1 U=14
197-        C        OXIDATION LAYER CS TUBE - ASSEMBLY RIGHT
198-        C     148   6  -7.8320   50 -54        IMP:N=1 U=14
199-        C        CS TUBE - ASSEMBLY RIGHT
200-        C     149   7  -7.8320   54 -58        IMP:N=1 U=14
201-        C        SS PANEL - ASSEMBLY RIGHT
202-        150   8  -7.7700   54             IMP:N=1 U=14
203-        C        GAP      - ASSEMBLY TOP
204-        151   3  -0.001225  -55                IMP:N=1 U=15
205-        C     151   3  -0.001225  -51                IMP:N=1 U=15
206-        C        OXIDATION LAYER CS TUBE - ASSEMBLY TOP
207-        C     152   6  -7.8320   51 -55       IMP:N=1 U=15
208-        C        CS TUBE - ASSEMBLY TOP
209-        C     153   7  -7.8320   55 -59       IMP:N=1 U=15
210-        C        SS PANEL - ASSEMBLY TOP
211-        154   8  -7.7700   55            IMP:N=1 U=15
212-        C     FUEL CELL BASKET STRUCTURE -         WET - Unborated panels
213-        C        WATER GAP      - ASSEMBLY LEFT
214-        155   1  -2.1024   52                IMP:N=1 U=16
215-        C     155   1  -2.1024   48                IMP:N=1 U=16
216-        C        OXIDATION LAYER CS TUBE - ASSEMBLY LEFT
217-        C     156   6  -7.8320  -48  52       IMP:N=1 U=16
218-        C        CS TUBE - ASSEMBLY LEFT
219-        C     157   7  -7.8320  -52  56       IMP:N=1 U=16
220-        C        PANEL - ASSEMBLY LEFT
221-        158   1  -2.1024  -52            IMP:N=1 U=16
222-        C        WATER GAP      - ASSEMBLY BOTTOM
223-        159   1  -2.1024   53                IMP:N=1 U=17
224-        C     159   1  -2.1024   49                IMP:N=1 U=17
225-        C        OXIDATION LAYER CS TUBE - ASSEMBLY BOTTOM
226-        C     160   6  -7.8320  -49  53       IMP:N=1 U=17
227-        C        CS TUBE - ASSEMBLY BOTTOM
228-        C     161   7  -7.8320  -53  57       IMP:N=1 U=17
229-        C        PANEL - ASSEMBLY BOTTOM
230-        162   1  -2.1024  -53            IMP:N=1 U=17
231-        C        WATER GAP      - ASSEMBLY RIGHT
232-        163   1  -2.1024  -54                IMP:N=1 U=18
233-        C     163   1  -2.1024  -50                IMP:N=1 U=18
234-        C        OXIDATION LAYER CS TUBE - ASSEMBLY RIGHT
235-        C     164   6  -7.8320   50 -54       IMP:N=1 U=18
236-        C        CS TUBE - ASSEMBLY RIGHT
```

```
C      165   7  -7.8320   54 -58       IMP:N=1 U=18
C         PANEL - ASSEMBLY RIGHT
166    1  -2.1024   54           IMP:N=1 U=18
C         WATER GAP      - ASSEMBLY TOP
167    1  -2.1024  -55             IMP:N=1 U=19
C      167   1  -2.1024  -51             IMP:N=1 U=19
C         OXIDATION LAYER CS TUBE - ASSEMBLY TOP
C      168   6  -7.8320   51 -55       IMP:N=1 U=19
C         CS TUBE - ASSEMBLY TOP
C      169   7  -7.8320   55 -59       IMP:N=1 U=19
C         PANEL - ASSEMBLY TOP
170    1  -2.1024   55          IMP:N=1 U=19
C      FUEL CELL BASKET STRUCTURE -          DRY - Unborated panels
C         GAP      - ASSEMBLY LEFT
171    3  -0.001225   52             IMP:N=1 U=20
C      171   3  -0.001225   48             IMP:N=1 U=20
C         OXIDATION LAYER CS TUBE - ASSEMBLY LEFT
C      172   6  -7.8320  -48  52       IMP:N=1 U=20
C         CS TUBE - ASSEMBLY LEFT
C      173   7  -7.8320  -52  56       IMP:N=1 U=20
C         PANEL - ASSEMBLY LEFT
174    3  -0.001225  -52          IMP:N=1 U=20
C         GAP      - ASSEMBLY BOTTOM
175    3  -0.001225   53             IMP:N=1 U=21
C      175   3  -0.001225   49             IMP:N=1 U=21
C         OXIDATION LAYER CS TUBE - ASSEMBLY BOTTOM
C      176   6  -7.8320  -49  53       IMP:N=1 U=21
C         CS TUBE - ASSEMBLY BOTTOM
C      177   7  -7.8320  -53  57       IMP:N=1 U=21
C         PANEL - ASSEMBLY BOTTOM
178    3  -0.001225  -53          IMP:N=1 U=21
C         GAP      - ASSEMBLY RIGHT
179    3  -0.001225  -54             IMP:N=1 U=22
C      179   3  -0.001225  -50             IMP:N=1 U=22
C         OXIDATION LAYER CS TUBE - ASSEMBLY RIGHT
C      180   6  -7.8320   50 -54       IMP:N=1 U=22
C         CS TUBE - ASSEMBLY RIGHT
C      181   7  -7.8320   54 -58       IMP:N=1 U=22
C         PANEL - ASSEMBLY RIGHT
182    3  -0.001225   54          IMP:N=1 U=22
C         GAP      - ASSEMBLY TOP
183    3  -0.001225  -55             IMP:N=1 U=23
C      183   3  -0.001225  -51             IMP:N=1 U=23
C         OXIDATION LAYER CS TUBE - ASSEMBLY TOP
C      184   6  -7.8320   51 -55       IMP:N=1 U=23
C         CS TUBE - ASSEMBLY TOP
C      185   7  -7.8320   55 -59       IMP:N=1 U=23
C         PANEL - ASSEMBLY TOP
186    3  -0.001225   55          IMP:N=1 U=23

C      SURFACE SPECIFICATIONS
1*    PX     0.0
C     2*    PY     0.00       $ For 1/4 Model
3*    PZ     0.00
C     4     PX    12.30       $ For Collapsed Model
C     5     PX    36.90       $ For Collapsed Model
C     6     PY    12.30       $ Water Level Surface
C     7     PY    36.90       $ Water Level Surface
C     8     PY   -12.30       $ Water Level Surface
C     9     PY   -36.90       $ Water Level Surface
```

```
297-        10   PZ  180.0860     $ TOP ACTIVE FUEL
298-        11   PZ  201.2360     $ TOP FUEL HARDWARE
299-        C    12   PZ  226.75       $ TOP TUBE - (Shielding Model)
300-        13   PZ  228.75       $ TOP OF BASKET MATERIAL
301-        14   PZ  229.25       $ TOP RING/WATER GAP
302-        15   PZ  231.75       $ TOP INNER LID
303-        16   PZ  234.75       $ TOP LID GAP
304-        17   PZ  245.75       $ TOP OUTER LID
305-        C    18   PZ  268.25       $ TOP SKIRT - (Shielding Model)
306-        19   PZ  298.75       $ TOP REFLECTOR REGION
307-        20   CZ   71.095      $ ID OF INNER BARRIER
308-        21   CZ   73.095      $ OD OF INNER BARRIER
309-        22   CZ   73.10       $ ID OF OUTER BARRIER
310-        C    23   CZ   76.45       $ ID OF SKIRT LIP - (Shielding Model)
311-        24   CZ   83.10       $ OD OF OUTER BARRIER
312-        25   CZ  113.60       $ OD OF REFLECTOR REGION
313-        C    PIN LATTICE BOUNDS
314-        26   PX  0.72136
315-        27   PX -0.72136
316-        28   PY  0.72136
317-        29   PY -0.72136
318-        C     FUEL ROD
319-        30   CZ  0.468122
320-        31   CZ  0.478790
321-        32   CZ  0.546100
322-        C     CONTROL ROD/GUIDE TUBE
323-        33   CZ  0.45340  $ 0.49022
324-        34   CZ  0.46990  $ 0.50292
325-        35   CZ  0.54610  $ 0.56007
326-        36   CZ  0.62230  $ 0.63246
327-        37   CZ  0.67310
328-        C     INSTRUMENTATION TUBE
329-        38   CZ  0.56007
330-        39   CZ  0.62611
331-        C    ASSEMBLY LATTICE BOUNDS Actual
332-        44   PX  -10.65  $ ACTUAL 10.82025
333-        45   PY  -10.65
334-        46   PX   10.65
335-        47   PY   10.65
336-        C    48   PX  -11.0  $ Corrosion Expansion Cards
337-        C    49   PY  -11.0
338-        C    50   PX   11.0
339-        C    51   PY   11.0
340-        52   PX  -10.650001  $ UCF Intact Inside Tube ID
341-        53   PY  -10.650001
342-        54   PX   10.650001
343-        55   PY   10.650001
344-        56   PX  -11.95   $ UCF Intact Outside Tube ID
345-        57   PY  -11.95
346-        58   PX   11.95
347-        59   PY   11.95
348-        C    FUEL CELL LATTICE BOUNDS
349-        60   PX  -10.65    $ ACTUAL 12.30
350-        61   PX   10.65
351-        62   PY  -10.65
352-        63   PY   10.65
353-        C    45 degree planes
354-        64   P    1. -1.  0. 0.
355-        65   P    1.  1.  0. 0.
356-        C    EXTRA CARDS
```

```
357-
358-        MODE  N
359-        C     VOL   88J
360-        KCODE   4000 1. 7 97
361-        C        KSRC   -4.3  -5.7 1.  -2.8  -5.7 5.  -1.4  -5.7 10.   0.   -5.7  5.
362-        C         1.44 -5.7 3.   2.88 -5.7 8.   4.32 -5.7  9.
363-        C        -5.7  -4.3 2.  -4.3  -4.3 1.  -2.8  -4.3  5.  -1.4  -4.3 10.
364-        C         0.   -4.3 5.   1.44 -4.3 3.   2.88 -4.3  8.   4.32 -4.3  9.
365-        C        -5.7  -2.9 2.  -4.3  -2.9 1.                   -1.4  -2.9 10.
366-        C         0.   -2.9 5.                   2.88 -2.9  8.   4.32 -2.0  9.
367-        C        -5.7  -1.4 2.  -4.3  -1.4 1.  -2.8  -1.4  5.  -1.4  -1.4 10.
368-        C         0.   -1.4 5.   1.44 -1.4 3.   2.88 -1.4  8.   4.32 -1.4  9.
369-        C        -5.7   0.0 2.  -4.3   0.0 1.  -2.8   0.0  5.  -1.4   0.0 10.
370-        C                     1.44  0.0 3.   2.88  0.0  8.   4.32  0.0  9.
371-        C        -5.7   1.4 2.                -2.8   1.4  5.  -1.4   1.4 10.
372-        C         0.    1.4 5.   1.44  1.4 3.   2.88  1.4  8.   4.32  1.4  9.
373-        C        -5.7   2.9 2.  -4.3   2.9 1.  -2.8   2.9  5.  -1.4   2.9 10.
374-        C         0.    2.9 5.   1.44  2.9 3.   2.88  2.9  8.   4.32  2.9  9.
375-        C        -5.7   4.3 2.  -4.3   4.3 1.  -2.8   4.3  5.  -1.4   4.3 10.
376-        C         0.    4.3 5.   1.44  4.3 3.   2.88  4.3  8.   4.32  4.3  9.
377-        C       MATERIAL SPECIFICATIONS
378-        C          WATER AT 300 K d=1.0000 g/cc w/ 26% Fe2O3 w/ 5% B10
379-        M1     1001.50C  4.9490-2     8016.50C  4.0160-2  26000.55C 1.0277-2
380-               5010.50C  2.8870-6
381-        MT1    LWTR.01T
382-        C           3.00%/20 GWD  15000 yr decay  5000 yr crit
383-        M2          8016.50C     4.6947E-02
384-              42095.50C   2.9047E-05
385-              43099.50C   2.6777E-05
386-              44101.50C   2.6604E-05
387-              45103.50C   1.6963E-05
388-              47109.50C   2.4540E-06
389-              60143.50C   2.2997E-05
390-              60145.50C   1.7196E-05
391-              62147.50C   7.5058E-06
392-              62149.50C   6.3701E-08
393-              62150.50C   6.5926E-06
394-              62151.50C   2.4249E-09
395-              63151.55C   4.6823E-07
396-              62152.50C   2.9874E-06
397-              63153.55C   2.1806E-06
398-              64155.50C   1.1733E-07
399-              64157.50C   1.2504E-09
400-              48000.50C   1.9600E-06
401-              54131.50C   1.2875E-05
402-              55133.50C   3.1431E-05
403-              92233.50C   1.6324E-07
404-              92234.50C   5.7609E-06
405-              92235.50C   3.7337E-04
406-              92236.50C   1.0302E-04
407-              92238.50C   2.2352E-02
408-              93237.55C   2.7728E-05
409-              94238.50C   8.7993E-09
410-              94239.55C   7.7552E-05
411-              94240.50C   5.1653E-06
412-              94241.50C   1.2685E-09
413-              94242.50C   3.3520E-06
414-              95241.50C   3.8803E-08
415-              95242.50C   1.1289E-11
416-              95243.50C   1.0946E-07
```

```
C          WATER AT 300 K d=1.0000 g/cc
M3     1001.50C  6.6878-2     8016.50C  3.3439-2
MT3    LWTR.01T
C          Air d=0.001225 g/cc
C     M3     7014.50C  -0.80    8016.50C  -0.20
C          ZIRCALOY-4 d=6.56 g/cc
M4     8016.50C -0.0012  24000.50C -0.0010  26000.55C -0.0020
      40000.50C -0.9818  50000.35C -0.0140
C          ALLOY 825 d=8.14 g/cc
M5     6000.50C -0.0005  13027.50C -0.0020  14000.50C -0.0050
      16032.50C -0.0003  22000.50C -0.0090  24000.50C -0.2150
      25055.50C -0.0100  26000.55C -0.2857  28000.50C -0.4200
      29000.50C -0.0225  42000.50C -0.0300
C          Oxidized A516 CARBON STEEL and Water Mixture d=7.832 g/cc
C     M6     6000.50C -0.00220  14000.50C -0.002750  15031.50C -0.00035
C          16032.50C -0.00035  25055.50C -0.0090
C          26000.55C -0.98535
C          A516 CARBON STEEL d=7.832 g/cc
M7     6000.50C -0.00220  14000.50C -0.002750  15031.50C -0.00035
      16032.50C -0.00035  25055.50C -0.0090
      26000.55C -0.98535
C          SS316B6A  1.6%  d=7.77 g/cc
M8     5010.50C -0.00288  5011.50C -0.013120
       6000.50C -0.00030  7014.50C -0.00100 14000.50C -0.0075
      15031.50C -0.00045 16032.50C -0.00030 24000.50C -0.19000
      25055.50C -0.02000 26000.55C -0.60445 28000.50C -0.13500
      42000.50C -0.02500
C          SS316B3A 0.87wt% B d=7.83 g/cc
C     M9     5010.50C -0.001566 5011.50C -0.007134
C           6000.50C -0.00030  7014.50C -0.00100 14000.50C -0.00750
C          15031.50C -0.00045 16032.50C -0.00030 24000.50C -0.19000
C          25055.50C -0.02000 26000.55C -0.60445 28000.50C -0.13500
C          42000.50C -0.02500
C          Al 6063 d=2.69 g/cc
C     M10  12000.50C -0.00675  13027.50C -0.98125  14000.50C -0.00400
C          22000.50C -0.00150  24000.50C -0.00100  25055.50C -0.00100
C          26000.55C -0.00350  29000.50C -0.00100
C     TALLIES
PRINT
```

1 initial source from file srctp

1problem summary

run terminated when 97 kcode cycles were done.

+ 08/20/96 22:55:23

AUCF - B&W 15x15 FUEL,21 ASSEMBLY DBF CS/SS-B Corroded & collapsed - (a26xb5e) probid = 08/20/96 21:00:04

0

neutron creation	tracks	weight (per source particle)	energy (per source particle)	neutron loss	tracks	weight (per source particle)	energy (per source particle)
source	388004	9.9999E-01	2.0600E+00	escape	10	1.7170E-05	3.6994E-05
				energy cutoff	0	0.	0.
				time cutoff	0	0.	0.
weight window	0	0.	0.	weight window	0	0.	0.
cell importance	0	0.	0.	cell importance	0	0.	0.
weight cutoff	0	5.1088E-02	7.4122E-06	weight cutoff	388630	5.1257E-02	5.9796E-06
energy importance	0	0.	0.	energy importance	0	0.	0.
dxtran	0	0.	0.	dxtran	0	0.	0.

forced collisions	0	0.	0.	forced collisions	0	0.	0.
exp. transform	0	0.	0.	exp. transform	0	0.	0.
upscattering	0	0.	7.5977E-08	downscattering	0	0.	1.9258E+00
				capture	0	6.5312E-01	3.5701E-02
(n,xn)	1269	2.5713E-03	2.0152E-03	loss to (n,xn)	633	1.2827E-03	1.0840E-02
fission	0	0.	0.	loss to fission	0	3.4797E-01	8.9545E-02
total	389273	1.0536E+00	2.0620E+00	total	389273	1.0536E+00	2.0620E+00

number of neutrons banked	636	average lifetime, shakes		cutoffs	
neutron tracks per source particle	1.0033E+00	escape	9.2675E+03	tco	1.0000E+34
neutron collisions per source particle	4.6989E+01	capture	2.3781E+03	eco	.0000E+00
total neutron collisions	18231800	capture or escape	2.3782E+03	wc1	-5.0000E-01
net multiplication	1.0013E+00 .0001	any termination	2.5508E+03	wc2	-2.5000E-01

computer time so far in this run	115.20 minutes	maximum number ever in bank	2
computer time in mcrun	115.10 minutes	bank overflows to backup file	0
source particles per minute	3.3711E+03	field length	0
random numbers generated	254604968	most random numbers used was	10424 in history 346341

1keff results for: AUCF - B&W 15x15 FUEL,21 ASSEMBLY DBF CS/SS-B Corroded & collapsed - (a26xb5e) probid = 08/20/96 21:00:04

the initial fission neutron source distribution was read from the srctp file named srctp .
the criticality problem was scheduled to skip 7 cycles and run a total of 97 cycles with nominally 4000 neutrons per cycle.
this problem has run 7 inactive cycles with 27651 neutron histories and 90 active cycles with 360353 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 388004 fission neutron source histories.

xxxx

---

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.90078	.00131	.89946 to .90209	.89816 to .90340	.89731 to .90425	
absorption	.90042	.00118	.89924 to .90159	.89808 to .90276	.89731 to .90352	
track length	.90126	.00162	.89964 to .90288	.89803 to .90449	.89698 to .90554	
col/absorp	.90056	.00106	.89950 to .90163	.89844 to .90268	.89775 to .90337	.4650
abs/trk len	.90066	.00108	.89958 to .90174	.89851 to .90280	.89781 to .90351	.2902
col/trk len	.90079	.00132	.89947 to .90212	.89816 to .90343	.89730 to .90429	.7969
col/abs/trk len	.90061	.00107	.89955 to .90168	.89849 to .90274	.89780 to .90343	

```
1mcnp     version 4a    ld=10/01/93                          08/20/96 22:55:24
 ******************************************************************************                probid =   08/20/96 22:55:24
 inp=a26xb5f outp=a26xb5f0

    1-        AUCF - B&W 15x15 FUEL,21 ASSEMBLY DBF CS/SS-B Corroded & collapsed - (a26xb5f)
    2-        C     Advanced Uncanistered Fuel Waste Package, collapsed basket 10k 26%/5%B
    3-        C     15000 year decay  10000 yr criticality
    4-        C     CELL SPECIFICATIONS
    5-        C       Assembly Sub-lattices - 1/2 Model
    6-        1     0        1  3 -13 -20    FILL=1 (0 -74 0) IMP:N=1
    7-        C     1     0        1  3  -4 -13 -20    FILL=1 (0 -73.8 0) IMP:N=1
    8-        C     2     0        3  4  -5 -13 -20    FILL=1 (0 -73.8 0) IMP:N=1
    9-        C     3     0        3  5 -13 -20        FILL=1 (0 -73.8 0) IMP:N=1
   10-        C       Assembly Sub-lattices - 1/4 Model
   11-        C     1     0        1  2  3  -4 -13 -20    FILL=1 (0 -12.3 0) IMP:N=1
   12-        C     2     0        2  3  4  -5 -13 -20    FILL=1 (0 -12.3 0) IMP:N=1
   13-        C     3     0        2  3  5 -13 -20        FILL=1 (0 -12.3 0) IMP:N=1
   14-        C     ASSEMBLY LATTICE DESCRIPTION
   15-        5     1  -2.1024  -61  60 -63  62  IMP:N=1 LAT=1 U=1
   16-              FILL=0:3 0:7 0:0  1 1  1  1  56 56 1  1  56 56 56 1
   17-                               56 56 56 1  56 56 56 1  56 56 1  1
   18-                               1 1  1  1    1 1 1 1       $ 1/2 model
   19-        C     5     1  -2.1024   60 -61  62 -63  IMP:N=1 LAT=1 U=1
   20-        C           FILL=0:3 0:3 0:0  58 58 64 70  58 58 62 70
   21-        C                             60 62 70  1  70 70  1  1 $ 1/4 model
   22-        C     BARRIER CELLS
   23-        C     Basket Material-Lid Gap
   24-        76    3  -1.0000    1 -20  13  -14      IMP:N=1 $ 1/2 model
   25-        C     76    1  -2.1024    1   2 -20  13  -14      IMP:N=1 $ 1/4 model
   26-        C     Inner Barrier
   27-        77    5  -8.1400    1   3  20 -21 -14  IMP:N=1 $ 1/2 model
   28-        C     77    5  -8.1400    1   2   3  20 -21 -14  IMP:N=1 $ 1/4 model
   29-        C     Inner Lid
   30-        78    5  -8.1400    1  14 -15 -21       IMP:N=1 $ 1/2 model
   31-        C     78    5  -8.1400    1   2  14 -15 -21       IMP:N=1 $ 1/4 model
   32-        C      Gap between Inner and Outer Barrier Lids
   33-        79    3  -1.0000    1  15 -16 -21       IMP:N=1 $ 1/2 model
   34-        C     79    1  -2.1024    1   2  15 -16 -21       IMP:N=1 $ 1/4 model
   35-        C      Gap between Inner and Outer Barriers
   36-        80    3  -1.0000   21 -22   1   3 -16  IMP:N=1 $ 1/2 model
   37-        C     80    1  -2.1024   21 -22   1   2   3 -16  IMP:N=1 $ 1/4 model
   38-        C     Outer Barrier
   39-        81    7  -7.8320   22 -24   1   3 -16  IMP:N=1 $ 1/2 model
   40-        C     81    7  -7.8320   22 -24   1   2   3 -16  IMP:N=1 $ 1/4 model
   41-        C     Outer Barrier Lid
   42-        82    7  -7.8320    1 -24  16 -17       IMP:N=1 $ 1/2 model
   43-        C     82    7  -7.8320    1   2 -24  16 -17       IMP:N=1 $ 1/4 model
   44-        C     12" of Water around Container
   45-        83    3  -1.0000   24 -25   1   3 -17  IMP:N=1 $ 1/2 model
   46-        C     83    1  -2.1024   24 -25   1   2   3 -17  IMP:N=1 $ 1/4 model
   47-        C     12" of Water above Container
   48-        84    3  -1.0000   17 -19   1 -25       IMP:N=1 $ 1/2 model
   49-        C     84    1  -2.1024   17 -58   1   2 -59       IMP:N=1 $ 1/4 model
   50-        C     OUTSIDE WORLD
   51-        85    0  -1:-3:19:25  IMP:N=0  $ 1/2 model
   52-        C     85    0  -1:-2:-3:19:25  IMP:N=0  $ 1/4 model
   53-        C     WET PIN LATTICE DESCRIPTION
   54-        86    1  -2.1024  -26 27 -28  29  IMP:N=1 LAT=1  U=56
   55-              FILL -8:8 -8:8 0:0  56 16R  56 2 14R 56  56 2 14R 56
   56-                                  56 2 4R 4 2 2R 4 2 4R 56
```

```
                                  56 2 2R 4 2 6R 4 2 2R 56  56 2 14R 56
                                  56 2 2 4 2 2 4 2 2R 4 2 2 4 2 2 56
                                  56 2 14R 56
                                  56 2 6R 6 2 6R 56
                                  56 2 14R 56
                                  56 2 2 4 2 2 4 2 2R 4 2 2 4 2 2 56
                                  56 2 14R 56  56 2 2R 4 2 6R 4 2 2R 56
                                  56 2 4R 4 2 2R 4 2 4R 56
                                  56 2 14R 56  56 2 14R 56  56 16R
C       MIXED PIN LATTICE DESCRIPTION
C       87    3  -0.001225  -26 27 -28  29  IMP:N=1 LAT=1  U=72
C        FILL -8:8 -8:8 0:0  57 16R  57 3 14R 57  57 3 14R 57
C                            57 3 4R 5 3 2R 5 3 4R 57
C                            57 3 2R 5 3 6R 5 3 2R 57  57 3 14R 57
C                            57 3 3 5 3 3 5 3 2R 5 3 3 5 3 3 57
C                            57 3 14R 57
C                            57 3 6R 7 3 6R 57
C                            57 2 14R 57
C                            57 2 2 4 2 2 4 2 2R 4 2 2 4 2 2 57
C                            57 2 14R 57  57 2 2R 4 2 6R 4 2 2R 57
C                            57 2 4R 4 2 2R 4 2 4R 57
C                            57 2 14R 57  57 2 14R 57  57 16R
C       DRY PIN LATTICE DESCRIPTION
88      3  -0.001225  -26 27 -28  29  IMP:N=1 LAT=1  U=57
        FILL -8:8 -8:8 0:0  57 16R  57 3 14R 57  57 3 14R 57
                            57 3 4R 5 3 2R 5 3 4R 57
                            57 3 2R 5 3 6R 5 3 2R 57  57 3 14R 57
                            57 3 3 5 3 3 5 3 2R 5 3 3 5 3 3 57
                            57 3 14R 57
                            57 3 6R 7 3 6R 57
                            57 3 14R 57
                            57 3 3 5 3 3 5 3 2R 5 3 3 5 3 3 57
                            57 3 14R 57  57 3 2R 5 3 6R 5 3 2R 57
                            57 3 4R 5 3 2R 5 3 4R 57
                            57 3 14R 57  57 3 14R 57  57 16R
C       WET FUEL ROD
89      2   7.0106E-02   -30 -10     IMP:N=1 U=2
90      4  -6.5600   -30  10 -11 IMP:N=1 U=2
91      1  -2.1024   -30  11     IMP:N=1 U=2
92      1  -2.1024    30 -31 -11 IMP:N=1 U=2
93      1  -2.1024    30 -31  11 IMP:N=1 U=2
94      4  -6.5600    31 -32 -11 IMP:N=1 U=2
95      1  -2.1024    31 -32  11 IMP:N=1 U=2
96      1  -2.1024    32         IMP:N=1 U=2
C       DRY FUEL ROD
97      2   7.0106E-02   -30 -10     IMP:N=1 U=3
98      4  -6.5600   -30  10 -11 IMP:N=1 U=3
99      3  -0.001225   -30  11     IMP:N=1 U=3
100     3  -0.001225    30 -31 -11 IMP:N=1 U=3
101     3  -0.001225    30 -31  11 IMP:N=1 U=3
102     4  -6.5600    31 -32 -11 IMP:N=1 U=3
103     3  -0.001225    31 -32  11 IMP:N=1 U=3
104     3  -0.001225    32         IMP:N=1 U=3
C       WET CONTROL ROD/GUIDE TUBE
105     1  -2.1024  -33       IMP:N=1 U=4  $ No DCRA Rod
C       105   9  -7.8300  -33       IMP:N=1 U=4  $ DCRA Rod
106     1  -2.1024   33  -34  IMP:N=1 U=4
107     1  -2.1024   34  -35  IMP:N=1 U=4  $ No DCRA Cladding
C       107   4  -6.5600   34  -35  IMP:N=1 U=4  $ DCRA Cladding
108     1  -2.1024   35  -36  IMP:N=1 U=4
```

```
117-        109   4  -6.5600   36  -37  IMP:N=1 U=4
118-        110   1  -2.1024   37       IMP:N=1 U=4
119-        C     DRY CONTROL ROD/GUIDE TUBE
120-        111   3  -0.001225  -33        IMP:N=1 U=5  $ No DCRA Rod
121-        C     111   9  -7.8300  -33        IMP:N=1 U=5  $ DCRA Rod
122-        112   3  -0.001225   33  -34  IMP:N=1 U=5
123-        113   3  -0.001225   34  -35  IMP:N=1 U=5  $ No DCRA Cladding
124-        C     113   4  -6.5600   34  -35  IMP:N=1 U=5  $ DCRA Cladding
125-        114   3  -0.001225   35  -36  IMP:N=1 U=5
126-        115   4  -6.5600   36  -37  IMP:N=1 U=5
127-        116   3  -0.001225   37       IMP:N=1 U=5
128-        C     WET INSTRUMENTATION TUBE
129-        117   1  -2.1024  -38         IMP:N=1 U=6
130-        118   4  -6.5600   38 -39     IMP:N=1 U=6
131-        119   1  -2.1024   39         IMP:N=1 U=6
132-        C     DRY INSTRUMENTATION TUBE
133-        120   3  -0.001225  -38          IMP:N=1 U=7
134-        121   4  -6.5600   38 -39     IMP:N=1 U=7
135-        122   3  -0.001225   39          IMP:N=1 U=7
136-        C     FUEL CELL BASKET STRUCTURE
137-        C     Code: boron in [B=] all panels [all], left [l], bottom, [b], right [r], to
138-        C     FUEL CELL BASKET STRUCTURE -          WET - Borated panels
139-        C        WATER GAP      - ASSEMBLY LEFT
140-        123   1  -2.1024   52                IMP:N=1 U=8
141-        C     123   1  -2.1024   48                IMP:N=1 U=8
142-        C        OXIDATION LAYER CS TUBE - ASSEMBLY LEFT
143-        C     124   6  -7.8320  -48  52       IMP:N=1 U=8
144-        C        CS TUBE - ASSEMBLY LEFT
145-        C     125   7  -7.8320  -52  56       IMP:N=1 U=8
146-        C        SS PANEL - ASSEMBLY LEFT
147-        126   8  -7.7700  -52           IMP:N=1 U=8
148-        C        WATER GAP      - ASSEMBLY BOTTOM
149-        127   1  -2.1024   53                IMP:N=1 U=9
150-        C     127   1  -2.1024   49                IMP:N=1 U=9
151-        C        OXIDATION LAYER CS TUBE - ASSEMBLY BOTTOM
152-        C     128   6  -7.8320  -49  53       IMP:N=1 U=9
153-        C        CS TUBE - ASSEMBLY BOTTOM
154-        C     129   7  -7.8320  -53  57       IMP:N=1 U=9
155-        C        SS PANEL - ASSEMBLY BOTTOM
156-        130   8  -7.7700  -53           IMP:N=1 U=9
157-        C        WATER GAP      - ASSEMBLY RIGHT
158-        131   1  -2.1024  -54                IMP:N=1 U=10
159-        C     131   1  -2.1024  -50                IMP:N=1 U=10
160-        C        OXIDATION LAYER CS TUBE - ASSEMBLY RIGHT
161-        C     132   6  -7.8320   50 -54       IMP:N=1 U=10
162-        C        CS TUBE - ASSEMBLY RIGHT
163-        C     133   7  -7.8320   54 -58        IMP:N=1 U=10
164-        C        SS PANEL - ASSEMBLY RIGHT
165-        134   8  -7.7700   54            IMP:N=1 U=10
166-        C        WATER GAP      - ASSEMBLY TOP
167-        135   1  -2.1024  -55                IMP:N=1 U=11
168-        C     135   1  -2.1024  -51                IMP:N=1 U=11
169-        C        OXIDATION LAYER CS TUBE - ASSEMBLY TOP
170-        C     136   6  -7.8320   51 -55       IMP:N=1 U=11
171-        C        CS TUBE - ASSEMBLY TOP
172-        C     137   7  -7.8320   55 -59       IMP:N=1 U=11
173-        C        SS PANEL - ASSEMBLY TOP
174-        138   8  -7.7700   55           IMP:N=1 U=11
175-        C     FUEL CELL BASKET STRUCTURE -          DRY - Borated panels
176-        C        GAP      - ASSEMBLY LEFT
```

```
177-        139   3  -0.001225   52              IMP:N=1 U=12
178-        C     139    3  -0.001225   48              IMP:N=1 U=12
179-        C        OXIDATION LAYER CS TUBE - ASSEMBLY LEFT
180-        C     140    6  -7.8320  -48  52       IMP:N=1 U=12
181-        C        CS TUBE - ASSEMBLY LEFT
182-        C     141    7  -7.8320  -52  56       IMP:N=1 U=12
183-        C        SS PANEL - ASSEMBLY LEFT
184-        142   8  -7.7700  -52           IMP:N=1 U=12
185-        C        GAP      - ASSEMBLY BOTTOM
186-        143  3  -0.001225   53               IMP:N=1 U=13
187-        C     143    3  -0.001225   49              IMP:N=1 U=13
188-        C        OXIDATION LAYER CS TUBE - ASSEMBLY BOTTOM
189-        C     144    6  -7.8320  -49  53       IMP:N=1 U=13
190-        C        CS TUBE - ASSEMBLY BOTTOM
191-        C     145    7  -7.8320  -53  57       IMP:N=1 U=13
192-        C        SS PANEL - ASSEMBLY BOTTOM
193-        146   8  -7.7700  -53           IMP:N=1 U=13
194-        C        GAP      - ASSEMBLY RIGHT
195-        147   3  -0.001225  -54              IMP:N=1 U=14
196-        C     147    3  -0.001225  -50              IMP:N=1 U=14
197-        C        OXIDATION LAYER CS TUBE - ASSEMBLY RIGHT
198-        C     148    6  -7.8320   50 -54        IMP:N=1 U=14
199-        C        CS TUBE - ASSEMBLY RIGHT
200-        C     149    7  -7.8320   54 -58        IMP:N=1 U=14
201-        C        SS PANEL - ASSEMBLY RIGHT
202-        150   8  -7.7700   54            IMP:N=1 U=14
203-        C        GAP      - ASSEMBLY TOP
204-        151   3  -0.001225  -55              IMP:N=1 U=15
205-        C     151    3  -0.001225  -51              IMP:N=1 U=15
206-        C        OXIDATION LAYER CS TUBE - ASSEMBLY TOP
207-        C     152    6  -7.8320   51 -55       IMP:N=1 U=15
208-        C        CS TUBE - ASSEMBLY TOP
209-        C     153    7  -7.8320   55 -59       IMP:N=1 U=15
210-        C        SS PANEL - ASSEMBLY TOP
211-        154   8  -7.7700   55           IMP:N=1 U=15
212-        C     FUEL CELL BASKET STRUCTURE -        WET - Unborated panels
213-        C        WATER GAP      - ASSEMBLY LEFT
214-        155   1  -2.1024   52              IMP:N=1 U=16
215-        C     155    1  -2.1024   48              IMP:N=1 U=16
216-        C        OXIDATION LAYER CS TUBE - ASSEMBLY LEFT
217-        C     156    6  -7.8320  -48  52       IMP:N=1 U=16
218-        C        CS TUBE - ASSEMBLY LEFT
219-        C     157    7  -7.8320  -52  56       IMP:N=1 U=16
220-        C        PANEL - ASSEMBLY LEFT
221-        158   1  -2.1024  -52           IMP:N=1 U=16
222-        C        WATER GAP      - ASSEMBLY BOTTOM
223-        159   1  -2.1024   53              IMP:N=1 U=17
224-        C     159    1  -2.1024   49              IMP:N=1 U=17
225-        C        OXIDATION LAYER CS TUBE - ASSEMBLY BOTTOM
226-        C     160    6  -7.8320  -49  53       IMP:N=1 U=17
227-        C        CS TUBE - ASSEMBLY BOTTOM
228-        C     161    7  -7.8320  -53  57       IMP:N=1 U=17
229-        C        PANEL - ASSEMBLY BOTTOM
230-        162   1  -2.1024  -53           IMP:N=1 U=17
231-        C        WATER GAP      - ASSEMBLY RIGHT
232-        163   1  -2.1024  -54              IMP:N=1 U=18
233-        C     163    1  -2.1024  -50              IMP:N=1 U=18
234-        C        OXIDATION LAYER CS TUBE - ASSEMBLY RIGHT
235-        C     164    6  -7.8320   50 -54       IMP:N=1 U=18
236-        C        CS TUBE - ASSEMBLY RIGHT
```

```
237-        C     165   7  -7.8320   54 -58       IMP:N=1 U=18
238-        C        PANEL - ASSEMBLY RIGHT
239-        166   1  -2.1024   54          IMP:N=1 U=18
240-        C        WATER GAP     - ASSEMBLY TOP
241-        167   1  -2.1024  -55          IMP:N=1 U=19
242-        C     167   1  -2.1024  -51          IMP:N=1 U=19
243-        C        OXIDATION LAYER CS TUBE - ASSEMBLY TOP
244-        C     168   6  -7.8320   51 -55       IMP:N=1 U=19
245-        C        CS TUBE - ASSEMBLY TOP
246-        C     169   7  -7.8320   55 -59       IMP:N=1 U=19
247-        C        PANEL - ASSEMBLY TOP
248-        170   1  -2.1024   55          IMP:N=1 U=19
249-        C     FUEL CELL BASKET STRUCTURE -          DRY - Unborated panels
250-        C        GAP      - ASSEMBLY LEFT
251-        171   3  -0.001225   52          IMP:N=1 U=20
252-        C     171   3  -0.001225   48          IMP:N=1 U=20
253-        C        OXIDATION LAYER CS TUBE - ASSEMBLY LEFT
254-        C     172   6  -7.8320  -48  52       IMP:N=1 U=20
255-        C        CS TUBE - ASSEMBLY LEFT
256-        C     173   7  -7.8320  -52  56       IMP:N=1 U=20
257-        C        PANEL - ASSEMBLY LEFT
258-        174   3  -0.001225  -52          IMP:N=1 U=20
259-        C        GAP      - ASSEMBLY BOTTOM
260-        175   3  -0.001225   53          IMP:N=1 U=21
261-        C     175   3  -0.001225   49          IMP:N=1 U=21
262-        C        OXIDATION LAYER CS TUBE - ASSEMBLY BOTTOM
263-        C     176   6  -7.8320  -49  53       IMP:N=1 U=21
264-        C        CS TUBE - ASSEMBLY BOTTOM
265-        C     177   7  -7.8320  -53  57       IMP:N=1 U=21
266-        C        PANEL - ASSEMBLY BOTTOM
267-        178   3  -0.001225  -53          IMP:N=1 U=21
268-        C        GAP      - ASSEMBLY RIGHT
269-        179   3  -0.001225  -54          IMP:N=1 U=22
270-        C     179   3  -0.001225  -50          IMP:N=1 U=22
271-        C        OXIDATION LAYER CS TUBE - ASSEMBLY RIGHT
272-        C     180   6  -7.8320   50 -54       IMP:N=1 U=22
273-        C        CS TUBE - ASSEMBLY RIGHT
274-        C     181   7  -7.8320   54 -58       IMP:N=1 U=22
275-        C        PANEL - ASSEMBLY RIGHT
276-        182   3  -0.001225   54          IMP:N=1 U=22
277-        C        GAP      - ASSEMBLY TOP
278-        183   3  -0.001225  -55          IMP:N=1 U=23
279-        C     183   3  -0.001225  -51          IMP:N=1 U=23
280-        C        OXIDATION LAYER CS TUBE - ASSEMBLY TOP
281-        C     184   6  -7.8320   51 -55       IMP:N=1 U=23
282-        C        CS TUBE - ASSEMBLY TOP
283-        C     185   7  -7.8320   55 -59       IMP:N=1 U=23
284-        C        PANEL - ASSEMBLY TOP
285-        186   3  -0.001225   55          IMP:N=1 U=23
286-
287-        C     SURFACE SPECIFICATIONS
288-        1*    PX    0.0
289-        C     2*    PY    0.00      $ For 1/4 Model
290-        3*    PZ    0.00
291-        C     4     PX   12.30      $ For Collapsed Model
292-        C     5     PX   36.90      $ For Collapsed Model
293-        C     6     PY   12.30      $ Water Level Surface
294-        C     7     PY   36.90      $ Water Level Surface
295-        C     8     PY  -12.30      $ Water Level Surface
296-        C     9     PY  -36.90      $ Water Level Surface
```

```
297-        10   PZ  180.0860     $ TOP ACTIVE FUEL
298-        11   PZ  201.2360     $ TOP FUEL HARDWARE
299-        C    12   PZ  226.75       $ TOP TUBE - (Shielding Model)
300-        13   PZ  228.75       $ TOP OF BASKET MATERIAL
301-        14   PZ  229.25       $ TOP RING/WATER GAP
302-        15   PZ  231.75       $ TOP INNER LID
303-        16   PZ  234.75       $ TOP LID GAP
304-        17   PZ  245.75       $ TOP OUTER LID
305-        C    18   PZ  268.25       $ TOP SKIRT - (Shielding Model)
306-        19   PZ  298.75       $ TOP REFLECTOR REGION
307-        20   CZ   71.095      $ ID OF INNER BARRIER
308-        21   CZ   73.095      $ OD OF INNER BARRIER
309-        22   CZ   73.10       $ ID OF OUTER BARRIER
310-        C    23   CZ   76.45       $ ID OF SKIRT LIP - (Shielding Model)
311-        24   CZ   83.10       $ OD OF OUTER BARRIER
312-        25   CZ  113.60       $ OD OF REFLECTOR REGION
313-        C    PIN LATTICE BOUNDS
314-        26   PX  0.72136
315-        27   PX -0.72136
316-        28   PY  0.72136
317-        29   PY -0.72136
318-        C     FUEL ROD
319-        30   CZ  0.468122
320-        31   CZ  0.478790
321-        32   CZ  0.546100
322-        C     CONTROL ROD/GUIDE TUBE
323-        33   CZ  0.45340  $ 0.49022
324-        34   CZ  0.46990  $ 0.50292
325-        35   CZ  0.54610  $ 0.56007
326-        36   CZ  0.62230  $ 0.63246
327-        37   CZ  0.67310
328-        C     INSTRUMENTATION TUBE
329-        38   CZ  0.56007
330-        39   CZ  0.62611
331-        C    ASSEMBLY LATTICE BOUNDS Actual
332-        44   PX  -10.65  $ ACTUAL 10.82025
333-        45   PY  -10.65
334-        46   PX   10.65
335-        47   PY   10.65
336-        C    48   PX  -11.0  $ Corrosion Expansion Cards
337-        C    49   PY  -11.0
338-        C    50   PX   11.0
339-        C    51   PY   11.0
340-        52   PX  -10.650001  $ UCF Intact Inside Tube ID
341-        53   PY  -10.650001
342-        54   PX   10.650001
343-        55   PY   10.650001
344-        56   PX  -11.95   $ UCF Intact Outside Tube ID
345-        57   PY  -11.95
346-        58   PX   11.95
347-        59   PY   11.95
348-        C    FUEL CELL LATTICE BOUNDS
349-        60   PX  -10.65    $ ACTUAL 12.30
350-        61   PX   10.65
351-        62   PY  -10.65
352-        63   PY   10.65
353-        C    45 degree planes
354-        64   P    1. -1.  0. 0.
355-        65   P    1.  1.  0. 0.
356-        C    EXTRA CARDS
```

```
357-
358-        MODE  N
359-        C     VOL   88J
360-        KCODE   4000 1. 7 97
361-        C       KSRC   -4.3  -5.7 1.  -2.8  -5.7 5.  -1.4  -5.7 10.   0.   -5.7  5.
362-        C        1.44 -5.7 3.   2.88 -5.7 8.   4.32 -5.7  9.
363-        C       -5.7  -4.3 2.  -4.3  -4.3 1.  -2.8  -4.3  5.  -1.4  -4.3 10.
364-        C        0.   -4.3 5.   1.44 -4.3 3.   2.88 -4.3  8.   4.32 -4.3  9.
365-        C       -5.7  -2.9 2.  -4.3  -2.9 1.                      -1.4  -2.9 10.
366-        C        0.   -2.9 5.                        2.88 -2.9  8.   4.32 -2.0  9.
367-        C       -5.7  -1.4 2.  -4.3  -1.4 1.  -2.8  -1.4  5.  -1.4  -1.4 10.
368-        C        0.   -1.4 5.   1.44 -1.4 3.   2.88 -1.4  8.   4.32 -1.4  9.
369-        C       -5.7   0.0 2.  -4.3   0.0 1.  -2.8   0.0  5.  -1.4   0.0 10.
370-        C                    1.44  0.0 3.   2.88  0.0  8.   4.32  0.0  9.
371-        C       -5.7   1.4 2.                -2.8   1.4  5.  -1.4   1.4 10.
372-        C        0.    1.4 5.   1.44  1.4 3.   2.88  1.4  8.   4.32  1.4  9.
373-        C       -5.7   2.9 2.  -4.3   2.9 1.  -2.8   2.9  5.  -1.4   2.9 10.
374-        C        0.    2.9 5.   1.44  2.9 3.   2.88  2.9  8.   4.32  2.9  9.
375-        C       -5.7   4.3 2.  -4.3   4.3 1.  -2.8   4.3  5.  -1.4   4.3 10.
376-        C        0.    4.3 5.   1.44  4.3 3.   2.88  4.3  8.   4.32  4.3  9.
377-        C      MATERIAL SPECIFICATIONS
378-        C         WATER AT 300 K d=1.0000 g/cc w/ 26% Fe203 w/ 5% B10
379-        M1    1001.50C  4.9490-2    8016.50C  4.0160-2  26000.55C 1.0277-2
380-              5010.50C  2.8870-6
381-        MT1   LWTR.01T
382-        C         3.00%/20 GWD  15000 yr decay  10000 yr crit
383-        M2         8016.50C     4.6947E-02
384-             42095.50C    2.9555E-05
385-             43099.50C    2.6899E-05
386-             44101.50C    2.7082E-05
387-             45103.50C    1.7197E-05
388-             47109.50C    2.4871E-06
389-             60143.50C    2.3334E-05
390-             60145.50C    1.7528E-05
391-             62147.50C    7.6533E-06
392-             62149.50C    5.6264E-08
393-             62150.50C    6.6809E-06
394-             62151.50C    2.4408E-09
395-             63151.55C    4.4669E-07
396-             62152.50C    3.0032E-06
397-             63153.55C    2.2357E-06
398-             64155.50C    5.9056E-08
399-             64157.50C    1.1891E-09
400-             48000.50C    2.0221E-06
401-             54131.50C    1.3059E-05
402-             55133.50C    3.1974E-05
403-             92233.50C    2.0043E-07
404-             92234.50C    5.9667E-06
405-             92235.50C    3.7645E-04
406-             92236.50C    1.0659E-04
407-             92238.50C    2.2352E-02
408-             93237.55C    2.7931E-05
409-             94238.50C    9.1027E-09
410-             94239.55C    7.0502E-05
411-             94240.50C    4.0570E-06
412-             94241.50C    1.0238E-09
413-             94242.50C    3.2774E-06
414-             95241.50C    3.1112E-08
415-             95242.50C    9.2503E-12
416-             95243.50C    1.0153E-07
```

```
C          WATER AT 300 K d=1.0000 g/cc
M3     1001.50C  6.6878-2    8016.50C  3.3439-2
MT3    LWTR.01T
C          Air d=0.001225 g/cc
C     M3    7014.50C  -0.80   8016.50C  -0.20
C          ZIRCALOY-4 d=6.56 g/cc
M4     8016.50C -0.0012  24000.50C -0.0010  26000.55C -0.0020
      40000.50C -0.9818  50000.35C -0.0140
C          ALLOY 825 d=8.14 g/cc
M5     6000.50C -0.0005  13027.50C -0.0020  14000.50C -0.0050
      16032.50C -0.0003  22000.50C -0.0090  24000.50C -0.2150
      25055.50C -0.0100  26000.55C -0.2857  28000.50C -0.4200
      29000.50C -0.0225  42000.50C -0.0300
C          Oxidized A516 CARBON STEEL and Water Mixture d=7.832 g/cc
C     M6    6000.50C -0.00220  14000.50C -0.002750  15031.50C -0.00035
C          16032.50C -0.00035  25055.50C -0.0090
C          26000.55C -0.98535
C          A516 CARBON STEEL d=7.832 g/cc
M7     6000.50C -0.00220  14000.50C -0.002750  15031.50C -0.00035
      16032.50C -0.00035  25055.50C -0.0090
      26000.55C -0.98535
C          SS316B6A  1.6%  d=7.77 g/cc
M8     5010.50C -0.00288  5011.50C -0.013120
       6000.50C -0.00030  7014.50C -0.00100 14000.50C -0.0075
      15031.50C -0.00045 16032.50C -0.00030 24000.50C -0.19000
      25055.50C -0.02000 26000.55C -0.60445 28000.50C -0.13500
      42000.50C -0.02500
C          SS316B3A 0.87wt% B d=7.83 g/cc
C     M9    5010.50C -0.001566 5011.50C -0.007134
C           6000.50C -0.00030  7014.50C -0.00100 14000.50C -0.00750
C          15031.50C -0.00045 16032.50C -0.00030 24000.50C -0.19000
C          25055.50C -0.02000 26000.55C -0.60445 28000.50C -0.13500
C          42000.50C -0.02500
C          Al 6063 d=2.69 g/cc
C     M10  12000.50C -0.00675  13027.50C -0.98125  14000.50C -0.00400
C          22000.50C -0.00150  24000.50C -0.00100  25055.50C -0.00100
C          26000.55C -0.00350  29000.50C -0.00100
C     TALLIES
PRINT
```

```
1     initial source from file   srctp
1problem summary

      run terminated when    97 kcode cycles were done.
+                                                                                    08/21/96 00:50:24
      AUCF - B&W 15x15 FUEL,21 ASSEMBLY DBF CS/SS-B Corroded & collapsed - (a26xb5f)      probid =   08/20/96 22:55:24
0
 neutron creation    tracks      weight        energy          neutron loss        tracks      weight        energy
                                 (per source particle)                                         (per source particle)

 source              388354    9.9909E-01    2.0536E+00        escape                   7    9.1811E-06    2.6297E-05
                                                                 energy cutoff            0    0.            0.
                                                                 time cutoff              0    0.            0.
 weight window            0    0.            0.                weight window            0    0.            0.
 cell importance          0    0.            0.                cell importance          0    0.            0.
 weight cutoff            0    5.1206E-02    5.3136E-06        weight cutoff       389025    5.1889E-02    1.0547E-05
 energy importance        0    0.            0.                energy importance        0    0.            0.
 dxtran                   0    0.            0.                dxtran                   0    0.            0.
 forced collisions        0    0.            0.                forced collisions        0    0.            0.
 exp. transform           0    0.            0.                exp. transform           0    0.            0.
```

upscattering	0	0.	7.6094E-08	downscattering	0	0.	1.9191E+00
				capture	0	6.5097E-01	3.5891E-02
(n,xn)	1352	2.7427E-03	2.2046E-03	loss to (n,xn)	674	1.3673E-03	1.1601E-02
fission	0	0.	0.	loss to fission	0	3.4880E-01	8.9234E-02
total	389706	1.0530E+00	2.0559E+00	total	389706	1.0530E+00	2.0559E+00

number of neutrons banked	678	average lifetime, shakes		cutoffs	
neutron tracks per source particle	1.0035E+00	escape	2.1281E+04	tco	1.0000E+34
neutron collisions per source particle	4.7025E+01	capture	2.3934E+03	eco	.0000E+00
total neutron collisions	18262445	capture or escape	2.3936E+03	wc1	-5.0000E-01
net multiplication	1.0014E+00 .0001	any termination	2.5626E+03	wc2	-2.5000E-01

computer time so far in this run	114.87 minutes	maximum number ever in bank	2
computer time in mcrun	114.77 minutes	bank overflows to backup file	0
source particles per minute	3.3838E+03	field length	0
random numbers generated	255297822	most random numbers used was	9706 in history 186745

range of sampled source weights = 9.5034E-01 to 1.1019E+00

1keff results for: AUCF - B&W 15x15 FUEL,21 ASSEMBLY DBF CS/SS-B Corroded & collapsed - (a26xb5f) probid = 08/20/96 22:55:24

the initial fission neutron source distribution was read from the srctp file named srctp .
the criticality problem was scheduled to skip 7 cycles and run a total of 97 cycles with nominally 4000 neutrons per cycle.
this problem has run 7 inactive cycles with 27794 neutron histories and 90 active cycles with 360560 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 388354 fission neutron source histories.

xxxx

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.90068	.00127	.89941 to .90196	.89815 to .90322	.89732 to .90405	
absorption	.90008	.00132	.89876 to .90140	.89746 to .90270	.89660 to .90356	
track length	.89966	.00142	.89824 to .90108	.89683 to .90249	.89591 to .90342	
col/absorp	.90040	.00109	.89931 to .90149	.89822 to .90258	.89751 to .90329	.4081
abs/trk len	.89989	.00111	.89879 to .90100	.89769 to .90210	.89697 to .90282	.2980
col/trk len	.90039	.00126	.89913 to .90165	.89789 to .90290	.89707 to .90371	.7472
col/abs/trk len	.90019	.00108	.89910 to .90127	.89803 to .90235	.89732 to .90305	

		Number Density Worksheet:			Isotope List											
	Element	Symbol	Isotope	MCNP ID	Atomic Weight					******* Base	Case at 300 K	*****	case sp40a			
										Far Field Criticality - 8%	UO2 in beginning - 40% Porosity Tuff w/ water					
										Tuff Porosit	40%		Years Critical	0		
										Volume	11494000.00		UO2 added	0		
										UO2%	8%			Number		
1	Hydrogen	H	H-1	1001.50C	1.007825				ISOTOPE	Gm/Critic	Aw	Wt%	MCNP ID	Density		
		D	H-2	1002.55C	2.014102				SM149	0	148.91718		62149.50c	0.0000E+00		
		T	H-3	1003.50C	3.01605				SM151	0	150.919919		62151.50c	0.0000E+00		
2	Helium	He	nat.	2000.01C	4.0026				ND143	0	142.909779		60143.50c	0.0000E+00		
		He	He-4	2004.50C	4.002631				RH103	0	102.905511		45103.50c	0.0000E+00		
3	Lithium	Li	Li-6	3006.50C	6.015125				EU151	0	150.919838		63151.55c	0.0000E+00		
		Li	Li-7	3007.55C	7.016004				GD157	0	156.924025		64157.50c	0.0000E+00		
4	Beryillium	Be	Be-9	4009.50C	9.012186				GD155	0	154.922664		64155.50c	0.0000E+00		
5	Boron	B	B-10	5010.50C	10.01294				CD(113)	0	112.4		48000.50c	0.0000E+00		
		B	B-11	5011.56C	11.00931				XE131	0	130.905069		54131.50c	0.0000E+00		
6	Carbon	C	nat.	6000.50C	12.01115				CS133	0	132.905355		55133.50c	0.0000E+00		
		C	C-12	6012.50C	12				TC99	0	98.90628		43099.50c	0.0000E+00		
7	Nitrogen	N	N-14	7014.50C	14.00307				SM147	0	146.914867		62147.50c	0.0000E+00		
8	Oxygen	O	O-16	8016.50C	15.99492				XE135	0	134.9063		54135.50c	0.0000E+00		
9	Fluorine	F	F-19	9019.50C	18.9984				ND145	0	144.912538		60145.50c	0.0000E+00		
11	Sodium	Na	Na-23	11023.50C	22.98977				MO95	0	94.905839		42095.50c	0.0000E+00		
12	Magnesium	Mg	nat.	12000.50C	24.312				U233	0	233.039522		92233.50c	0.0000E+00		
13	Aluminum	Al	Al-27	13027.50C	26.98154				U234	0	234.040904		92234.50c	4.6944E-07		
14	Silicon	Si	nat.	14000.50C	28.086				U235	0	235.043915		92235.50c	3.8253E-05		
15	Phosphoru	P	P-31	15031.50C	30.97376				U236	0	236.045637		92236.50c	9.1532E-06		
16	Sulfur	S	S-32	16032.50C	31.97207				U238	0	238.05077		92238.50c	1.9055E-03		
17	Chlorine	Cl	nat.	17000.50C	35.452				NP237	0	237.048056		92237.55c	2.1829E-06		
19	Potasium	K	nat.	19000.50C	39.102				PU238	0	238.049511		94238.50c	0.0000E+00		
20	Calcium	Ca	nat.	20000.50C	40.08				PU239	0	239.052146		94239.55c	0.0000E+00		
22	Titanium	Ti	nat.	22000.50C	47.9				PU240	0	240.053882		94240.50c	0.0000E+00		
23	Vanadium	V	nat.	23000.50C	50.942				O	0	15.994915		8016.50c	4.2818E-02		
24	Chromium	Cr	nat.	24000.50C	51.996			water	H		1.00782519		1001.50c	2.1396E-02		
25	Manganese	Mn	Mn-55	25055.50C	54.93805				O		15.994915					
26	Iron	Fe	nat.	26000.55C	55.847			Tuff	O		15.994915					
27	Cobalt	Co	Co-59	27059.50C	58.93319				Na		22.9897707		11023.50c	3.9366E-04		
28	Nickel	Ni	nat.	28000.50C	58.71				Mg		24.312		12000.50c	2.3128E-04		
29	Copper	Cu	nat.	29000.50C	63.54				Al		26.9815389		13027.50c	2.6070E-03		
30	Zinc	Zn	nat.		65.37				Si		28.086		14000.50c	1.1406E-02		
33	Arsenic	As	As-75	33075.35C	74.9216				K		39.102		19000.50c	5.5591E-04		
38	Strontium	Sr	nat.		87.62				Ca		40.08		20000.50c	5.6949E-04		
40	Zirconium	Zr	nat.	40000.50C	91.22				Fe		55.847		26000.55c	1.4037E-04		
41	Niobium	Nb	Nb-93	41093.50C	92.90638				TOTAL	0				8.20735E-02		
42	Molybdenu	Mo	nat.	42000.50C	95.94											
		Mo	Mo-95	42095.50c	94.90584					***** Base Case at 50 C (323 K) Case sp40a2						
43	Technetium	Tc	Tc-99*	43099.50c	98.90628											
44	Ruthenium	Ru	Ru-101	44101.50c	100.9056				Far Field Criticality - 8%	UO2 in beginning - 40% Porosity Tuff w/ water						
45	Rhodium	Rh	Rh-103	45103.50C	102.9055				Tuff Porosit	40%			Years Critical	0		
47	Silver	Ag	Ag-109	47109.50C	108.9048				Volume	11494000.00			UO2 added	0		
48	Cadmium	Cd	nat.	48000.50C	112.4				UO2%	8%	T=50 C de		0.99	Number		
49	Indium	In	nat.		114.82				ISOTOPE	Gm/Critic	Aw	Wt%	MCNP ID	Density		
50	Tin	Sn	nat.	50000.35C	118.69				SM149	0	148.91718		62149.50c	0.0000E+00		
54	Xenon	Xe	Xe-131 *	54131.50c	130.9051	* AW from Chart of the Nuclides			SM151	0	150.919919		62151.50c	0.0000E+00		
		Xe	Xe-135 *	54135.50c	134.9063				ND143	0	142.909779		60143.50c	0.0000E+00		
55	Cesium	Cs	Cs-133	55133.50c	132.9054				RH103	0	102.905511		45103.50c	0.0000E+00		
		Cs	Cs-135	55135.50c	134.9058				EU151	0	150.919838		63151.55c	0.0000E+00		

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
56	56	Barium	Ba	nat.		137.34				GD157	0	156.924025		64157.50c	0.0000E+00
57	57	Lanthanum	La	nat.		138.91				GD155	0	154.922664		64155.50c	0.0000E+00
58	58	Cerium	Ce	nat.		140.12				CD(113)	0	112.4		48000.50c	0.0000E+00
59	60	Neodymiu	Nd	Nd-143	60143.50c	142.9098				XE131	0	130.905069		54131.50c	0.0000E+00
60			Nd	Nd-145	60145.50c	144.9125				CS133	0	132.905355		55133.50c	0.0000E+00
61										TC99	0	98.90628		43099.50c	0.0000E+00
62										SM147	0	146.914867		62147.50c	0.0000E+00
63										XE135	0	134.9063		54135.50c	0.0000E+00
64										ND145	0	144.912538		60145.50c	0.0000E+00
65		**Number Density Worksheet:**			Isotope List	(Continued)				MO95	0	94.905839		42095.50c	0.0000E+00
66										U233	0	233.039522		92233.50c	0.0000E+00
67										U234	0	234.040904		92234.50c	4.6944E-07
68		Element	Symbol	Isotope	MCNP ID	Atomic Weight				U235	0	235.043915		92235.53c	3.8253E-05
69	62	Samarium	Sm	Sm-147		146.9149				U236	0	236.045637		92236.50c	9.1532E-06
70			Sm	Sm-149	62149.50C	148.9172				U238	0	238.05077		92238.53c	1.9055E-03
71			Sm	Sm-150		149.9173				NP237	0	237.048056		93237.50c	2.1829E-06
72			Sm	Sm-151		150.9199				PU238	0	238.049511		94238.50c	0.0000E+00
73			Sm	Sm-152		151.9198				PU239	0	239.052146		94239.55c	0.0000E+00
74	63	Europium	Eu	Eu-151	63151.55C	150.9198				PU240	0	240.053882		94240.50c	0.0000E+00
75			Eu	Eu-153	63153.55C	152.9212				O	0	15.994915		8016.53c	4.2711E-02
76			Eu	Eu-154	63154.50C	153.9231				H		1.00782519		1001.53c	2.1182E-02
77	64	Gadolinium	Gd	nat.	64000.35C	157.25				O		15.994915			
78			Gd	Gd-155	64155.50C	154.9227				O		15.994915			
79			Gd	Gd-157	64157.50C	156.924				Na		22.9897707		11023.50c	3.9366E-04
80	72	Hafnium	Hf	nat.	72000.50C	178.49				Mg		24.312		12000.50c	2.3128E-04
81	73	Tantalum	Ta	Ta-181	73181.50C	180.948				Al		26.9815389		13027.50c	2.6070E-03
82	74	Tungsten	W	nat.	74000.55C	183.85				Si		28.086		14000.50c	1.1406E-02
83	82	Lead	Pb	nat.	82000.50C	207.19				K		39.102		19000.50c	5.5591E-04
84	92	Uranium	U	U-233	92233.50C	233.0395				Ca		40.08		20000.50c	5.6949E-04
85			U	U-234	92234.50C	234.0409				Fe		55.847		26000.55c	1.4037E-04
86			U	U-235	92235.50C	235.0439				TOTAL	0				8.17526E-02
87			U	U-236	92236.50C	236.0456				****** 100,000 year hydrologic cycle cases - years critical indicated below is full power equivalent c					
88			U	U-238	92238.50C	238.0508				Far Field Criticality - 8% UO2 in beginning - 40% Porosity Tuff w/ water					w/ UO2 additio
89	93	Neptunium	Np	Np-237	93237.55C	237.0481					Tuff Porosit	40%		Years Critical	50000
90	94	Plutonium	Pu	Pu-238	94238.50C	238.0495					Volume	11494000.00		UO2 added	0.052391664
91			Pu	Pu-239	94239.55C	239.0521					UO2%	8%	T=50 C de	0.99	Number
92			Pu	Pu-240	94240.50C	240.0539				ISOTOPE	Gm/Critic	Aw	Wt%	MCNP ID	Density
93			Pu	Pu-241	94241.50C	241.0567				SM149	8.79E+00	148.91718		62149.50c	3.0928E-09
94			Pu	Pu-242	94242.50C	242.0587				SM150	1.85E+02	149.917276		62150.50c	6.4659E-08
95			Pu	Pu-243	94243.35C	243.062				ND143	9.53E+02	142.909779		60143.50c	3.4941E-07
96	95	Americium	Am	Am-241	95241.50C	241.0567				RH103	3.99E+02	102.905511		45103.50c	2.0316E-07
97			Am	Am-242m	95242.50C	242.0595				EU151	3.76E+01	150.919838		63151.55c	1.3054E-08
98			Am	Am-243	95243.50C	243.0614				KR83	5.03E+01	82.914137		36083.50c	3.1787E-08
99	96	Curium	Cm	Cm-243	96243.35C	243.0614				GD155	6.66E-01	154.922664		64155.50c	2.2525E-10
100			Cm	Cm-245	96245.35C	245.0654				CS135	1.05E+03	134.90577		55135.50c	4.0782E-07
101			Cm	Cm-248	96248.35C	248.0722				XE131	4.50E+02	130.905069		54131.50c	1.8012E-07
102	36	Krypton	Kr	Kr-83	36083.50C	82.91414				CS133	1.06E+03	132.905355		55133.50c	4.1790E-07
103										TC99	6.21E+02	98.90628		43099.50c	3.2898E-07
104		**Number Density Worksheet:**								SM147	3.89E+02	146.914867		62147.50c	1.3874E-07
105										SM152	7.57E+01	151.919756		62152.50c	2.6109E-08
106		Number Density = (Weight %) * (Density) * (Na) / (Aw)								ND145	6.66E+02	144.912538		60145.50c	2.4081E-07
107		Avogadro's Number [Na		0.602252						MO95	7.23E+02	94.905839		42095.50c	3.9916E-07
108		Atomic Weight [Aw]								U233	1.87E+02	233.039522		92233.50c	4.2045E-08
109										U234	2.38E+03	234.040904		92234.50c	8.4027E-07
110										U235	1.54E+05	235.043915		92235.50c	5.9382E-05

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
111	TUFF & Water Number		Densities							U236	4.62E+04	236.045637		92236.50c	1.6250E-05
112										U238	8.63E+06	238.05077		92238.50c	3.1474E-03
113		H2O	H	6.6861260E-02						NP237	9.53E+03	237.048056		93237.50c	3.5361E-06
114			O	3.3430630E-02						PU238	0.00E+00	238.049511		94238.50c	0.0000E+00
115	40% Porosi	Tuff	O	2.8209363E-02						PU239	5.81E+03	239.052146		94239.55c	1.2735E-06
116			Na	3.9366415E-04						PU240	5.87E+01	240.053882		94240.50c	1.2813E-08
117	Multiply 30.6%		Mg	2.3127847E-04						O	0	15.994915		SUM 8016.50c	4.3539E-02
118	Porosity Tuff by		Al	2.6069628E-03						H		1.00782519		1001.50c	1.7714E-02
119	(1-0.4)/(1-0.306)		Si	1.1406406E-02						O		15.994915			
120			K	5.5590692E-04						O		15.994915			
121			Ca	5.6949182E-04						Na		22.9897707		11023.50c	3.9366E-04
122			Fe	1.4036533E-04						Mg		24.312		12000.50c	2.3128E-04
123										Al		26.9815389		13027.50c	2.6070E-03
124										Si		28.086		14000.50c	1.1406E-02
125		Feed	3.0% / 20 GWD/mt							K		39.102		19000.50c	5.5591E-04
126				Full Density	wt fraction					Ca		40.08		20000.50c	5.6949E-04
127		UO2	O	4.8888950E-02	0.118494					Fe		55.847		26000.55c	1.4037E-04
128			U-234	5.8680620E-06	0.000208					TOTAL	8854835				8.03881E-02
129			U-235	4.7816080E-04	0.01703										
130			U-236	1.1441480E-04	0.004092										
131			U-238	2.3818750E-02	0.859195					Far Field Criticality - 8%		UO2 in beginning - 40% Porosity Tuff w/ water			
132			Np-237	2.7286570E-05	0.00098						Tuff Porosit	40%		Years Critical	50000
133					1						Volume	11494000.00		UO2 added	0.052391664
134											UO2%	8%	T=265 C d	0.776	Number
135										ISOTOPE	Gm/Critic	Aw	Wt%	MCNP ID	Density
136										SM149	8.79E+00	148.91718		62149.50c	3.0928E-09
137										SM150	1.85E+02	149.917276		62150.50c	6.4659E-08
138										ND143	9.53E+02	142.909779		60143.50c	3.4941E-07
139										RH103	3.99E+02	102.905511		45103.50c	2.0316E-07
140										EU151	3.76E+01	150.919838		63151.55c	1.3054E-08
141										KR83	5.03E+01	82.914137		36083.50c	3.1787E-08
142										GD155	6.66E-01	154.922664		64155.50c	2.2525E-10
143										CS135	1.05E+03	134.90577		55135.50c	4.0782E-07
144										XE131	4.50E+02	130.905069		54131.50c	1.8012E-07
145										CS133	1.06E+03	132.905355		55133.50c	4.1790E-07
146										TC99	6.21E+02	98.90628		43099.50c	3.2898E-07
147										SM147	3.89E+02	146.914867		62147.50c	1.3874E-07
148										SM152	7.6E+01	151.919756		62152.50c	2.6109E-08
149										ND145	6.66E+02	144.912538		60145.50c	2.4081E-07
150										MO95	7.23E+02	94.905839		42095.50c	3.9916E-07
151										U233	1.87E+02	233.039522		92233.50c	4.2045E-08
152										U234	2.38E+03	234.040904		92234.50c	8.4027E-07
153										U235	1.54E+05	235.043915		92235.53c	5.9382E-05
154										U236	4.62E+04	236.045637		92236.50c	1.6250E-05
155										U238	8.63E+06	238.05077		92238.53c	3.1474E-03
156										NP237	9.53E+03	237.048056		93237.50c	3.5361E-06
157										PU238	0.00E+00	238.049511		94238.50c	0.0000E+00
158										PU239	5.81E+03	239.052146		94239.55c	1.2735E-06
159										PU240	5.87E+01	240.053882		94240.50c	1.2813E-08
160										O	0	15.994915		SUM 8016.50c	4.1624E-02
161										H		1.00782519		1001.50c	1.3885E-02
162										O		15.994915			
163										O		15.994915			
164										Na		22.9897707		11023.50c	3.9366E-04
165										Mg		24.312		12000.50c	2.3128E-04

	J	K	L	M	N	O
	Al		26.9815389		13027.50c	2.6070E-03
	Si		28.086		14000.50c	1.1406E-02
	K		39.102		19000.50c	5.5591E-04
	Ca		40.08		20000.50c	5.6949E-04
	Fe		55.847		26000.55c	1.4037E-04
	TOTAL	8854835				7.46445E-02
					*** case sp40ln	
	Far Field Criticality - 8%		UO2 in beginning - 40% Porosity Tuff w/ water			no additional U
		Tuff Porosit	40%		Years Critical	50000
		Volume	11494000.00		UO2 added	0.052391664
		UO2%	8%	T=50 C de	0.99	Number
	ISOTOPE	Gm/Critic	Aw	Wt%	MCNP ID	Density
	SM149	8.79E+00	148.91718		62149.50c	3.0928E-09
	SM150	1.85E+02	149.917276		62150.50c	6.4659E-08
	ND143	9.53E+02	142.909779		60143.50c	3.4941E-07
	RH103	3.99E+02	102.905511		45103.50c	2.0316E-07
	EU151	3.76E+01	150.919838		63151.55c	1.3054E-08
	KR83	5.03E+01	82.914137		36083.50c	3.1787E-08
	GD155	6.66E-01	154.922664		64155.50c	2.2525E-10
	CS135	1.05E+03	134.90577		55135.50c	4.0782E-07
	XE131	4.50E+02	130.905069		54131.50c	1.8012E-07
	CS133	1.06E+03	132.905355		55133.50c	4.1790E-07
	TC99	6.21E+02	98.90628		43099.50c	3.2898E-07
	SM147	3.89E+02	146.914867		62147.50c	1.3874E-07
	SM152	7.6E+01	151.919756		62152.50c	2.6109E-08
	ND145	6.66E+02	144.912538		60145.50c	2.4081E-07
	MO95	7.23E+02	94.905839		42095.50c	3.9916E-07
	U233	1.87E+02	233.039522		92233.50c	4.2045E-08
	U234	2.38E+03	234.040904		92234.50c	5.3283E-07
	U235	1.54E+05	235.043915		92235.50c	3.4330E-05
	U236	4.62E+04	236.045637		92236.50c	1.0255E-05
	U238	8.63E+06	238.05077		92238.50c	1.8995E-03
	NP237	9.53E+03	237.048056		93237.50c	2.1065E-06
	PU238	0.00E+00	238.049511		94238.50c	0.0000E+00
	PU239	5.81E+03	239.052146		94239.55c	1.2735E-06
	PU240	5.87E+01	240.053882		94240.50c	1.2813E-08
	O	0	15.994915		SUM 8016.50c	4.2711E-02
	H		1.00782519		1001.50c	2.1182E-02
	O		15.994915			
	O		15.994915			
	Na		22.9897707		11023.50c	3.9366E-04
	Mg		24.312		12000.50c	2.3128E-04
	Al		26.9815389		13027.50c	2.6070E-03
	Si		28.086		14000.50c	1.1406E-02
	K		39.102		19000.50c	5.5591E-04
	Ca		40.08		20000.50c	5.6949E-04
	Fe		55.847		26000.55c	1.4037E-04
	TOTAL	8854835				8.17479E-02

C	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD
1			**** Base case at	Power T=265 C	case sp40a1					Backcheck of initial composition from SAS2H which was based on MCNP wt. fractions					
2		Far Field Criticality - 8% UO2	in beginning - 40%	Porosity Tuff w/	water				Far Field Criticality - 8% UO2	in beginning - 40%	Porosity Tuff w/	water	*** These # densities were not		
3			Tuff Porosity=	40%		Years Critical	0			Tuff Porosity=	40%		Years Critical	0	
4			Volume	11494000.00		UO2 added	0			Volume	11494000.00		UO2 added	0	
5			UO2%	8%	T=265 C den=	0.776	Number			UO2%	8%	T=265 C d	0.776	Number	
6		ISOTOPE	Gm/Critical %	Aw	Wt%	MCNP ID	Density		ISOTOPE	Gm/Critical	Aw	Wt%	MCNP ID	Density	
7		SM149	0	148.91718		62149.50c	0.0000E+00		SM149	0	148.91718		62149.50c	0.0000E+00	
8		SM151	0	150.919919		62151.50c	0.0000E+00		SM151	0	150.919919		62151.50c	0.0000E+00	
9		ND143	0	142.909779		60143.50c	0.0000E+00		ND143	0	142.909779		60143.50c	0.0000E+00	
10		RH103	0	102.905511		45103.50c	0.0000E+00		RH103	0	102.905511		45103.50c	0.0000E+00	
11		EU151	0	150.919838		63151.55c	0.0000E+00		EU151	0	150.919838		63151.55c	0.0000E+00	
12		GD157	0	156.924025		64157.50c	0.0000E+00		GD157	0	156.924025		64157.50c	0.0000E+00	
13		GD155	0	154.922664		64155.50c	0.0000E+00		GD155	0	154.922664		64155.50c	0.0000E+00	
14		CD(113)	0	112.4		48000.50c	0.0000E+00		CD(113)	0	112.4		48000.50c	0.0000E+00	
15		XE131	0	130.905069		54131.50c	0.0000E+00		XE131	0	130.905069		54131.50c	0.0000E+00	
16		CS133	0	132.905355		55133.50c	0.0000E+00		CS133	0	132.905355		55133.50c	0.0000E+00	
17		TC99	0	98.90628		43099.50c	0.0000E+00		TC99	0	98.90628		43099.50c	0.0000E+00	
18		SM147	0	146.914867		62147.50c	0.0000E+00		SM147	0	146.914867		62147.50c	0.0000E+00	
19		XE135	0	134.9063		54135.50c	0.0000E+00		XE135	0	134.9063		54135.50c	0.0000E+00	
20		ND145	0	144.912538		60145.50c	0.0000E+00		ND145	0	144.912538		60145.50c	0.0000E+00	
21		MO95	0	94.905839		42095.50c	0.0000E+00		MO95	0	94.905839		42095.50c	0.0000E+00	
22		U233	0	233.039522		92233.50c	0.0000E+00		U233	0	233.039522		92233.50c	0.0000E+00	
23		U234	0	234.040904		92234.50c	4.6944E-07		U234	2119.55337	234.040904		92234.50c	4.7453E-07	
24		U235	0	235.043915		92235.53c	3.8253E-05		U235	171683.823	235.043915		92235.53c	3.8273E-05	
25		U236	0	236.045637		92236.50c	9.1532E-06		U236	41179.894	236.045637		92236.50c	9.1411E-06	
26		U238	0	238.05077		92238.53c	1.9055E-03		U238	8657769.92	238.05077		92238.53c	1.9057E-03	
27		NP237	0	237.048056		93237.50c	2.1829E-06		NP237	9992.18017	237.048056		93237.50c	2.2087E-06	
28		PU238	0	238.049511		94238.50c	0.0000E+00		PU238	0	238.049511		94238.50c	0.0000E+00	
29		PU239	0	239.052146		94239.55c	0.0000E+00		PU239	0	239.052146		94239.55c	0.0000E+00	
30		PU240	0	240.053882		94240.50c	0.0000E+00		PU240	0	240.053882		94240.50c	0.0000E+00	
31		O	0	15.994915		8016.53c	4.0422E-02		O	0	15.994915		8016.53c	4.0422E-02	
32	water	H		1.00782519		1001.53c	1.6603E-02		H		1.00782519		1001.53c	1.6603E-02	
33		O		15.994915					O		15.994915				
34	Tuff	O		15.994915					O		15.994915				
35		Na		22.9897707		11023.50c	3.9366E-04		Na		22.9897707		11023.50c	3.9366E-04	
36		Mg		24.312		12000.50c	2.3128E-04		Mg		24.312		12000.50c	2.3128E-04	
37		Al		26.9815389		13027.50c	2.6070E-03		Al		26.9815389		13027.50c	2.6070E-03	
38		Si		28.086		14000.50c	1.1406E-02		Si		28.086		14000.50c	1.1406E-02	
39		K		39.102		19000.50c	5.5591E-04		K		39.102		19000.50c	5.5591E-04	
40		Ca		40.08		20000.50c	5.6949E-04		Ca		40.08		20000.50c	5.6949E-04	
41		Fe		55.847		26000.55c	1.4037E-04		Fe		55.847		26000.55c	1.4037E-04	
42		TOTAL	0				7.48846E-02		TOTAL	8882745.38				7.48848E-02	
43															
44			***** Cases w/ UO2 addition at 132	g/year ******				*******	Assume no additional UO2 infiltration after criticality initiation.*****						
45				case names sp40(alpha)1							MCNP case names sp40(alpha)1n				
46		Far Field Criticality - 8% UO2	in beginning - 40%	Porosity Tuff w/	water				Far Field Criticality - 8% UO2	in beginning - 40%	Porosity Tuff w/	water			
47			Tuff Porosity=	40%		Years Critical	1			Tuff Porosity=	40%		Years Critical	1	
48			Volume	11494000.00		UO2 added	1.04783E-06			Volume	11494000.00		UO2 added	0	
49			UO2%	8%	T=265 C den=	0.776	Number			UO2%	8%	T=265 C d	0.776	Number	
50		ISOTOPE	Gm/Critical	Aw	Wt%	MCNP ID	Density		ISOTOPE	Gm/Critical	Aw	Wt%	MCNP ID	Density	
51		SM149	1.05E-02	148.91718		62149.50c	3.6945E-12		SM149	1.05E-02	148.91718		62149.50c	3.6945E-12	
52		SM151	4.62E-03	150.919919		62150.50c	1.6040E-12		SM151	4.62E-03	150.919919		62150.50c	1.6040E-12	
53		ND143	5.84E-02	142.909779		60143.50c	2.1412E-11		ND143	5.84E-02	142.909779		60143.50c	2.1412E-11	
54		RH103	1.79E-02	102.905511		45103.50c	9.1143E-12		RH103	1.79E-02	102.905511		45103.50c	9.1143E-12	
55		SM152	2.75E-03	151.919756		62152.50c	9.4847E-13		SM152	2.75E-03	151.919756		62152.50c	9.4847E-13	
56		GD157	7.73E-05	156.924025		64157.50c	2.5811E-14		GD157	7.73E-05	156.924025		64157.50c	2.5811E-14	
57		GD155	3.58E-04	154.922664		64155.50c	1.2118E-13		GD155	3.58E-04	154.922664		64155.50c	1.2118E-13	
58		CD(113)	6.62E-04	112.4		48000.50c	3.0860E-13		CD(113)	6.62E-04	112.4		48000.50c	3.0860E-13	
59		XE131	2.44E-02	130.905069		54131.50c	9.7665E-12		XE131	2.44E-02	130.905069		54131.50c	9.7665E-12	
60		CS133	6.18E-02	132.905355		55133.50c	2.4364E-11		CS133	6.18E-02	132.905355		55133.50c	2.4364E-11	
61		TC99	3.98E-02	98.90628		43099.50c	2.1085E-11		TC99	3.98E-02	98.90628		43099.50c	2.1085E-11	
62		SM147	2.08E-02	146.914867		62147.50c	7.4290E-12		SM147	2.08E-02	146.914867		62147.50c	7.4290E-12	
63		XE135	8.7E-05	134.9063		54135.50c	3.3790E-14		XE135	8.7E-05	134.9063		54135.50c	3.3790E-14	

C	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD
64		ND145	3.79E-02	144.912538		60145.50c	1.3704E-11		ND145	3.79E-02	144.912538		60145.50c	1.3704E-11	
65		KR83	2.92E-03	82.914137		36083.50c	1.8453E-12		KR83	2.92E-03	82.914137		36083.50c	1.8453E-12	
66		U233	2.84E-03	233.039522		92233.50c	6.3855E-13		U233	2.84E-03	233.039522		92233.50c	6.3855E-13	
67		U234	2.12E+03	234.040904		92234.50c	4.7463E-07		U234	2.12E+03	234.040904		92234.50c	4.7463E-07	
68		U235	1.72E+05	235.043915		92235.53c	3.8344E-05		U235	1.72E+05	235.043915		92235.53c	3.8343E-05	
69		U236	4.12E+04	236.045637		92236.50c	9.1456E-06		U236	4.12E+04	236.045637		92236.50c	9.1455E-06	
70		U238	8.66E+06	238.05077		92238.53c	1.9062E-03		U238	8.66E+06	238.05077		92238.53c	1.9061E-03	
71		NP237	9.99E+03	237.048056		93237.50c	2.2082E-06		NP237	9.99E+03	237.048056		93237.50c	2.2082E-06	
72		PU238	4.39E-02	238.049511		94238.50c	9.6628E-12		PU238	4.39E-02	238.049511		94238.50c	9.6628E-12	
73		PU239	1.18E+00	239.052146		94239.55c	2.5864E-10		PU239	1.18E+00	239.052146		94239.55c	2.5864E-10	
74		PU240	5.81E-06	240.053882		94240.50c	1.2682E-15		PU240	5.81E-06	240.053882		94240.50c	1.2682E-15	
75		O	0	15.994915		SUM 8016.53c	4.0422E-02		O	0	15.994915		8016.53c	4.0422E-02	
76		H		1.00782519		1001.53c	1.6603E-02		H		1.00782519		1001.53c	1.6603E-02	
77		O		15.994915					O		15.994915				
78		O		15.994915					O		15.994915				
79		Na		22.9897707		11023.50c	3.9366E-04		Na		22.9897707		11023.50c	3.9366E-04	
80		Mg		24.312		12000.50c	2.3128E-04		Mg		24.312		12000.50c	2.3128E-04	
81		Al		26.9815389		13027.50c	2.6070E-03		Al		26.9815389		13027.50c	2.6070E-03	
82		Si		28.086		14000.50c	1.1406E-02		Si		28.086		14000.50c	1.1406E-02	
83		K		39.102		19000.50c	5.5591E-04		K		39.102		19000.50c	5.5591E-04	
84		Ca		40.08		20000.50c	5.6949E-04		Ca		40.08		20000.50c	5.6949E-04	
85		Fe		55.847		26000.55c	1.4037E-04		Fe		55.847		26000.55c	1.4037E-04	
86		TOTAL	8885311.5098				7.48853E-02		TOTAL	8885311.51				7.48854E-02	
87	se sp40l														
88		Far Field Criticality - 8% UO2 in beginning - 40% Porosity Tuff w/ water							Far Field Criticality - 8% UO2 in beginning - 40% Porosity Tuff w/ water						
89			Tuff Porosity=	40%		Years Critical	10			Tuff Porosity=	40%		Years Critical	10	
90			Volume	11494000.00		UO2 added	0.0000104783			Volume	11494000.00		UO2 added	0	
91			UO2%	8% T=265 C den=		0.776	Number			UO2%	8% T=265 C d		0.776	Number	
92		ISOTOPE	Gm/Critical	Aw Wt%		MCNP ID	Density		ISOTOPE	Gm/Critical	Aw Wt%		MCNP ID	Density	
93		SM149	1.05E-01	148.91718		62149.50c	3.6945E-11		SM149	1.05E-01	148.91718		62149.50c	3.6945E-11	
94		SM151	4.10E-02	150.919919		62151.50c	1.4235E-11		SM151	4.10E-02	150.919919		62151.50c	1.4235E-11	
95		ND143	5.51E-01	142.909779		60143.50c	2.0202E-10		ND143	5.51E-01	142.909779		60143.50c	2.0202E-10	
96		RH103	2.09E-01	102.905511		45103.50c	1.0642E-10		RH103	2.09E-01	102.905511		45103.50c	1.0642E-10	
97		SM152	2.75E-02	151.919756		62152.50c	9.4847E-12		SM152	2.75E-02	151.919756		62152.50c	9.4847E-12	
98		GD157	7.32E-04	156.924025		64157.50c	2.4442E-13		GD157	7.32E-04	156.924025		64157.50c	2.4442E-13	
99		GD155	3.58E-03	154.922664		64155.50c	1.2108E-12		GD155	3.58E-03	154.922664		64155.50c	1.2108E-12	
100		CD(113)	6.65E-03	112.4		48000.50c	3.1000E-12		CD(113)	6.65E-03	112.4		48000.50c	3.1000E-12	
101		XE131	2.48E-01	130.905069		54131.50c	9.9266E-11		XE131	2.48E-01	130.905069		54131.50c	9.9266E-11	
102		CS133	5.83E-01	132.905355		55133.50c	2.2984E-10		CS133	5.83E-01	132.905355		55133.50c	2.2984E-10	
103		TC99	3.96E-01	98.90628		43099.50c	2.0979E-10		TC99	3.96E-01	98.90628		43099.50c	2.0979E-10	
104		SM147	2.19E-01	146.914867		62147.50c	7.7928E-11		SM147	2.19E-01	146.914867		62147.50c	7.7928E-11	
105		XE135	8.7E-05	134.9063		54135.50c	3.3790E-14		XE135	8.7E-05	134.9063		54135.50c	3.3790E-14	
106		ND145	3.72E-01	144.912538		60145.50c	1.3451E-10		ND145	3.72E-01	144.912538		60145.50c	1.3451E-10	
107		MO95	3.86E-01	94.905839		42095.50c	2.1311E-10		MO95	3.86E-01	94.905839		42095.50c	2.1311E-10	
108		U233	3.15E-02	233.039522		92233.50c	7.0825E-12		U233	3.15E-02	233.039522		92233.50c	7.0825E-12	
109		U234	2.12E+03	234.040904		92234.50c	4.7469E-07		U234	2.12E+03	234.040904		92234.50c	4.7463E-07	
110		U235	1.72E+05	235.043915		92235.53c	3.8348E-05		U235	1.72E+05	235.043915		92235.53c	3.8343E-05	
111		U236	4.12E+04	236.045637		92236.50c	9.1467E-06		U236	4.12E+04	236.045637		92236.50c	9.1455E-06	
112		U238	8.66E+06	238.05077		92238.53c	1.9064E-03		U238	8.66E+06	238.05077		92238.53c	1.9061E-03	
113		NP237	9.99E+03	237.048056		93237.50c	2.2085E-06		NP237	9.99E+03	237.048056		93237.50c	2.2082E-06	
114		PU238	4.27E-01	238.049511		94238.50c	9.3987E-11		PU238	4.27E-01	238.049511		94238.50c	9.3987E-11	
115		PU239	1.21E+01	239.052146		94239.55c	2.6522E-09		PU239	1.21E+01	239.052146		94239.55c	2.6522E-09	
116		PU240	6.00E-04	240.053882		94240.50c	1.3096E-13		PU240	6.00E-04	240.053882		94240.50c	1.3096E-13	
117		O	0	15.994915		SUM 8016.53c	4.0422E-02		O	0	15.994915		8016.53c	4.0422E-02	
118		H		1.00782519		1001.53c	1.6602E-02		H		1.00782519		1001.53c	1.6603E-02	
119		O		15.994915					O		15.994915				
120		O		15.994915					O		15.994915				
121		Na		22.9897707		11023.50c	3.9366E-04		Na		22.9897707		11023.50c	3.9366E-04	
122		Mg		24.312		12000.50c	2.3128E-04		Mg		24.312		12000.50c	2.3128E-04	
123		Al		26.9815389		13027.50c	2.6070E-03		Al		26.9815389		13027.50c	2.6070E-03	
124		Si		28.086		14000.50c	1.1406E-02		Si		28.086		14000.50c	1.1406E-02	
125		K		39.102		19000.50c	5.5591E-04		K		39.102		19000.50c	5.5591E-04	
126		Ca		40.08		20000.50c	5.6949E-04		Ca		40.08		20000.50c	5.6949E-04	

C	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD
127		Fe		55.847		26000.55c	1.4037E-04		Fe		55.847		26000.55c	1.4037E-04	
128		TOTAL	8885325.7071				7.48853E-02		TOTAL	8885325.71				7.48854E-02	
129															
130		Far Field Criticality - 8% UO2 in beginning - 40% Porosity Tuff w/ water				Years Critical	100		Far Field Criticality - 8% UO2 in beginning - 40% Porosity Tuff w/ water				Years Critical	100	
131			Tuff Porosity=	40%		UO2 added	0.0001047833			Tuff Porosity=	40%		UO2 added	0	
132			Volume	11494000.00		0.776	Number			Volume	11494000.00		0.776	Number	
133			UO2%	8%	T=265 C den=	MCNP ID	Density			UO2%	8%	T=265 C d	MCNP ID	Density	
134		ISOTOPE	Gm/Critical	Aw	Wt%				ISOTOPE	Gm/Critical	Aw	Wt%			
135		SM149	9.89E-01	148.91718		62149.50c	3.4798E-10		SM149	9.89E-01	148.91718		62149.50c	3.4798E-10	
136		SM151	2.95E-01	150.919919		62151.50c	1.0242E-10		SM151	2.95E-01	150.919919		62151.50c	1.0242E-10	
137		ND143	5.52E+00	142.909779		60143.50c	2.0239E-09		ND143	5.52E+00	142.909779		60143.50c	2.0239E-09	
138		RH103	2.12E+00	102.905511		45103.50c	1.0795E-09		RH103	2.12E+00	102.905511		45103.50c	1.0795E-09	
139		EU151	1.28E-01	150.919838		63151.55c	4.4440E-11		EU151	1.28E-01	150.919838		63151.55c	4.4440E-11	
140		GD157	6.71E-03	156.924025		64157.50c	2.2405E-12		GD157	6.71E-03	156.924025		64157.50c	2.2405E-12	
141		GD155	3.26E-02	154.922664		64155.50c	1.1026E-11		GD155	3.26E-02	154.922664		64155.50c	1.1026E-11	
142		CD(113)	6.65E-02	112.4		48000.50c	3.1000E-11		CD(113)	6.65E-02	112.4		48000.50c	3.1000E-11	
143		XE131	2.49E+00	130.905069		54131.50c	9.9667E-10		XE131	2.49E+00	130.905069		54131.50c	9.9667E-10	
144		CS133	5.84E+00	132.905355		55133.50c	2.3024E-09		CS133	5.84E+00	132.905355		55133.50c	2.3024E-09	
145		TC99	3.96E+00	98.90628		43099.50c	2.0979E-09		TC99	3.96E+00	98.90628		43099.50c	2.0979E-09	
146		SM147	2.10E+00	146.914867		62147.50c	7.4896E-10		SM147	2.10E+00	146.914867		62147.50c	7.4896E-10	
147		XE135	8.7E-05	134.9063		54135.50c	3.3790E-14		XE135	8.7E-05	134.9063		54135.50c	3.3790E-14	
148		ND145	3.72E+00	144.912538		60145.50c	1.3451E-09		ND145	3.72E+00	144.912538		60145.50c	1.3451E-09	
149		MO95	4.00E+00	94.905839		42095.50c	2.2084E-09		MO95	4.00E+00	94.905839		42095.50c	2.2084E-09	
150		U233	3.18E-01	233.039522		92233.50c	7.1500E-11		U233	3.18E-01	233.039522		92233.50c	7.1500E-11	
151		U234	2.12E+03	234.040904		92234.50c	4.7524E-07		U234	2.12E+03	234.040904		92234.50c	4.7463E-07	
152		U235	1.71E+05	235.043915		92235.53c	3.8170E-05		U235	1.71E+05	235.043915		92235.53c	3.8120E-05	
153		U236	4.12E+04	236.045637		92236.50c	9.1575E-06		U236	4.12E+04	236.045637		92236.50c	9.1455E-06	
154		U238	8.66E+06	238.05077		92238.53c	1.9086E-03		U238	8.66E+06	238.05077		92238.53c	1.9061E-03	
155		NP237	9.99E+03	237.048056		93237.50c	2.2110E-06		NP237	9.99E+03	237.048056		93237.50c	2.2082E-06	
156		PU238	3.07E+00	238.049511		94238.50c	6.7574E-10		PU238	3.07E+00	238.049511		94238.50c	6.7574E-10	
157		PU239	1.19E+02	239.052146		94239.55c	2.6083E-08		PU239	1.19E+02	239.052146		94239.55c	2.6083E-08	
158		PU240	5.87E-02	240.053882		94240.50c	1.2813E-11		PU240	5.87E-02	240.053882		94240.50c	1.2813E-11	
159		O	0	15.994915		SUM 8016.53c	4.0424E-02		O	0	15.994915		8016.53c	4.0422E-02	
160		H		1.00782519		1001.53c	1.6598E-02		H		1.00782519		1001.53c	1.6603E-02	
161		O		15.994915					O		15.994915				
162		O		15.994915					O		15.994915				
163		Na		22.9897707		11023.50c	3.9366E-04		Na		22.9897707		11023.50c	3.9366E-04	
164		Mg		24.312		12000.50c	2.3128E-04		Mg		24.312		12000.50c	2.3128E-04	
165		Al		26.9815389		13027.50c	2.6070E-03		Al		26.9815389		13027.50c	2.6070E-03	
166		Si		28.086		14000.50c	1.1406E-02		Si		28.086		14000.50c	1.1406E-02	
167		K		39.102		19000.50c	5.5591E-04		K		39.102		19000.50c	5.5591E-04	
168		Ca		40.08		20000.50c	5.6949E-04		Ca		40.08		20000.50c	5.6949E-04	
169		Fe		55.847		26000.55c	1.4037E-04		Fe		55.847		26000.55c	1.4037E-04	
170		TOTAL	8884463.7146				7.48847E-02		TOTAL	8884463.71				7.48852E-02	
171															
172		Far Field Criticality - 8% UO2 in beginning - 40% Porosity Tuff w/ water							Far Field Criticality - 8% UO2 in beginning - 40% Porosity Tuff w/ water						
173	2		Tuff Porosity=	40%		Years Critical	1000			Tuff Porosity=	40%		Years Critical	1000	
174			Volume	11494000.00		UO2 added	0.0010478333			Volume	11494000.00		UO2 added	0	
175			UO2%	8%	T=265 C den=	0.776	Number			UO2%	8%	T=265 C d	0.776	Number	
176		ISOTOPE	Gm/Critical	Aw	Wt%	MCNP ID	Density		ISOTOPE	Gm/Critical	Aw	Wt%	MCNP ID	Density	
177		SM149	5.77E+00	148.91718		62149.50c	2.0302E-09		SM149	5.77E+00	148.91718		62149.50c	2.0302E-09	
178		SM151	5.49E-01	150.919919		62151.50c	1.9060E-10		SM151	5.49E-01	150.919919		62151.50c	1.9060E-10	
179		ND143	5.50E+01	142.909779		60143.50c	2.0165E-08		ND143	5.50E+01	142.909779		60143.50c	2.0165E-08	
180		RH103	2.13E+01	102.905511		45103.50c	1.0845E-08		RH103	2.13E+01	102.905511		45103.50c	1.0845E-08	
181		EU151	3.50E+00	150.919838		63151.55c	1.2151E-09		EU151	3.50E+00	150.919838		63151.55c	1.2151E-09	
182		GD157	3.34E-02	156.924025		64157.50c	1.1152E-11		GD157	3.34E-02	156.924025		64157.50c	1.1152E-11	
183		GD155	2.79E-01	154.922664		64155.50c	9.4362E-11		GD155	2.79E-01	154.922664		64155.50c	9.4362E-11	
184		CD(113)	6.89E-01	112.4		48000.50c	3.2119E-10		CD(113)	6.89E-01	112.4		48000.50c	3.2119E-10	
185		XE131	2.49E+01	130.905069		54131.50c	9.9667E-09		XE131	2.49E+01	130.905069		54131.50c	9.9667E-09	
186		CS133	5.84E+01	132.905355		55133.50c	2.3024E-08		CS133	5.84E+01	132.905355		55133.50c	2.3024E-08	
187		TC99	3.95E+01	98.90628		43099.50c	2.0926E-08		TC99	3.95E+01	98.90628		43099.50c	2.0926E-08	
188		SM147	2.17E+01	146.914867		62147.50c	7.7393E-09		SM147	2.17E+01	146.914867		62147.50c	7.7393E-09	
189		SM152	2.92E+00	151.919756		62152.50c	1.0071E-09		SM152	2.9E+00	151.919756		62152.50c	1.0071E-09	

C	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD
190		ND145	3.71E+01	144.912538		60145.50c	1.3415E-08	SUM FP	ND145	3.71E+01	144.912538		60145.50c	1.3415E-08	
191		MO95	4.01E+01	94.905839		42095.50c	2.2139E-08	1.331E-07	MO95	4.01E+01	94.905839		42095.50c	2.2139E-08	
192		U233	3.16E+00	233.039522		92233.50c	7.1050E-10		U233	3.16E+00	233.039522		92233.50c	7.1050E-10	
193		U234	2.15E+03	234.040904		92234.50c	4.8749E-07		U234	2.15E+03	234.040904		92234.50c	4.8134E-07	
194		U235	1.70E+05	235.043915		92235.53c	3.8398E-05		U235	1.70E+05	235.043915		92235.53c	3.7897E-05	
195		U236	4.14E+04	236.045637		92236.50c	9.3098E-06		U236	4.14E+04	236.045637		92236.50c	9.1899E-06	
196		U238	8.65E+06	238.05077		92238.53c	1.9289E-03		U238	8.65E+06	238.05077		92238.53c	1.9039E-03	
197		NP237	9.97E+03	237.048056		93237.50c	2.2324E-06		NP237	9.97E+03	237.048056		93237.50c	2.2038E-06	
198		PU238	5.57E+00	238.049511		94238.50c	1.2260E-09		PU238	5.57E+00	238.049511		94238.50c	1.2260E-09	
199		PU239	1.15E+03	239.052146		94239.55c	2.5206E-07		PU239	1.15E+03	239.052146		94239.55c	2.5206E-07	
200		PU240	5.49E+00	240.053882		94240.50c	1.1983E-09		PU240	5.49E+00	240.053882		94240.50c	1.1983E-09	
201		O	0	15.994915		SUM 8016.53c	4.0446E-02		O	0	15.994915		8016.53c	4.0422E-02	
202		H		1.00782519		1001.53c	1.6549E-02		H		1.00782519		1001.53c	1.6603E-02	
203		O		15.994915					O		15.994915				
204		O		15.994915					O		15.994915				
205		Na		22.9897707		11023.50c	3.9366E-04		Na		22.9897707		11023.50c	3.9366E-04	
206		Mg		24.312		12000.50c	2.3128E-04		Mg		24.312		12000.50c	2.3128E-04	
207		Al		26.9815389		13027.50c	2.6070E-03		Al		26.9815389		13027.50c	2.6070E-03	
208		Si		28.086		14000.50c	1.1406E-02		Si		28.086		14000.50c	1.1406E-02	
209		K		39.102		19000.50c	5.5591E-04		K		39.102		19000.50c	5.5591E-04	
210		Ca		40.08		20000.50c	5.6949E-04		Ca		40.08		20000.50c	5.6949E-04	
211		Fe		55.847		26000.55c	1.4037E-04		Fe		55.847		26000.55c	1.4037E-04	
212		TOTAL	8874995.9604				7.48784E-02		TOTAL	8874995.96				7.48831E-02	
213															
214		Far Field Criticality - 8% UO2 in beginning - 40% Porosity Tuff w/ water							Far Field Criticality - 8% UO2 in beginning - 40% Porosity Tuff w/ water						
215			Tuff Porosity=	40%		Years Critical	5000			Tuff Porosity=	40%		Years Critical	5000	
216			Volume	11494000.00		UO2 added	0.0052391664			Volume	11494000.00		UO2 added	0	
217			UO2%	8%	T=265 C den=	0.776	Number			UO2%	8%	T=265 C d	0.776	Number	
218		ISOTOPE	Gm/Critical	Aw	Wt%	MCNP ID	Density		ISOTOPE	Gm/Critical	Aw	Wt%	MCNP ID	Density	
219		SM149	7.89E+00	148.91718		62149.50c	2.7761E-09		SM149	7.89E+00	148.91718		62149.50c	2.7761E-09	
220		SM150	4.54E+01	149.917276		62150.50c	1.5868E-08		SM150	4.54E+01	149.917276		62150.50c	1.5868E-08	
221		ND143	2.70E+02	142.909779		60143.50c	9.8994E-08		ND143	2.70E+02	142.909779		60143.50c	9.8994E-08	
222		RH103	1.09E+02	102.905511		45103.50c	5.5500E-08		RH103	1.09E+02	102.905511		45103.50c	5.5500E-08	
223		EU151	1.65E+01	150.919838		63151.55c	5.7285E-09		EU151	1.65E+01	150.919838		63151.55c	5.7285E-09	
224		GD157	5.42E-02	156.924025		64157.50c	1.8097E-11		GD157	5.42E-02	156.924025		64157.50c	1.8097E-11	
225		GD155	6.99E-01	154.922664		64155.50c	2.3641E-10		GD155	6.99E-01	154.922664		64155.50c	2.3641E-10	
226		CD(113)	3.96E+00	112.4		48000.50c	1.8479E-09		CD(113)	3.96E+00	112.4		48000.50c	1.8479E-09	
227		XE131	1.24E+02	130.905069		54131.50c	4.9633E-08		XE131	1.24E+02	130.905069		54131.50c	4.9633E-08	
228		CS133	2.91E+02	132.905355		55133.50c	1.1472E-07		CS133	2.91E+02	132.905355		55133.50c	1.1472E-07	
229		TC99	1.96E+02	98.90628		43099.50c	1.0383E-07		TC99	1.96E+02	98.90628		43099.50c	1.0383E-07	
230		SM147	1.08E+02	146.914867		62147.50c	3.8518E-08		SM147	1.08E+02	146.914867		62147.50c	3.8518E-08	
231		SM152	1.69E+01	151.919756		62152.50c	5.8288E-09		SM152	1.69E+01	151.919756		62152.50c	5.8288E-09	
232		ND145	1.84E+02	144.912538		60145.50c	6.6530E-08		ND145	1.84E+02	144.912538		60145.50c	6.6530E-08	
233		MO95	1.99E+02	94.905839		42095.50c	1.0987E-07		MO95	1.99E+02	94.905839		42095.50c	1.0987E-07	
234		U233	1.53E+01	233.039522		92233.50c	3.4401E-09		U233	1.53E+01	233.039522		92233.50c	3.4401E-09	
235		U234	2.28E+03	234.040904		92234.50c	5.4119E-07		U234	2.28E+03	234.040904		92234.50c	5.1045E-07	
236		U235	1.63E+05	235.043915		92235.53c	3.8842E-05		U235	1.63E+05	235.043915		92235.53c	3.6337E-05	
237		U236	4.25E+04	236.045637		92236.50c	1.0034E-05		U236	4.25E+04	236.045637		92236.50c	9.4341E-06	
238		U238	8.65E+06	238.05077		92238.53c	2.0287E-03		U238	8.65E+06	238.05077		92238.53c	1.9039E-03	
239		NP237	9.90E+03	237.048056		93237.50c	2.3313E-06		NP237	9.90E+03	237.048056		93237.50c	2.1883E-06	
240		PU238	5.49E+00	238.049511		94238.50c	1.2084E-09		PU238	5.49E+00	238.049511		94238.50c	1.2084E-09	
241		PU239	5.18E+03	239.052146		94239.55c	1.1354E-06		PU239	5.18E+03	239.052146		94239.55c	1.1354E-06	
242		PU240	1.08E+02	240.053882		94240.50c	2.3573E-08		PU240	1.08E+02	240.053882		94240.50c	2.3573E-08	
243		O	0	15.994915		SUM 8016.53c	4.0542E-02		O	0	15.994915		8016.53c	4.0422E-02	
244		H		1.00782519		1001.53c	1.6331E-02		H		1.00782519		1001.53c	1.6603E-02	
245		O		15.994915					O		15.994915				
246		O		15.994915					O		15.994915				
247		Na		22.9897707		11023.50c	3.9366E-04		Na		22.9897707		11023.50c	3.9366E-04	
248		Mg		24.312		12000.50c	2.3128E-04		Mg		24.312		12000.50c	2.3128E-04	
249		Al		26.9815389		13027.50c	2.6070E-03		Al		26.9815389		13027.50c	2.6070E-03	
250		Si		28.086		14000.50c	1.1406E-02		Si		28.086		14000.50c	1.1406E-02	
251		K		39.102		19000.50c	5.5591E-04		K		39.102		19000.50c	5.5591E-04	
252		Ca		40.08		20000.50c	5.6949E-04		Ca		40.08		20000.50c	5.6949E-04	

C	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD
253		Fe		55.847		26000.55c	1.4037E-04		Fe		55.847		26000.55c	1.4037E-04	
254		TOTAL	8874561.1972				7.48597E-02		TOTAL	8874561.2				7.48833E-02	
255															
256		Far Field Criticality - 8% UO2 in beginning - 40% Porosity Tuff w/ water							Far Field Criticality - 8% UO2 in beginning - 40% Porosity Tuff w/ water						
257			Tuff Porosity=	40%		Years Critical	10000			Tuff Porosity=	40%		Years Critical	10000	
258			Volume	11494000.00		UO2 added	0.0104783327			Volume	11494000.00		UO2 added	0	
259			UO2%	8%	T=265 C den=	0.776	Number			UO2%	8%	T=265 C d	0.776	Number	
260		ISOTOPE	Gm/Critical	Aw	Wt%	MCNP ID	Density		ISOTOPE	Gm/Critical	Aw	Wt%	MCNP ID	Density	
261		SM149	8.02E+00	148.91718		62149.50c	2.8219E-09		SM149	8.02E+00	148.91718		62149.50c	2.8219E-09	
262	*	EU151	2.77E+01	150.919838		63151.55c	9.6170E-09		EU151	2.77E+01	150.919838		63151.55c	9.6170E-09	
263		ND143	5.30E+02	142.909779		60143.50c	1.9432E-07		ND143	5.30E+02	142.909779		60143.50c	1.9432E-07	
264		RH103	2.22E+02	102.905511		45103.50c	1.1304E-07		RH103	2.22E+02	102.905511		45103.50c	1.1304E-07	
265		XE131	2.49E+02	130.905069		54131.50c	9.9667E-08		XE131	2.49E+02	130.905069		54131.50c	9.9667E-08	
266		CS133	5.81E+02	132.905355		55133.50c	2.2906E-07		CS133	5.81E+02	132.905355		55133.50c	2.2906E-07	
267		SM147	2.14E+02	146.914867		62147.50c	7.6323E-08		SM147	2.14E+02	146.914867		62147.50c	7.6323E-08	
268		TC99	3.87E+02	98.90628		43099.50c	2.0502E-07		TC99	3.87E+02	98.90628		43099.50c	2.0502E-07	
269		GD155	8.59E-01	154.922664		64155.50c	2.9053E-10		GD155	8.59E-01	154.922664		64155.50c	2.9053E-10	
270		ND145	3.64E+02	144.912538		60145.50c	1.3161E-07		ND145	3.64E+02	144.912538		60145.50c	1.3161E-07	
271		SM152	3.80E+01	151.919756		62152.50c	1.3106E-08		SM152	3.8E+01	151.919756		62152.50c	1.3106E-08	
272		MO95	3.94E+02	94.905839		42095.50c	2.1753E-07		MO95	3.94E+02	94.905839		42095.50c	2.1753E-07	
273	*	CD(113)	9.01E+00	112.4		48000.50c	4.2020E-09		CD(113)	9.01E+00	112.4		48000.50c	4.2020E-09	
274		SM150	9.83E+01	149.917276		62150.50c	3.4356E-08	SUM FP	SM150	9.83E+01	149.917276		62150.50c	3.4356E-08	
275		KR83	2.78E+01	82.914137		36083.50c	1.7568E-08	1.349E-06	KR83	2.78E+01	82.914137		36083.50c	1.7568E-08	
276		U233	2.95E+01	233.039522		92233.50c	6.6328E-09		U233	2.95E+01	233.039522		92233.50c	6.6328E-09	
277		U234	2.43E+03	234.040904		92234.50c	6.0552E-07		U234	2.43E+03	234.040904		92234.50c	5.4403E-07	
278		U235	1.56E+05	235.043915		92235.53c	3.9787E-05		U235	1.56E+05	235.043915		92235.53c	3.4776E-05	
279		U236	4.37E+04	236.045637		92236.50c	1.0899E-05		U236	4.37E+04	236.045637		92236.50c	9.7005E-06	
280		U238	8.64E+06	238.05077		92238.53c	2.1513E-03		U238	8.64E+06	238.05077		92238.53c	1.9017E-03	
281		NP237	9.83E+03	237.048056		93237.50c	2.4587E-06		NP237	9.83E+03	237.048056		93237.50c	2.1728E-06	
282		PU238	5.43E+00	238.049511		94238.50c	1.1952E-09		PU238	5.43E+00	238.049511		94238.50c	1.1952E-09	
283		PU239	9.03E+03	239.052146		94239.55c	1.9793E-06		PU239	9.03E+03	239.052146		94239.55c	1.9793E-06	
284		PU240	3.21E+02	240.053882		94240.50c	7.0065E-08		PU240	3.21E+02	240.053882		94240.50c	7.0065E-08	
285		O	0	15.994915		SUM 8016.53c	4.0662E-02		O	0	15.994915		8016.53c	4.0422E-02	
286		H		1.00782519		1001.53c	1.6059E-02		H		1.00782519		1001.53c	1.6603E-02	
287		O		15.994915					O		15.994915				
288		O		15.994915					O		15.994915				
289		Na		22.9897707		11023.50c	3.9366E-04		Na		22.9897707		11023.50c	3.9366E-04	
290		Mg		24.312		12000.50c	2.3128E-04		Mg		24.312		12000.50c	2.3128E-04	
291		Al		26.9815389		13027.50c	2.6070E-03		Al		26.9815389		13027.50c	2.6070E-03	
292		Si		28.086		14000.50c	1.1406E-02		Si		28.086		14000.50c	1.1406E-02	
293		K		39.102		19000.50c	5.5591E-04		K		39.102		19000.50c	5.5591E-04	
294		Ca		40.08		20000.50c	5.6949E-04		Ca		40.08		20000.50c	5.6949E-04	
295		Fe		55.847		26000.55c	1.4037E-04		Fe		55.847		26000.55c	1.4037E-04	
296		TOTAL	8864496.623				7.48343E-02		TOTAL	8864496.62				7.48814E-02	
297															
298		Far Field Criticality - 8% UO2 in beginning - 40% Porosity Tuff w/ water - Extended													
299			Tuff Porosity=	40%		Years Critical	10000								
300			Volume	11494000.00		UO2 added	0.0104783327								
301			UO2%	8%	T=265 C den=	0.776	Number								
302		ISOTOPE	Gm/Critical	Aw	Wt%	MCNP ID	Density								
303		SM149	8.02E+00	148.91718		62149.50c	2.8219E-09								
304	*	EU151	2.77E+01	150.919838		63151.55c	9.6170E-09								
305		ND143	5.30E+02	142.909779		60143.50c	1.9432E-07								
306		RH103	2.22E+02	102.905511		45103.50c	1.1304E-07								
307		XE131	2.49E+02	130.905069		54131.50c	9.9667E-08								
308		CS133	5.81E+02	132.905355		55133.50c	2.2906E-07								
309		SM147	2.14E+02	146.914867		62147.50c	7.6323E-08								
310		TC99	3.87E+02	98.90628		43099.50c	2.0502E-07								
311		GD155	8.59E-01	154.922664		64155.50c	2.9053E-10								
312		ND145	3.64E+02	144.912538		60145.50c	1.3161E-07								
313		SM152	3.8E+01	151.919756		62152.50c	1.3106E-08								
314		MO95	3.94E+02	94.905839		42095.50c	2.1753E-07								
315	*	CD(113)	9.01E+00	112.4		48000.50c	4.2020E-09								

	C	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD
316			SM150	9.83E+01	149.917276		62150.50c	3.4356E-08								
317			KR83	2.78E+01	82.914137		36083.50c	1.7568E-08								
318			CS135	5.81E+02	134.90577		55135.50c	2.2566E-07								
319			GD157	7.02E-02	156.924025		64157.50c	2.3440E-11								
320			RU101	3.40E+02	100.905576		44101.50c	1.7655E-07								
321			EU153	1.90E+01	152.921242		63153.55c	6.5102E-09								
322			PR141	5.30E+02	140.907648	*	59141.50c	1.9708E-07								
323			SM151	6.13E-01	150.919919		62151.50c	2.1282E-10								
324			AG109	1.05E+01	108.904756		47109.50c	5.0518E-09								
325			PD105	9.04E+01	104.90508	*	46105.50c	4.5152E-08								
326			ZR93	2.49E+02	92.905676	*	40093.50c	1.4043E-07								
327			GD152	7.10E+00	151.919788		64152.50c	2.4488E-09								
328			PD108	1.45E+01	107.903894	*	46108.50c	7.0411E-09								
329			U233	2.95E+01	233.039522		92233.50c	6.6328E-09								
330			U234	2.43E+03	234.040904		92234.50c	6.0552E-07								
331			U235	1.56E+05	235.043915		92235.53c	3.9787E-05								
332			U236	4.37E+04	236.045637		92236.50c	1.0899E-05								
333			U238	8.64E+06	238.05077		92238.53c	2.1513E-03								
334			NP237	9.83E+03	237.048056		93237.50c	2.4587E-06								
335			PU238	5.43E+00	238.049511		94238.50c	1.1952E-09								
336			PU239	9.03E+03	239.052146		94239.55c	1.9793E-06								
337			PU240	3.21E+02	240.053882		94240.50c	7.0065E-08								
338			O	0	15.994915		SUM 8016.53c	4.0662E-02								
339			H		1.00782519		1001.53c	1.6059E-02								
340			O		15.994915											
341			O		15.994915											
342			Na		22.9897707		11023.50c	3.9366E-04								
343			Mg		24.312		12000.50c	2.3128E-04								
344			Al		26.9815389		13027.50c	2.6070E-03								
345			Si		28.086		14000.50c	1.1406E-02								
346			K		39.102		19000.50c	5.5591E-04								
347			Ca		40.08		20000.50c	5.6949E-04								
348			Fe		55.847		26000.55c	1.4037E-04								
349			TOTAL	8866338.8062				7.48351E-02								

Internal Criticality Radionuclide Inventory Comparisons											
					Total Ci of 36 Isotopes per assembly						
	30	400	15000	16000	20000	25000	45000	65000			
PWR Thermal/Shielding DBF, Decay Only					1.73E+02						
PWR Criticality DBF, Decay Only	1.18E+04	1.14E+03	1.45E+02	1.40E+02	1.20E+02	9.80E+01	5.30E+01	3.20E+01			
PWR Criticality DBF, 1000 yr Criticality				1.50E+02			5.40E+01	3.30E+01			
PWR Criticality DBF, 5000 yr Criticality					1.40E+02		5.50E+01	3.30E+01			
PWR Criticality DBF, 10000 yr Criticality						1.20E+02	5.80E+01	3.50E+01			
					Total Ci of 36 TSPA 95 Isotopes Per Unit Burnup						
	Incremental					Age of Fuel (years)					
PWR Thermal/Shielding DBF, Decay Only	Burnup (GWd)	30	400	15000	16000	20000	25000	45000	65000		
PWR Criticality DBF, Decay Only	9.280	1274.58	122.40	15.60	15.09	12.93	10.56	5.71	3.45		
PWR Criticality DBF, 1000 yr Criticality	0.038				263.16			26.32	26.32		
PWR Criticality DBF, 5000 yr Criticality	0.190					105.40		10.54	5.27		
PWR Criticality DBF, 10000 yr Criticality	0.380						57.97	13.17	7.90		

	PWR DBF ISOTOPE ========	Imported Data from CDB-R Therm/Shld decay only 20000 yrs CURIES/MTIHM ==========	(Ci/MTHM*.464) CURIES/ASSY	PWR Crit. DBF Isotopes	From Ref. 5.53 16000 yr 1k crit	20000 yr 5k crit	25000 yr 10k crit	45000 yr 1k crit	5k crit
	AC227	6.77E-03	3.14E-03	ac227	4.9E-03	8.8E-03	1.4E-02	1.0E-02	1.2E-02
	AM241	1.45E-01	6.74E-02	am241	2.6E+00	2.7E+00	2.1E+00	2.0E-04	1.9E-04
	AM242M	7.23E-39	3.35E-39	am242m	2.0E-03	2.4E-03	1.9E-03	0.0E+00	0.0E+00
	AM243	5.67E+00	2.63E+00	am243	4.8E-01	4.4E-01	4.1E-01	3.1E-02	4.2E-02
	C 14	1.45E-01	6.71E-02	c 14	4.9E-06	3.5E-06	2.4E-06	1.5E-07	1.7E-07
	CM244	1.19E-10	5.51E-11	cm244	1.7E-02	1.6E-02	1.5E-02	0.0E+00	0.0E+00
	CM245	1.45E-01	6.73E-02	cm245	2.1E-03	1.4E-03	8.8E-04	2.0E-04	1.9E-04
	CM246	1.04E-02	4.80E-03	cm246	9.6E-05	7.4E-05	5.2E-05	1.4E-06	1.9E-06
	CS135	6.90E-01	3.20E-01	cs135	2.0E-01	2.1E-01	2.2E-01	2.0E-01	2.1E-01
	I129	4.50E-02	2.09E-02	i129	8.8E-03	9.0E-03	9.2E-03	8.8E-03	9.0E-03
	NB 93M	2.83E+00	1.31E+00	nb 93m	3.5E-01	3.5E-01	3.6E-01	3.4E-01	3.5E-01
	NB 94	7.40E-01	3.43E-01	nb 94	1.9E-05	4.1E-05	7.4E-05	7.1E-06	1.8E-05
	NP237	1.75E+00	8.10E-01	np237	3.8E-01	3.8E-01	3.9E-01	3.8E-01	3.8E-01
	PA231	6.77E-03	3.14E-03	pa231	4.9E-03	8.8E-03	1.4E-02	1.0E-02	1.2E-02
	PB210	5.10E-01	2.37E-01	pb210	8.0E-02	1.0E-01	1.3E-01	2.1E-01	2.2E-01
	PD107	1.66E-01	7.68E-02	pd107	2.6E-02	2.7E-02	2.7E-02	2.6E-02	2.7E-02
	PU238	1.42E-38	6.59E-39	pu238	2.9E+00	3.0E+00	3.1E+00	0.0E+00	0.0E+00
	PU239	2.44E+02	1.13E+02	pu239	1.0E+02	9.6E+01	8.7E+01	4.5E+01	4.7E+01
	PU240	8.62E+01	4.00E+01	pu240	2.9E+01	2.3E+01	1.8E+01	1.4E+00	1.7E+00
	PU241	1.45E-01	6.74E-02	pu241	3.2E+00	2.6E+00	2.1E+00	2.0E-04	1.9E-04
	PU242	2.45E+00	1.14E+00	pu242	2.7E-01	2.7E-01	2.6E-01	2.6E-01	2.5E-01
	RA226	5.10E-01	2.37E-01	ra226	8.0E-02	1.0E-01	1.3E-01	2.1E-01	2.2E-01
	RA228	4.65E-07	2.16E-07	ra228	9.0E-08	1.1E-07	1.5E-07	2.8E-07	2.8E-07
	SE 79	4.77E-01	2.21E-01	se 79	1.4E-01	1.3E-01	1.2E-01	7.5E-02	7.7E-02
	SM151	0.00E+00	0.00E+00	sm151	7.9E-01	8.0E-01	8.1E-01	0.0E+00	0.0E+00
	SN126	9.83E-01	4.56E-01	sn126	1.3E-01	1.2E-01	1.2E-01	1.0E-01	1.0E-01
	TC 99	1.70E+01	7.90E+00	tc 99	3.8E+00	3.8E+00	3.8E+00	3.4E+00	3.5E+00
	TH229	7.91E-02	3.67E-02	th229	1.1E-02	1.6E-02	2.3E-02	5.1E-02	5.1E-02
	TH230	5.71E-01	2.65E-01	th230	9.2E-02	1.1E-01	1.4E-01	2.2E-01	2.3E-01
	TH232	4.64E-07	2.15E-07	th232	9.0E-08	1.1E-07	1.5E-07	2.8E-07	2.8E-07
	U233	1.44E-01	6.66E-02	u233	2.5E-02	3.1E-02	3.7E-02	6.7E-02	6.7E-02
	U234	3.39E+00	1.57E+00	u234	6.7E-01	6.9E-01	7.2E-01	6.3E-01	6.6E-01
	U235	2.23E-02	1.03E-02	u235	1.6E-02	1.6E-02	1.6E-02	1.8E-02	1.8E-02
	U236	5.30E-01	2.46E-01	u236	1.3E-01	1.3E-01	1.4E-01	1.3E-01	1.4E-01
	U238	3.11E-01	1.44E-01	u238	1.5E-01	1.5E-01	1.5E-01	1.5E-01	1.5E-01
	ZR 93	2.97E+00	1.38E+00	zr 93	3.5E-01	3.5E-01	3.6E-01	3.4E-01	3.5E-01
	36 TSPA Total	3.73E+02	1.73E+02		1.5E+02	1.4E+02	1.2E+02	5.4E+01	5.5E+01

								decay only				
	65000 yr			Ref. 5.53	Ref. 5.53	Ref. 5.53	Ref. 5.54	Ref. 5.54	Ref. 5.54	Ref. 5.54	Ref. 5.54
10k crit	1k crit	5k crit	10k crit	30 yr	400 yr	15000 yr	16000 yr	20000 yr	25000 yr	45000 yr	65000 yr
1.5E-02	1.3E-02	1.4E-02	1.6E-02	1.1E-05	1.2E-04	4.0E-03	4.3E-03	5.2E-03	6.3E-03	1.0E-02	1.3E-02
1.7E-04	3.9E-05	3.6E-05	3.4E-05	1.1E+03	7.9E+02	2.4E-03	2.2E-03	1.6E-03	1.1E-03	2.0E-04	3.9E-05
0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E+00	6.3E-01	4.6E-32	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
6.3E-02	4.8E-03	6.4E-03	9.5E-03	2.0E+00	1.9E+00	4.9E-01	4.5E-01	3.1E-01	1.9E-01	2.9E-02	4.5E-03
2.1E-07	1.3E-08	1.5E-08	1.9E-08	3.3E-05	3.2E-05	5.4E-06	4.8E-06	3.0E-06	1.6E-06	1.4E-07	1.3E-08
0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E+01	2.7E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
1.7E-04	3.9E-05	3.6E-05	3.4E-05	7.9E-03	7.6E-03	2.3E-03	2.1E-03	1.5E-03	1.0E-03	2.0E-04	3.9E-05
2.8E-06	7.3E-08	1.0E-07	1.5E-07	9.2E-04	8.7E-04	1.0E-04	8.8E-05	4.9E-05	2.4E-05	1.3E-06	6.7E-08
2.2E-01	2.0E-01	2.1E-01	2.2E-01	2.0E-01	2.0E-01	2.0E-01	2.0E-01	2.0E-01	2.0E-01	2.0E-01	2.0E-01
9.2E-03	8.8E-03	9.0E-03	9.2E-03	8.8E-03	8.8E-03	8.8E-03	8.8E-03	8.8E-03	8.8E-03	8.8E-03	8.8E-03
3.6E-01	3.4E-01	3.5E-01	3.5E-01	2.6E-01	3.5E-01	3.5E-01	3.5E-01	3.5E-01	3.4E-01	3.4E-01	3.4E-01
3.7E-05	3.6E-06	8.9E-06	1.9E-05	2.3E-05	2.3E-05	1.4E-05	1.4E-05	1.2E-05	1.0E-05	5.0E-06	2.5E-06
3.9E-01	3.8E-01	3.8E-01	3.8E-01	9.7E-02	2.2E-01	3.8E-01	3.8E-01	3.8E-01	3.8E-01	3.8E-01	3.8E-01
1.5E-02	1.3E-02	1.4E-02	1.6E-02	2.2E-05	1.3E-04	4.0E-03	4.3E-03	5.2E-03	6.3E-03	1.0E-02	1.3E-02
2.2E-01	2.8E-01	2.9E-01	3.1E-01	2.9E-07	1.6E-04	7.5E-02	8.0E-02	1.0E-01	1.3E-01	2.1E-01	2.8E-01
2.7E-02	2.6E-02	2.7E-02	2.7E-02	2.6E-02	2.6E-02	2.6E-02	2.6E-02	2.6E-02	2.6E-02	2.6E-02	2.6E-02
0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E+02	2.3E+01	4.6E-32	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
4.9E+01	2.6E+01	2.6E+01	2.8E+01	1.6E+02	1.6E+02	1.1E+02	1.0E+02	9.2E+01	8.0E+01	4.5E+01	2.5E+01
2.2E+00	1.7E-01	2.0E-01	2.7E-01	1.5E+02	1.5E+02	3.1E+01	2.8E+01	1.9E+01	1.1E+01	1.3E+00	1.6E-01
1.7E-04	3.9E-05	3.6E-05	3.4E-05	9.8E+03	7.8E-03	2.3E-03	2.1E-03	1.5E-03	1.0E-03	2.0E-04	3.9E-05
2.5E-01	2.5E-01	2.5E-01	2.4E-01	2.8E-01	2.8E-01	2.7E-01	2.7E-01	2.7E-01	2.7E-01	2.6E-01	2.5E-01
2.2E-01	2.8E-01	2.9E-01	3.1E-01	1.1E-06	1.8E-04	7.5E-02	8.0E-02	1.0E-01	1.3E-01	2.1E-01	2.8E-01
2.8E-07	4.1E-07	4.2E-07	4.2E-07	1.1E-10	1.8E-09	8.4E-08	9.0E-08	1.1E-07	1.5E-07	2.8E-07	4.1E-07
7.9E-02	4.9E-02	5.1E-02	5.2E-02	1.9E-01	1.9E-01	1.4E-01	1.4E-01	1.3E-01	1.1E-01	7.5E-02	4.9E-02
0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E+02	7.5E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
1.1E-01	8.9E-02	9.1E-02	9.3E-02	1.4E-01	1.4E-01	1.3E-01	1.2E-01	1.2E-01	1.2E-01	1.0E-01	8.8E-02
3.5E+00	3.2E+00	3.3E+00	3.3E+00	3.9E+00	3.9E+00	3.8E+00	3.7E+00	3.7E+00	3.6E+00	3.4E+00	3.2E+00
5.1E-02	7.8E-02	7.8E-02	7.8E-02	4.8E-08	4.5E-06	1.0E-02	1.2E-02	1.6E-02	2.3E-02	5.1E-02	7.8E-02
2.3E-01	2.9E-01	3.0E-01	3.1E-01	1.6E-04	2.3E-03	8.7E-02	9.2E-02	1.1E-01	1.4E-01	2.2E-01	2.9E-01
2.8E-07	4.1E-07	4.2E-07	4.2E-07	1.5E-10	1.8E-09	8.4E-08	9.0E-08	1.1E-07	1.5E-07	2.8E-07	4.1E-07
6.7E-02	9.3E-02	9.3E-02	9.3E-02	2.2E-05	2.9E-04	2.3E-02	2.5E-02	3.1E-02	3.9E-02	6.7E-02	9.3E-02
6.9E-01	6.1E-01	6.3E-01	6.6E-01	5.4E-01	6.8E-01	6.7E-01	6.7E-01	6.6E-01	6.5E-01	6.3E-01	6.0E-01
1.7E-02	1.8E-02	1.8E-02	1.8E-02	1.4E-02	1.4E-02	1.6E-02	1.6E-02	1.6E-02	1.6E-02	1.8E-02	1.8E-02
1.4E-01	1.4E-01	1.4E-01	1.4E-01	9.2E-02	9.3E-02	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01
1.5E-01	1.5E-01	1.5E-01	1.5E-01	1.5E-01	1.5E-01	1.5E-01	1.5E-01	1.5E-01	1.5E-01	1.5E-01	1.5E-01
3.6E-01	3.4E-01	3.5E-01	3.5E-01	3.5E-01	3.5E-01	3.5E-01	3.5E-01	3.5E-01	3.4E-01	3.4E-01	3.4E-01
5.8E+01	3.3E+01	3.3E+01	3.5E+01	1.2E+04	1.1E+03	1.4E+02	1.4E+02	1.2E+02	9.8E+01	5.3E+01	3.2E+01

```
1mcnp     version 4a    ld=10/01/93                          07/26/96 08:40:39
*************************************************************************          probid =   07/26/96 08:40:39
 inp=sp40a outp=sp40a.0

      Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40a) 0 Years  300K
      C    Calico Hills Tuff 1.5095 g/cc  .40 porosity -  sphere surrounded by tuff
      C    Water and UO2 offset each other in porous space
      C     CELL SPECIFICATIONS
      C     INNER WATER REGION
      1     1  8.20735-2   -1   IMP:N=1
      2     2  8.42302-2  1 -2  IMP:N=1
      C     OUTSIDE WORLD
      3     0  2   IMP:N=0

      C     SURFACE SPECIFICATIONS
      1     SO  140       $ INNER FUEL ZONE
      2     SO  200       $ TUFF REFLECTOR

      MODE  N
      KCODE  4000 1. 30 130
      C     KSRC   0 0 1  0 0 10  0 0 -20  0 0 29  0 20 5  0 0 -5  -10 0 -10
      C       0 -5 -20 -10 0 -13 0 -10 14 0 0 -15 -10 -5  -16 5 5 0 10 10 17
      C      MATERIAL SPECIFICATIONS
      c        32 vol% water in calico Hills tuff - 8 vol% UO2
      c        3.0% Original Enrichment/ 20 GWD/MT decayed to Uranium isotopes
      m1       1001.50c 2.1396-2   8016.50c 4.2818-2  11023.50c 3.9366-4
               12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
               19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
               92234.50c 4.6944-7  92235.50c 3.8253-5  92236.50c 9.1532-6
               92238.50c 1.9055-3  93237.50c 2.1829-6
      mt1      lwtr.01t
      c        40 vol% water in calico Hills tuff
      m2       1001.50c 2.6744-2   8016.50c 4.1582-2  11023.50c 3.9366-4
               12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
               19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
      mt2      lwtr.01t
      PRINT
1     initial source from file   srctp

 original number of points                          4015
    points not in any cell                     0
    points in cells of zero importance         0
    points in void cells                       0
    points in ambiguous cells                  0
 total points rejected                                0
 points remaining                                  4015
 points after expansion or contraction             4001
 nominal source size                               4000

 initial guess for k(eff.)                     1.000000

 cycles to skip before tallying                      30

 number of keff cycles that can be stored           260

 total fission nubar data are being used.
1material composition                                                    print table 40

 material
  number     component nuclide, atom fraction
```

1	1001,	.26069	8016,	.52170	11023,	.00480	12000,	.00282
	13027,	.03176	14000,	.13897	19000,	.00677	20000,	.00694
	26000,	.00171	92234,	.00001	92235,	.00047	92236,	.00011
	92238,	.02322	93237,	.00003				

associated thermal s(a,b) data sets: lwtr.01t

2	1001,	.31751	8016,	.49367	11023,	.00467	12000,	.00275
	13027,	.03095	14000,	.13542	19000,	.00660	20000,	.00676
	26000,	.00167						

associated thermal s(a,b) data sets: lwtr.01t

material number component nuclide, mass fraction

1	1001,	.01323	8016,	.42028	11023,	.00555	12000,	.00345
	13027,	.04317	14000,	.19658	19000,	.01334	20000,	.01401
	26000,	.00481	92234,	.00007	92235,	.00552	92236,	.00133
	92238,	.27836	93237,	.00032				
2	1001,	.02344	8016,	.57845	11023,	.00787	12000,	.00489
	13027,	.06118	14000,	.27861	19000,	.01890	20000,	.01985
	26000,	.00682						

1cell volumes and masses print table 50

cell		atom density	gram density	input volume	calculated volume	mass	pieces	reason volume not calculated
1	1	8.20735E-02	2.70602E+00	.00000E+00	1.14940E+07	3.11031E+07	1	
2	2	8.42302E-02	1.90934E+00	.00000E+00	2.20163E+07	4.20366E+07	1	
3	3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	0	infinite

1problem summary

run terminated when 130 kcode cycles were done.

\+ 07/26/96 11:15:45

Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40a) 0 Years 300K probid = 07/26/96 08:40:39

0

neutron creation	tracks	weight (per source	energy particle)	neutron loss	tracks	weight (per source	energy particle)
source	519712	1.0006E+00	2.0304E+00	escape	71	7.8193E-05	4.8272E-05
				energy cutoff	0	0.	0.
				time cutoff	0	0.	0.
weight window	0	0.	0.	weight window	0	0.	0.
cell importance	0	0.	0.	cell importance	0	0.	0.
weight cutoff	0	5.8391E-02	2.5613E-05	weight cutoff	519894	5.8323E-02	2.4633E-05
energy importance	0	0.	0.	energy importance	0	0.	0.
dxtran	0	0.	0.	dxtran	0	0.	0.
forced collisions	0	0.	0.	forced collisions	0	0.	0.
exp. transform	0	0.	0.	exp. transform	0	0.	0.
upscattering	0	0.	1.9735E-07	downscattering	0	0.	1.9368E+00
				capture	0	6.0074E-01	5.8408E-02
(n,xn)	505	7.4376E-04	5.4034E-04	loss to (n,xn)	252	3.7112E-04	3.1107E-03
fission	0	0.	0.	loss to fission	0	4.0018E-01	3.2580E-02
total	520217	1.0597E+00	2.0310E+00	total	520217	1.0597E+00	2.0310E+00

number of neutrons banked 253 average lifetime, shakes cutoffs

neutron tracks per source particle 1.0010E+00 escape 2.0960E+04 tco 1.0000E+34

neutron collisions per source particle	7.7830E+01	capture	9.3384E+03	eco	.0000E+00
total neutron collisions	40449082	capture or escape	9.3393E+03	wc1	-5.0000E-01
net multiplication	1.0004E+00 .0000	any termination	1.0085E+04	wc2	-2.5000E-01

computer time so far in this run	89.99 minutes	maximum number ever in bank	2
computer time in mcrun	89.95 minutes	bank overflows to backup file	0
source particles per minute	5.7777E+03	field length	0
random numbers generated	466116603	most random numbers used was	12366 in history 242791

range of sampled source weights = 9.5102E-01 to 1.0692E+00

1neutron activity in each cell print table 126

cell		tracks entering	population	collisions	collisions * weight (per history)	number weighted energy	flux weighted energy	average track weight (relative)	average track mfp (cm)
1	1	577532	519965	35423477	4.9823E+01	2.5818E-04	5.2493E-01	8.1462E-01	2.1899E+00
2	2	75241	36493	5025605	5.1939E+00	4.7126E-05	2.2736E-01	5.9409E-01	1.3345E+00

1keff results for: Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40a) 0 Years 300K probid = 07/26/96 08:40:39

the initial fission neutron source distribution was read from the srctp file named srctp .
the criticality problem was scheduled to skip 30 cycles and run a total of 130 cycles with nominally 4000 neutrons per cycle.
this problem has run 30 inactive cycles with 120293 neutron histories and 100 active cycles with 399419 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 519712 fission neutron source histories.
all cells with fissionable material were sampled and had fission neutron source points.

the results of the w test for normality applied to the individual collision, absorption, and track-length keff cycle values are:

the k(collision) cycle values appear normally distributed at the 95 percent confidence level
the k(absorption) cycle values appear normally distributed at the 95 percent confidence level
the k(trk length) cycle values appear normally distributed at the 95 percent confidence level

---

the final estimated combined collision/absorption/track-length keff = .97755 with an estimated standard deviation of .00081

the estimated 68, 95, & 99 percent keff confidence intervals are .97674 to .97835, .97593 to .97916, and .97541 to .97968

the estimated collision/absorption neutron removal lifetime = 9.36E-05 seconds with an estimated standard deviation of 1.75E-07

---

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.97699	.00138	.97561 to .97838	.97424 to .97974	.97334 to .98064	
absorption	.97847	.00110	.97736 to .97957	.97627 to .98066	.97556 to .98138	
track length	.97663	.00134	.97529 to .97797	.97397 to .97929	.97310 to .98016	
col/absorp	.97788	.00082	.97706 to .97870	.97624 to .97952	.97571 to .98005	-.1060
abs/trk len	.97770	.00080	.97690 to .97851	.97610 to .97930	.97558 to .97983	-.1259
col/trk len	.97645	.00135	.97510 to .97780	.97376 to .97914	.97288 to .98002	.9838
col/abs/trk len	.97755	.00081	.97674 to .97835	.97593 to .97916	.97541 to .97968	

```
1mcnp     version 4a    ld=10/01/93                          08/23/96 10:15:41
 ************************************************************************                probid =   08/23/96 10:15:41
 inp=sp40a2 outp=sp40a20

      Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40a2) 0 Years  300K
      C    Calico Hills Tuff 1.5095 g/cc  .40 porosity -  sphere surrounded by tuff
      C    Water and UO2 offset each other in porous space  50 C uniform
      C     CELL SPECIFICATIONS
      C     INNER WATER REGION
      1     1  8.17526-2   -1   IMP:N=1
      2     2  8.38290-2  1 -2  IMP:N=1
      C     OUTSIDE WORLD
      3     0  2   IMP:N=0

      C     SURFACE SPECIFICATIONS
      1     SO  140       $ INNER FUEL ZONE
      2     SO  200       $ TUFF REFLECTOR

      MODE  N
      KCODE  4000 1. 30 130
      C     KSRC   0 0 1  0 0 10  0 0 -20  0 0 29  0 20 5  0 0 -5  -10 0 -10
      C       0 -5 -20 -10 0 -13 0 -10 14 0 0 -15 -10 -5  -16 5 5 0 10 10 17
      C      MATERIAL SPECIFICATIONS
      c        32 (x .99 at 50 C) vol% water in calico Hills tuff - 8 vol% UO2
      c        3.0% Original Enrichment/ 20 GWD/MT decayed to Uranium isotopes
      m1       1001.50c 2.1182-2   8016.50c 4.2711-2  11023.50c 3.9366-4
               12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
               19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
               92234.50c 4.6944-7  92235.50c 3.8253-5  92236.50c 9.1532-6
               92238.50c 1.9055-3  93237.50c 2.1829-6
      mt1      lwtr.01t
      c        40 (x .99 at 50 C) vol% water in calico Hills tuff
      m2       1001.50c 2.6477-2   8016.50c 4.1448-2  11023.50c 3.9366-4
               12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
               19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
      mt2      lwtr.01t
      PRINT
1     initial source from file   srctp

 original number of points                          4048
    points not in any cell                     0
    points in cells of zero importance         0
    points in void cells                       0
    points in ambiguous cells                  0
 total points rejected                                0
 points remaining                                   4048
 points after expansion or contraction              3997
 nominal source size                                4000

 initial guess for k(eff.)                     1.000000

 cycles to skip before tallying                       30

 number of keff cycles that can be stored            260

 total fission nubar data are being used.
1material composition                                                    print table 40

 material
  number     component nuclide, atom fraction
```

1	1001,	.25910	8016,	.52244	11023,	.00482	12000,	.00283
	13027,	.03189	14000,	.13952	19000,	.00680	20000,	.00697
	26000,	.00172	92234,	.00001	92235,	.00047	92236,	.00011
	92238,	.02331	93237,	.00003				

associated thermal s(a,b) data sets: lwtr.01t

2	1001,	.31585	8016,	.49444	11023,	.00470	12000,	.00276
	13027,	.03110	14000,	.13606	19000,	.00663	20000,	.00679
	26000,	.00167						

associated thermal s(a,b) data sets: lwtr.01t

material number — component nuclide, mass fraction

1	1001,	.01312	8016,	.41972	11023,	.00556	12000,	.00345
	13027,	.04322	14000,	.19681	19000,	.01335	20000,	.01402
	26000,	.00482	92234,	.00007	92235,	.00552	92236,	.00133
	92238,	.27869	93237,	.00032				
2	1001,	.02326	8016,	.57779	11023,	.00789	12000,	.00490
	13027,	.06130	14000,	.27919	19000,	.01894	20000,	.01989
	26000,	.00683						

1cell volumes and masses print table 50

cell		atom density	gram density	input volume	calculated volume	mass	pieces	reason volume not calculated
1	1	8.17526E-02	2.70282E+00	.00000E+00	1.14940E+07	3.10664E+07	1	
2	2	8.38290E-02	1.90533E+00	.00000E+00	2.20163E+07	4.19483E+07	1	
3	3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	0	infinite

1problem summary

run terminated when 130 kcode cycles were done.

+ 08/23/96 13:47:25

Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40a2) 0 Years 300K probid = 08/23/96 10:15:41

0

neutron creation	tracks	weight (per source	energy particle)	neutron loss	tracks	weight (per source	energy particle)
source	518810	1.0023E+00	2.0305E+00	escape	113	1.2903E-04	1.2917E-04
				energy cutoff	0	0.	0.
				time cutoff	0	0.	0.
weight window	0	0.	0.	weight window	0	0.	0.
cell importance	0	0.	0.	cell importance	0	0.	0.
weight cutoff	0	5.8402E-02	3.2972E-05	weight cutoff	518942	5.8636E-02	3.3741E-05
energy importance	0	0.	0.	energy importance	0	0.	0.
dxtran	0	0.	0.	dxtran	0	0.	0.
forced collisions	0	0.	0.	forced collisions	0	0.	0.
exp. transform	0	0.	0.	exp. transform	0	0.	0.
upscattering	0	0.	1.9681E-07	downscattering	0	0.	1.9372E+00
				capture	0	6.0199E-01	5.8119E-02
(n,xn)	488	7.1361E-04	4.8042E-04	loss to (n,xn)	243	3.5546E-04	2.9646E-03
fission	0	0.	0.	loss to fission	0	4.0030E-01	3.2620E-02
total	519298	1.0614E+00	2.0310E+00	total	519298	1.0614E+00	2.0310E+00

number of neutrons banked 245 average lifetime, shakes cutoffs

neutron tracks per source particle 1.0009E+00 escape 2.1238E+04 tco 1.0000E+34

neutron collisions per source particle	7.7862E+01	capture	9.3706E+03	eco	.0000E+00
total neutron collisions	40395375	capture or escape	9.3722E+03	wc1	-5.0000E-01
net multiplication	1.0004E+00 .0000	any termination	1.0137E+04	wc2	-2.5000E-01

computer time so far in this run	89.65 minutes	maximum number ever in bank	2
computer time in mcrun	89.61 minutes	bank overflows to backup file	0
source particles per minute	5.7894E+03	field length	0
random numbers generated	465318405	most random numbers used was	12040 in history 376270

range of sampled source weights = 9.2915E-01 to 1.0650E+00

1neutron activity in each cell print table 126

cell		tracks entering	population	collisions	collisions * weight (per history)	number weighted energy	flux weighted energy	average track weight (relative)	average track mfp (cm)
1	1	578169	519055	35184913	4.9712E+01	2.6018E-04	5.2471E-01	8.1658E-01	2.2038E+00
2	2	77612	37548	5210462	5.3914E+00	4.6338E-05	2.2143E-01	5.9394E-01	1.3362E+00
total		655781	556603	40395375	5.5103E+01				

1keff results for: Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40a2) 0 Years 300K probid = 08/23/96 10:15:41

the initial fission neutron source distribution was read from the srctp file named srctp .
the criticality problem was scheduled to skip 30 cycles and run a total of 130 cycles with nominally 4000 neutrons per cycle.
this problem has run 30 inactive cycles with 119746 neutron histories and 100 active cycles with 399064 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 518810 fission neutron source histories.
all cells with fissionable material were sampled and had fission neutron source points.

the results of the w test for normality applied to the individual collision, absorption, and track-length keff cycle values are:

the k(collision) cycle values appear normally distributed at the 95 percent confidence level
the k(absorption) cycle values appear normally distributed at the 95 percent confidence level
the k(trk length) cycle values appear normally distributed at the 95 percent confidence level

---

the final estimated combined collision/absorption/track-length keff = .97716 with an estimated standard deviation of .00073

the estimated 68, 95, & 99 percent keff confidence intervals are .97643 to .97789, .97571 to .97861, and .97524 to .97909

the estimated collision/absorption neutron removal lifetime = 9.37E-05 seconds with an estimated standard deviation of 1.80E-07

---

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.97733	.00132	.97600 to .97866	.97469 to .97997	.97383 to .98083	
absorption	.97701	.00099	.97602 to .97800	.97504 to .97897	.97440 to .97961	
track length	.97708	.00134	.97573 to .97842	.97440 to .97975	.97353 to .98062	
col/absorp	.97713	.00072	.97641 to .97785	.97569 to .97857	.97522 to .97904	-.1824
abs/trk len	.97703	.00073	.97630 to .97776	.97558 to .97849	.97510 to .97896	-.1692
col/trk len	.97731	.00134	.97597 to .97865	.97464 to .97998	.97377 to .98085	.9845

col/abs/trk len	.97716	.00073	.97643 to .97789	.97571 to .97861	.97524 to .97909

```
1mcnp     version 4a    ld=10/01/93                          07/26/96 12:01:33
 ************************************************************************                probid =   07/26/96 12:01:33
 inp=sp40a1 outp=sp40a1.0

     1-        Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40a1) 0 Years  600K
     2-        C    Calico Hills Tuff 1.5095 g/cc  .40 porosity -  sphere surrounded by tuff
     3-        C    Water and UO2 offset each other in porous space / H2O @ 500k
     4-        C     CELL SPECIFICATIONS
     5-        C     INNER WATER REGION
     6-        1     1  7.48846-2   -1   IMP:N=1
     7-        2     2  8.38290-2  1 -2  IMP:N=1
     8-        C     OUTSIDE WORLD
     9-        3     0  2   IMP:N=0
    10-
    11-        C     SURFACE SPECIFICATIONS
    12-        1     SO  140       $ INNER FUEL ZONE
    13-        2     SO  200       $ TUFF REFLECTOR
    14-
    15-        MODE  N
    16-        KCODE  4000 1. 30 130
    17-        C     KSRC   0 0 1  0 0 10  0 0 -20  0 0 29  0 20 5  0 0 -5  -10 0 -10
    18-        C       0 -5 -20 -10 0 -13 0 -10 14 0 0 -15 -10 -5  -16 5 5 0 10 10 17
    19-        C      MATERIAL SPECIFICATIONS
    20-        c        32 (x .776 at 265 C) vol% water in calico Hills tuff - 8 vol% UO2
    21-        c        3.0% Original Enrichment/ 20 GWD/MT decayed to Uranium isotopes
    22-        m1       1001.53c 1.6603-2   8016.53c 4.0422-2  11023.50c 3.9366-4
    23-                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
    24-                19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
    25-                92234.50c 4.6944-7  92235.53c 3.8253-5  92236.50c 9.1532-6
    26-                92238.53c 1.9055-3  93237.50c 2.1829-6
    27-        mt1     lwtr.03t
    28-        c        40 (x .99 at 50 C) vol% water in calico Hills tuff
    29-        m2       1001.53c 2.6477-2   8016.53c 4.1448-2  11023.50c 3.9366-4
    30-                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
    31-                19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
    32-        mt2     lwtr.02t
    33-        PRINT
1     initial source from file   srctp

 original number of points                          4001
    points not in any cell                     0
    points in cells of zero importance         0
    points in void cells                       0
    points in ambiguous cells                  0
 total points rejected                                 0
 points remaining                                   4001
 points after expansion or contraction              4000
 nominal source size                                4000

 initial guess for k(eff.)                      1.000000

 cycles to skip before tallying                       30

 number of keff cycles that can be stored            260

 total fission nubar data are being used.

 warning.    lwtr.02t and   lwtr.03t are both called for.
1material composition                                                    print table 40
```

material
number component nuclide, atom fraction

1	1001,	.22172	8016,	.53979	11023,	.00526	12000,	.00309
	13027,	.03481	14000,	.15232	19000,	.00742	20000,	.00760
	26000,	.00187	92234,	.00001	92235,	.00051	92236,	.00012
	92238,	.02545	93237,	.00003				

associated thermal s(a,b) data sets: lwtr.03t

2	1001,	.31585	8016,	.49444	11023,	.00470	12000,	.00276
	13027,	.03110	14000,	.13606	19000,	.00663	20000,	.00679
	26000,	.00167						

associated thermal s(a,b) data sets: lwtr.02t

material
number component nuclide, mass fraction

1	1001,	.01055	8016,	.40755	11023,	.00570	12000,	.00354
	13027,	.04434	14000,	.20193	19000,	.01370	20000,	.01439
	26000,	.00494	92234,	.00007	92235,	.00567	92236,	.00136
	92238,	.28593	93237,	.00033				
2	1001,	.02326	8016,	.57779	11023,	.00789	12000,	.00490
	13027,	.06130	14000,	.27919	19000,	.01894	20000,	.01989
	26000,	.00683						

1cell volumes and masses print table 50

cell		atom density	gram density	input volume	calculated volume	mass	pieces	reason volume not calculated
1	1	7.48846E-02	2.63436E+00	.00000E+00	1.14940E+07	3.02795E+07	1	
2	2	8.38290E-02	1.90533E+00	.00000E+00	2.20163E+07	4.19483E+07	1	
3	3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	0	infinite

1problem summary

run terminated when 130 kcode cycles were done.

+ 07/26/96 14:46:59

Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40a1) 0 Years 600K probid = 07/26/96 12:01:33

0

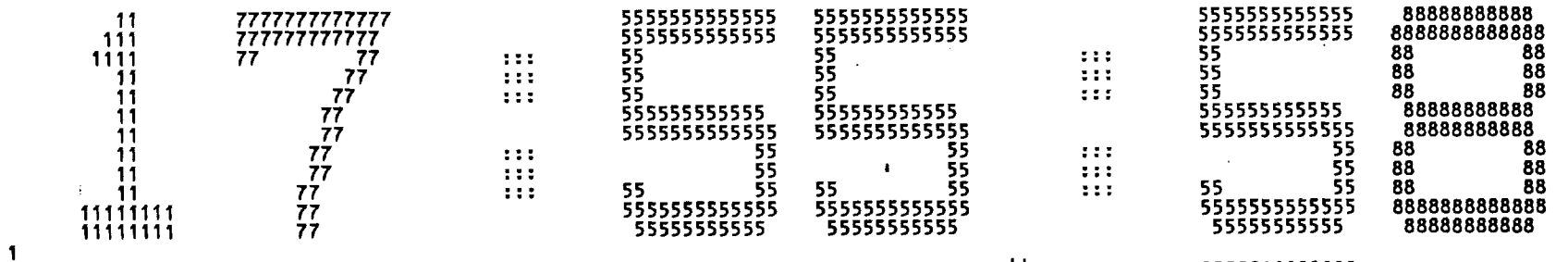
neutron creation	tracks	weight (per source)	energy particle)	neutron loss	tracks	weight (per source)	energy particle)
source	519688	1.0006E+00	2.0277E+00	escape	112	1.1480E-04	1.1651E-04
				energy cutoff	0	0.	0.
				time cutoff	0	0.	0.
weight window	0	0.	0.	weight window	0	0.	0.
cell importance	0	0.	0.	cell importance	0	0.	0.
weight cutoff	0	6.4155E-02	1.7917E-05	weight cutoff	519846	6.4103E-02	3.9674E-05
energy importance	0	0.	0.	energy importance	0	0.	0.
dxtran	0	0.	0.	dxtran	0	0.	0.
forced collisions	0	0.	0.	forced collisions	0	0.	0.
exp. transform	0	0.	0.	exp. transform	0	0.	0.
upscattering	0	0.	3.4039E-07	downscattering	0	0.	1.9255E+00
				capture	0	6.1590E-01	6.2459E-02
(n,xn)	538	7.8906E-04	5.5245E-04	loss to (n,xn)	268	3.9334E-04	3.2773E-03
fission	0	0.	0.	loss to fission	0	3.8503E-01	3.6840E-02
total	520226	1.0655E+00	2.0283E+00	total	520226	1.0655E+00	2.0283E+00

```
  number of neutrons banked                        270        average lifetime, shakes                cutoffs
  neutron tracks per source particle      1.0010E+00          escape            3.0559E+04            tco    1.0000E+34
  neutron collisions per source particle 7.9711E+01          capture           9.5684E+03            eco     .0000E+00
  total neutron collisions                  41424645          capture or escape 9.5708E+03            wc1   -5.0000E-01
  net multiplication                1.0004E+00  .0000         any termination   1.0408E+04            wc2   -2.5000E-01

 computer time so far in this run    95.66 minutes           maximum number ever in bank          2
 computer time in mcrun              95.62 minutes           bank overflows to backup file        0
 source particles per minute            5.4349E+03           field length                         0
 random numbers generated                480822729           most random numbers used was    12386 in history   367999

 range of sampled source weights = 9.0744E-01 to 1.0579E+00
1neutron  activity in each cell                                                                    print table 126

                tracks     population   collisions   collisions     number       flux       average      average
       cell    entering                             * weight     weighted     weighted   track weight   track mfp
                                                  (per history)    energy       energy     (relative)      (cm)

    1     1      599158       519957     34357801    4.8313E+01   3.0916E-04   5.0477E-01   8.0256E-01   2.5043E+00
    2     2      102454        48279      7066844    7.2108E+00   4.6390E-05   1.9975E-01   5.7956E-01   1.3152E+00

    total        701612       568236     41424645    5.5524E+01
1keff results for: Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40a1) 0 Years  600K                probid =   07/26/96 12:01:33

 the initial fission neutron source distribution was read from the srctp file named srctp   .
 the criticality problem was scheduled to skip  30 cycles and run a total of  130 cycles with nominally     4000 neutrons per cycle.
 this problem has run  30 inactive cycles with   119927 neutron histories and  100 active cycles with      399761 neutron histories.

 this calculation has completed the requested number of keff cycles using a total of      519688 fission neutron source histories.
 all cells with fissionable material were sampled and had fission neutron source points.

 the results of the w test for normality applied to the individual collision, absorption, and track-length keff cycle values are:

          the k( collision) cycle values appear normally distributed at the 95 percent confidence level
          the k(absorption) cycle values appear normally distributed at the 95 percent confidence level
          the k(trk length) cycle values appear normally distributed at the 95 percent confidence level

 ------------------------------------------------------------------------------------------------------------------------------
 | the final estimated combined collision/absorption/track-length keff =  .94240 with an estimated standard deviation of  .00099 |
 | the estimated 68, 95, & 99 percent keff confidence intervals are  .94141 to  .94339,  .94042 to  .94437, and  .93978 to  .94502 |
 | the estimated collision/absorption neutron removal lifetime = 9.56E-05 seconds with an estimated standard deviation of 2.03E-07 |
 ------------------------------------------------------------------------------------------------------------------------------

 the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

       keff estimator       keff     standard deviation     68% confidence        95% confidence        99% confidence        corr

           collision      .94224          .00151          .94073 to  .94375     .93924 to  .94524     .93826 to  .94622
          absorption      .94255          .00119          .94136 to  .94375     .94017 to  .94493     .93940 to  .94571
        track length      .94207          .00153          .94054 to  .94361     .93902 to  .94513     .93802 to  .94613
          col/absorp      .94244          .00099          .94145 to  .94342     .94047 to  .94440     .93983 to  .94504     .1015
```

abs/trk len	.94238	.00099	.94139 to .94336	.94042 to .94434	.93978 to .94498	.0842	
col/trk len	.94227	.00152	.94075 to .94379	.93924 to .94529	.93826 to .94628	.9876	
col/abs/trk len	.94240	.00099	.94141 to .94339	.94042 to .94437	.93978 to .94502		

```
1          primary module access and input record ( scale driver - 95/03/29 - 09:06:37 )
-    module sas2h     will be called
       SAS2H: Far-Field Crit based on B&W 15x15, 3.00wt%, 20gwd/mtu 40% H2O/ 8% UO2
       44group     latticecell
       '
       '  mixtures of tuff infinite slabs:
       arbm-ftuff  2.6344 14 0 0 0 1001 1.055 8016 40.755 11023 0.570 12000 0.354
                              13027 4.434 14000 20.193 19000 1.370 20000 1.439
                              26000 0.494 92235 0.567 92234 0.007 92236 0.136
                              92238 28.593 93237 0.033 1 1.0 538    end
       kr-83      1 0 1-20 538 end
       kr-85      1 0 1-20 538 end
       sr-90      1 0 1-20 538 end
        y-89      1 0 1-20 538 end
       mo-95      1 0 1-20 538 end
       zr-93      1 0 1-20 538 end
       zr-94      1 0 1-20 538 end
       zr-95      1 0 1-20 538 end
       nb-94      1 0 1-20 538 end
       tc-99      1 0 1-20 538 end
       rh-103     1 0 1-20 538 end
       rh-105     1 0 1-20 538 end
       ru-101     1 0 1-20 538 end
       ru-106     1 0 1-20 538 end
       pd-105     1 0 1-20 538 end
       pd-108     1 0 1-20 538 end
       ag-109     1 0 1-20 538 end
       sb-124     1 0 1-20 538 end
       xe-131     1 0 1-20 538 end
       xe-132     1 0 1-20 538 end
       xe-135     1 0 1-20 538 end
       xe-136     1 0 1-20 538 end
       cs-134     1 0 1-20 538 end
       cs-135     1 0 1-20 538 end
       cs-137     1 0 1-20 538 end
       ba-136     1 0 1-20 538 end
       la-139     1 0 1-20 538 end
       pr-141     1 0 1-20 538 end
       pr-143     1 0 1-20 538 end
       ce-144     1 0 1-20 538 end
       nd-143     1 0 1-20 538 end
       nd-145     1 0 1-20 538 end
       pm-147     1 0 1-20 538 end
       pm-148     1 0 1-20 538 end
       nd-147     1 0 1-20 538 end
       sm-147     1 0 1-20 538 end
       sm-149     1 0 1-20 538 end
       sm-150     1 0 1-20 538 end
       sm-151     1 0 1-20 538 end
       sm-152     1 0 1-20 538 end
       gd-155     1 0 1-20 538 end
       eu-153     1 0 1-20 538 end
       eu-154     1 0 1-20 538 end
       eu-155     1 0 1-20 538 end
       arbm-tuff1  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                              13027 6.130 14000 27.919 19000 1.894 20000 1.989
                              26000 0.683 2 1.0 323.    end
       arbm-tuff2  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                              13027 6.130 14000 27.919 19000 1.894 20000 1.989
                              26000 0.683 3 1.0 323.    end
```

```
      '
      ' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
      end comp
      '
      ' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
      '
      '  fuel-pin-cell geometry:
      '
      symmslabcell  340.  280. 1 3 281. 2 end
      '
      ' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
      '
      '
      '  assembly and cycle parameters:
      '
      npin/assm=1 fuelngth=280. ncycles=1 nlib/cyc=5 volfueltot=1.1494E7
      printlevel=6 inplevel=0 end
      power=0.004 burn=3.6525e2 down=1.82625e3
         end
0 * normal termination *
1   ooooooooooo    rrrrrrrrrrr    iiiiiiiiiii     ggggggggggg    eeeeeeeeeeee   nn          nn   sssssssssss
   oooooooooooo    rrrrrrrrrrrr   iiiiiiiiiii    gggggggggggg    eeeeeeeeeeee   nnn         nn  sssssssssssss
   oo         oo   rr         rr       ii        gg          gg   ee            nnnn        nn  ss          ss
   oo         oo   rr         rr       ii        gg               ee            nn nn       nn  ss
   oo         oo   rr         rr       ii        gg               ee            nn  nn      nn  ss
   oo         oo   rrrrrrrrrrrr        ii        gg    ggggggg    eeeeeeeee     nn   nn     nn  sssssssssss
   oo         oo   rrrrrrrrrrr         ii        gg    ggggggg    eeeeeeeee     nn    nn    nn   sssssssssss
   oo         oo   rr       rr         ii        gg         gg    ee            nn     nn   nn             ss
   oo         oo   rr        rr        ii        gg         gg    ee            nn      nn  nn             ss
   oo         oo   rr         rr       ii        gg         gg    ee            nn       nnnn  ss          ss
   ooooooooooooo   rr          rr  iiiiiiiiiii    gggggggggggg    eeeeeeeeeeeee  nn         nnn  sssssssssssss
    ooooooooooo    rr          rr  iiiiiiiiiii     gggggggggg    eeeeeeeeeeee   nn          nn   sssssssssss
0

   ddddddddddd      aaaaaaaaa     vv          vv  iiiiiiiiiii     sssssssssss
   ddddddddddddd    aaaaaaaaaa    vv          vv  iiiiiiiiiii    sssssssssssss
   dd          dd   aa          aa  vv          vv      ii       ss          ss
   dd          dd   aa          aa  vv          vv      ii       ss
   dd          dd   aa          aa  vv          vv      ii       ss
   dd          dd   aaaaaaaaaaaaa  vv          vv      ii       sssssssssss
   dd          dd   aaaaaaaaaaaaa   vv        vv       ii        sssssssssss
   dd          dd   aa          aa    vv    vv         ii                ss
   dd          dd   aa          aa     vv  vv          ii                ss
   dd          dd   aa          aa      vvvv           ii       ss       ss
   ddddddddddddd   aa          aa       vv        iiiiiiiiiii    sssssssssss
   ddddddddddddd   aa          aa       v         iiiiiiiiiii     sssssssssss
0

     0000000       88888888888          //  22222222222    88888888888          //   99999999999    666666666666
    000000000     8888888888888        //  2222222222222  8888888888888        //   9999999999999  6666666666666
   00       00    88          88      //   22          22  88          88      //    99          99  66
  00         00   88          88     //    22          22  88          88     //     99          99  66
  00         00   88          88    //     22          22  88          88    //      99          99  66
  00         00    88888888888     //              22     88888888888     //       9999999999999  666666666666
  00         00    88888888888    //           22        88888888888    //         999999999999  6666666666666
  00         00   88          88  //        22           88          88  //                   99  66          66
  00         00   88          88 //      22             88          88 //                    99  66          66
   00       00    88          88//    22               88          88//                     99  66          66
    000000000     8888888888888//  2222222222222      8888888888888//                      99  6666666666666
     0000000       88888888888//  2222222222222       88888888888//                       99   66666666666
```




```
**********************************************************************************
**********************************************************************************
**********************************************************************************
*****                                                                        *****
*****                  program verification information                       *****
*****                                                                        *****
*****                 code system:    scale  version:    4.3                 *****
*****                                                                        *****
**********************************************************************************
**********************************************************************************
*****                                                                        *****
*****                                                                        *****
*****              program:  o0o004                                          *****
*****                                                                        *****
*****         creation date:  03/13/96                                       *****
*****                                                                        *****
*****              library:  /usr1/ornl/Scale/bin                            *****
*****                                                                        *****
*****                                                                        *****
*****            test code:  origens                                         *****
*****                                                                        *****
*****              version:  3.0                                             *****
*****                                                                        *****
*****              jobname:  davis                                           *****
*****                                                                        *****
*****     date of execution:  08/28/96                                       *****
*****                                                                        *****
*****     time of execution:  17:55:58                                       *****
```

```
                        *****                                                                  *****
                        *****                                                                  *****
                        ******************************************************************************
                        ******************************************************************************
                        ******************************************************************************
1
0       -1q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0         dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0             short-lived split test fraction, qxn =    9.1188E-04
0             half-norm of matrix used, axn =    7.0000E+00
0             4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
0        1q array has     20 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        4q array has      1 entries.
0       54q array has     12 entries.
1library information...

         cross-section data taken from position number  1 of library on unit 33.

         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         ******************************************************************************
         *                                                                            *
         *            prelim lwr origen-s binary working library--id = 1143           *
         *         made from modified card-image origen-s libraries of scale 4.2      *
         *      data from the light element, actinide, and fission product libraries  *
         *        decay data, including gamma and total energy, are from endf/b-vi    *
         *                                                                            *
         *      neutron flux spectrum factors and cross sections were produced from   *
         *     the "presas2" case updating all nuclides on the scale "burnup" library *
         *                                                                            *
         *                  fission product yields are from endf/b-v                  *
         *                                                                            *
         *              photon libraries use an 18-energy-group structure             *
         *             the photon data are from the master photon data base,          *
         *              produced to include bremsstrahlung from uo2 matrix            *
         *                                                                            *
         *        see information above this box (if present) for later updates       *
         *                                                                            *
         ******************************************************************************
         *                                                                            *
```

```
0         ******************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                 8/28/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
                        879    number of fission product nuclides
0                      7993    number of nonzero off-diagonal matrix elements
0         ******************************************************************************
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                light elements        page    1
0                                          nuclide concentrations, grams
                                           basis =single reactor assembly
              initial  1E-18 d
     na 23   1.73E+05  1.73E+05
     al 27   1.35E+06  1.35E+06
   total     1.52E+06  1.52E+06
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page    2
0                                          nuclide concentrations, grams
                                           basis =single reactor assembly
              initial  1E-18 d
      u234   2.12E+03  2.12E+03
      u235   1.72E+05  1.72E+05
      u236   4.12E+04  4.12E+04
      u238   8.66E+06  8.66E+06
     np237   9.99E+03  9.99E+03
   total     8.88E+06  8.88E+06
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page    3
         power=    .00mw, burnup=      0.mwd, flux= 3.00E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial         18.3 d         36.5 d         54.8 d         73.1 d         73.1 d
     productions   1.023182E+06   1.023182E+06   1.023183E+06   1.023183E+06   1.023183E+06   1.023183E+06
     absorptions   8.460824E+05   8.460847E+05   8.460852E+05   8.460858E+05   8.460863E+05   8.460863E+05
     k infinity    1.209317E+00   1.209314E+00   1.209314E+00   1.209314E+00   1.209313E+00   1.209313E+00
0                    initial         18.3 d         36.5 d         54.8 d         73.1 d         73.1 d
     actinide
     absorptions   8.423173E+05   8.423174E+05   8.423176E+05   8.423178E+05   8.423180E+05   8.423180E+05
     non-actinide
     abs. fracs.   4.450083E-03   4.452646E-03   4.453003E-03   4.453421E-03   4.453838E-03   4.453838E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products        page    4
0                                  fraction of total absorption rate
         power=    .00mw, burnup=      0.mwd, flux= 3.00E+08n/cm**2-sec
0                initial    18.3 d    36.5 d    54.8 d    73.1 d    73.1 d

     xe135      .00E+00  2.28E-06  2.28E-06  2.28E-06  2.28E-06  2.28E-06
     sm149      .00E+00  3.01E-07  6.68E-07  1.04E-06  1.40E-06  1.40E-06
     sm151      .00E+00  1.54E-08  3.22E-08  4.91E-08  6.59E-08  6.59E-08
     nd143      .00E+00  2.56E-09  8.54E-09  1.59E-08  2.37E-08  2.37E-08
     gd157      .00E+00  3.74E-09  7.67E-09  1.16E-08  1.55E-08  1.55E-08
     cd113      .00E+00  3.18E-09  6.42E-09  9.65E-09  1.29E-08  1.29E-08
     pm147      .00E+00  1.47E-09  4.39E-09  7.73E-09  1.12E-08  1.12E-08
     rh105      .00E+00  8.28E-09  8.28E-09  8.28E-09  8.28E-09  8.28E-09
     xe131      .00E+00  1.16E-09  3.30E-09  5.64E-09  8.03E-09  8.03E-09
     cs133      .00E+00  1.14E-09  3.05E-09  5.04E-09  7.03E-09  7.03E-09
     rh103      .00E+00  5.01E-10  1.82E-09  3.73E-09  6.06E-09  6.07E-09
     tc 99      .00E+00  1.07E-09  2.44E-09  3.82E-09  5.21E-09  5.21E-09
     eu155      .00E+00  1.18E-09  2.34E-09  3.50E-09  4.65E-09  4.65E-09
```

nd145	.00E+00	1.04E-09	2.10E-09	3.17E-09	4.23E-09	4.23E-09
pr143	.00E+00	1.61E-09	2.36E-09	2.66E-09	2.78E-09	2.78E-09
sm152	.00E+00	5.54E-10	1.11E-09	1.66E-09	2.22E-09	2.22E-09
xe133	.00E+00	1.81E-09	2.01E-09	2.03E-09	2.03E-09	2.03E-09
kr 83	.00E+00	4.42E-10	8.90E-10	1.34E-09	1.79E-09	1.79E-09
cs135	.00E+00	4.04E-10	8.29E-10	1.25E-09	1.68E-09	1.68E-09
ru101	.00E+00	3.25E-10	6.50E-10	9.75E-10	1.30E-09	1.30E-09
ce141	.00E+00	5.08E-10	8.58E-10	1.10E-09	1.26E-09	1.26E-09
eu153	.00E+00	2.36E-10	5.15E-10	7.93E-10	1.07E-09	1.07E-09
la139	.00E+00	2.48E-10	4.98E-10	7.47E-10	9.96E-10	9.96E-10
pm149	.00E+00	9.59E-10	9.62E-10	9.62E-10	9.62E-10	9.62E-10
nd147	.00E+00	6.46E-10	8.50E-10	9.15E-10	9.35E-10	9.35E-10
pr141	.00E+00	5.22E-11	1.87E-10	3.78E-10	6.06E-10	6.06E-10
pd105	.00E+00	1.05E-10	2.24E-10	3.43E-10	4.62E-10	4.62E-10
zr 93	.00E+00	1.03E-10	2.09E-10	3.15E-10	4.22E-10	4.22E-10
mo 95	.00E+00	7.52E-12	5.27E-11	1.57E-10	3.28E-10	3.28E-10
gd155	.00E+00	1.81E-11	7.23E-11	1.62E-10	2.88E-10	2.88E-10
i129	.00E+00	6.40E-11	1.33E-10	2.04E-10	2.78E-10	2.78E-10
ru103	.00E+00	9.82E-11	1.69E-10	2.21E-10	2.58E-10	2.58E-10
mo 97	.00E+00	5.33E-11	1.10E-10	1.67E-10	2.23E-10	2.23E-10
ag109	.00E+00	3.84E-11	7.86E-11	1.19E-10	1.59E-10	1.59E-10
pm151	.00E+00	1.09E-10	1.09E-10	1.09E-10	1.09E-10	1.09E-10
ce144	.00E+00	2.61E-11	5.10E-11	7.48E-11	9.77E-11	9.77E-11
sm147	.00E+00	2.65E-12	1.69E-11	4.69E-11	9.39E-11	9.39E-11
zr 95	.00E+00	3.01E-11	5.48E-11	7.51E-11	9.18E-11	9.18E-11
ru102	.00E+00	2.29E-11	4.58E-11	6.87E-11	9.16E-11	9.16E-11
sr 90	.00E+00	2.09E-11	4.18E-11	6.26E-11	8.34E-11	8.34E-11
y 91	.00E+00	2.71E-11	4.97E-11	6.80E-11	8.27E-11	8.27E-11
ce142	.00E+00	2.05E-11	4.12E-11	6.18E-11	8.25E-11	8.25E-11
nd148	.00E+00	1.99E-11	3.99E-11	5.98E-11	7.98E-11	7.98E-11
nd146	.00E+00	1.66E-11	3.32E-11	4.99E-11	6.65E-11	6.65E-11
ba138	.00E+00	1.41E-11	2.83E-11	4.25E-11	5.67E-11	5.67E-11
pd108	.00E+00	1.37E-11	2.75E-11	4.12E-11	5.50E-11	5.50E-11
in115	.00E+00	1.10E-11	2.46E-11	3.84E-11	5.22E-11	5.22E-11
ba140	.00E+00	2.97E-11	4.07E-11	4.48E-11	4.63E-11	4.63E-11
xe132	.00E+00	9.05E-12	2.12E-11	3.33E-11	4.55E-11	4.55E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 5
0 fraction of total absorption rate
power= .00mw, burnup= 0.mwd, flux= 3.00E+08n/cm**2-sec
0

	initial	18.3 d	36.5 d	54.8 d	73.1 d	73.1 d
nb 95	.00E+00	4.55E-12	1.53E-11	2.89E-11	4.35E-11	4.35E-11
ce140	.00E+00	4.43E-12	1.48E-11	2.74E-11	4.08E-11	4.08E-11
sm153	.00E+00	3.79E-11	3.79E-11	3.79E-11	3.79E-11	3.79E-11
eu151	.00E+00	2.20E-12	9.19E-12	2.10E-11	3.76E-11	3.76E-11
y 89	.00E+00	2.93E-12	1.08E-11	2.26E-11	3.75E-11	3.75E-11
zr 91	.00E+00	2.63E-12	1.00E-11	2.12E-11	3.54E-11	3.54E-11
mo 98	.00E+00	8.46E-12	1.69E-11	2.54E-11	3.38E-11	3.38E-11
eu156	.00E+00	1.91E-11	2.78E-11	3.16E-11	3.32E-11	3.32E-11
mo100	.00E+00	8.09E-12	1.62E-11	2.43E-11	3.24E-11	3.24E-11
pd107	.00E+00	7.96E-12	1.59E-11	2.39E-11	3.19E-11	3.19E-11
xe134	.00E+00	7.83E-12	1.57E-11	2.36E-11	3.14E-11	3.14E-11
zr 92	.00E+00	6.33E-12	1.28E-11	1.92E-11	2.57E-11	2.57E-11
nd144	.00E+00	1.62E-12	6.40E-12	1.42E-11	2.49E-11	2.49E-11
kr 87	.00E+00	2.26E-11	2.26E-11	2.26E-11	2.26E-11	2.20E-11
zr 96	.00E+00	5.21E-12	1.04E-11	1.56E-11	2.08E-11	2.08E-11
ru104	.00E+00	4.96E-12	9.93E-12	1.49E-11	1.99E-11	1.99E-11
sr 89	.00E+00	6.73E-12	1.20E-11	1.61E-11	1.92E-11	1.92E-11
nd150	.00E+00	4.44E-12	8.88E-12	1.33E-11	1.78E-11	1.78E-11
cs137	.00E+00	4.37E-12	8.74E-12	1.31E-11	1.75E-11	1.75E-11

ce143	.00E+00	1.74E-11	1.74E-11	1.74E-11	1.74E-11	1.74E-11
xe136	.00E+00	4.25E-12	8.49E-12	1.27E-11	1.70E-11	1.70E-11
i127	.00E+00	3.07E-12	7.59E-12	1.22E-11	1.70E-11	1.70E-11
la140	.00E+00	9.71E-12	1.39E-11	1.54E-11	1.60E-11	1.60E-11
mo 99	.00E+00	1.30E-11	1.32E-11	1.32E-11	1.32E-11	1.32E-11
br 81	.00E+00	3.23E-12	6.46E-12	9.69E-12	1.29E-11	1.29E-11
zr 94	.00E+00	2.76E-12	5.51E-12	8.27E-12	1.10E-11	1.10E-11
rb 85	.00E+00	2.47E-12	4.98E-12	7.50E-12	1.00E-11	1.00E-11
te130	.00E+00	1.92E-12	3.85E-12	5.77E-12	7.69E-12	7.69E-12
sm154	.00E+00	1.88E-12	3.75E-12	5.63E-12	7.50E-12	7.50E-12
kr 85	.00E+00	1.84E-12	3.69E-12	5.55E-12	7.39E-12	7.39E-12
rb 87	.00E+00	1.82E-12	3.66E-12	5.49E-12	7.32E-12	7.32E-12
cd111	.00E+00	1.07E-12	2.95E-12	4.97E-12	7.02E-12	7.02E-12
i131	.00E+00	5.34E-12	6.49E-12	6.73E-12	6.78E-12	6.78E-12
se 77	.00E+00	1.26E-12	2.69E-12	4.13E-12	5.56E-12	5.56E-12
kr 84	.00E+00	8.70E-13	1.74E-12	2.61E-12	3.48E-12	3.48E-12
ru106	.00E+00	8.64E-13	1.70E-12	2.51E-12	3.29E-12	3.29E-12
sb121	.00E+00	6.31E-13	1.32E-12	2.01E-12	2.69E-12	2.69E-12
se 79	.00E+00	6.52E-13	1.30E-12	1.96E-12	2.61E-12	2.61E-12
te127m	.00E+00	5.77E-13	1.31E-12	1.98E-12	2.57E-12	2.57E-12
kr 86	.00E+00	4.73E-13	9.47E-13	1.42E-12	1.89E-12	1.89E-12
sb123	.00E+00	4.65E-13	9.36E-13	1.41E-12	1.89E-12	1.89E-12
te128	.00E+00	4.25E-13	8.53E-13	1.28E-12	1.71E-12	1.71E-12
te129m	.00E+00	5.59E-13	9.49E-13	1.22E-12	1.40E-12	1.40E-12
se 80	.00E+00	3.05E-13	6.10E-13	9.15E-13	1.22E-12	1.22E-12
ba137	.00E+00	8.52E-14	3.07E-13	6.64E-13	1.16E-12	1.16E-12
gd156	.00E+00	1.07E-13	3.46E-13	6.43E-13	9.66E-13	9.66E-13
dy161	.00E+00	1.44E-13	3.89E-13	6.51E-13	9.15E-13	9.15E-13
tb159	.00E+00	1.82E-13	3.76E-13	5.69E-13	7.63E-13	7.63E-13
sb125	.00E+00	1.57E-13	3.36E-13	5.19E-13	7.01E-13	7.01E-13

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 6
0 fraction of total absorption rate
power= .00mw, burnup= 0.mwd, flux= 3.00E+08n/cm**2-sec

0	initial	18.3 d	36.5 d	54.8 d	73.1 d	73.1 d
li 6	.00E+00	1.73E-13	3.46E-13	5.19E-13	6.92E-13	6.92E-13
cd112	.00E+00	1.62E-13	3.37E-13	5.13E-13	6.89E-13	6.89E-13
sn117	.00E+00	1.36E-13	2.75E-13	4.13E-13	5.51E-13	5.51E-13
sn119	.00E+00	1.12E-13	2.25E-13	3.37E-13	4.50E-13	4.50E-13
sn115	.00E+00	8.49E-14	1.89E-13	2.94E-13	3.99E-13	3.99E-13
sr 88	.00E+00	8.64E-14	1.74E-13	2.61E-13	3.48E-13	3.48E-13
sm150	.00E+00	2.92E-14	9.62E-14	2.02E-13	3.46E-13	3.46E-13
ag111	.00E+00	2.61E-13	3.09E-13	3.18E-13	3.19E-13	3.19E-13
eu157	.00E+00	2.95E-13	2.95E-13	2.95E-13	2.95E-13	2.95E-13
pd110	.00E+00	6.31E-14	1.26E-13	1.89E-13	2.53E-13	2.53E-13
cd114	.00E+00	6.16E-14	1.23E-13	1.85E-13	2.46E-13	2.46E-13
pd106	.00E+00	1.57E-14	6.19E-14	1.38E-13	2.42E-13	2.42E-13
se 82	.00E+00	5.91E-14	1.18E-13	1.77E-13	2.36E-13	2.36E-13
gd158	.00E+00	5.69E-14	1.14E-13	1.71E-13	2.28E-13	2.28E-13
sn126	.00E+00	4.71E-14	9.42E-14	1.41E-13	1.88E-13	1.88E-13
se 78	.00E+00	4.50E-14	9.03E-14	1.36E-13	1.81E-13	1.81E-13
cd115m	.00E+00	5.82E-14	1.02E-13	1.35E-13	1.60E-13	1.60E-13
pm148m	.00E+00	6.01E-15	3.23E-14	8.12E-14	1.49E-13	1.49E-13
sn124	.00E+00	3.68E-14	7.37E-14	1.11E-13	1.47E-13	1.47E-13
dy162	.00E+00	3.48E-14	6.97E-14	1.05E-13	1.39E-13	1.39E-13
dy164	.00E+00	3.11E-14	6.23E-14	9.34E-14	1.25E-13	1.25E-13
eu154	.00E+00	2.67E-14	5.38E-14	8.14E-14	1.09E-13	1.09E-13
as 75	.00E+00	2.69E-14	5.40E-14	8.11E-14	1.08E-13	1.08E-13
y 90	.00E+00	1.58E-14	3.56E-14	5.54E-14	7.51E-14	7.51E-14
sn118	.00E+00	1.51E-14	3.02E-14	4.54E-14	6.05E-14	6.05E-14

cs136	.00E+00	3.45E-14	4.77E-14	5.27E-14	5.47E-14	5.47E-14
cd116	.00E+00	1.28E-14	2.55E-14	3.83E-14	5.10E-14	5.10E-14
sn122	.00E+00	1.25E-14	2.49E-14	3.74E-14	4.98E-14	4.98E-14
ba136	.00E+00	5.16E-15	1.60E-14	2.91E-14	4.29E-14	4.29E-14
sn120	.00E+00	9.38E-15	1.88E-14	2.81E-14	3.75E-14	3.75E-14
kr 82	.00E+00	7.80E-15	1.65E-14	2.52E-14	3.39E-14	3.39E-14
cs134	.00E+00	7.60E-15	1.53E-14	2.31E-14	3.10E-14	3.10E-14
dy163	.00E+00	7.67E-15	1.53E-14	2.30E-14	3.07E-14	3.07E-14
ru105	.00E+00	3.00E-14	3.00E-14	3.00E-14	3.00E-14	3.00E-14
sn125	.00E+00	2.15E-14	2.73E-14	2.88E-14	2.93E-14	2.92E-14
ge 73	.00E+00	7.17E-15	1.45E-14	2.17E-14	2.90E-14	2.90E-14
ru 99	.00E+00	5.42E-15	1.25E-14	1.96E-14	2.67E-14	2.67E-14
zr 90	.00E+00	1.04E-15	5.05E-15	1.21E-14	2.23E-14	2.23E-14
te125	.00E+00	1.06E-15	4.62E-15	1.09E-14	2.01E-14	2.01E-14
xe130	.00E+00	4.76E-15	9.70E-15	1.46E-14	1.96E-14	1.96E-14
mo 96	.00E+00	3.41E-15	7.09E-15	1.08E-14	1.44E-14	1.44E-14
pm148	.00E+00	1.05E-15	4.31E-15	8.63E-15	1.33E-14	1.33E-14
rb 88	.00E+00	1.27E-14	1.27E-14	1.27E-14	1.27E-14	1.27E-14
ge 76	.00E+00	2.66E-15	5.33E-15	7.99E-15	1.07E-14	1.07E-14
i135	.00E+00	1.00E-14	1.00E-14	1.00E-14	1.00E-14	9.95E-15
te132	.00E+00	9.30E-15	9.49E-15	9.49E-15	9.49E-15	9.49E-15
gd160	.00E+00	1.69E-15	3.37E-15	5.06E-15	6.75E-15	6.75E-15
te134	.00E+00	5.77E-15	5.77E-15	5.77E-15	5.77E-15	5.39E-15
te126	.00E+00	9.22E-16	2.08E-15	3.33E-15	4.60E-15	4.60E-15

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 7
0 fraction of total absorption rate
power= .00mw, burnup= 0.mwd, flux= 3.00E+08n/cm**2-sec

0	initial	18.3 d	36.5 d	54.8 d	73.1 d	73.1 d
sn123	.00E+00	9.65E-16	1.84E-15	2.63E-15	3.35E-15	3.35E-15
sb126	.00E+00	1.91E-15	2.60E-15	2.85E-15	2.94E-15	2.94E-15
ru100	.00E+00	6.49E-16	1.30E-15	1.96E-15	2.63E-15	2.63E-15
ho165	.00E+00	5.26E-16	1.06E-15	1.59E-15	2.12E-15	2.12E-15
in117m	.00E+00	2.07E-15	2.07E-15	2.07E-15	2.07E-15	2.07E-15
sr 87	.00E+00	3.04E-16	6.09E-16	9.13E-16	1.22E-15	1.22E-15
sb124	.00E+00	3.98E-16	7.21E-16	9.83E-16	1.20E-15	1.20E-15
i130	.00E+00	7.10E-16	7.11E-16	7.11E-16	7.11E-16	7.08E-16
nb 94	.00E+00	1.75E-16	3.51E-16	5.26E-16	7.01E-16	7.01E-16
in117	.00E+00	6.07E-16	6.07E-16	6.07E-16	6.07E-16	6.07E-16
ge 74	.00E+00	1.47E-16	2.93E-16	4.40E-16	5.86E-16	5.86E-16
te124	.00E+00	4.65E-17	1.42E-16	2.78E-16	4.47E-16	4.47E-16
in113	.00E+00	2.49E-17	1.00E-16	2.26E-16	4.02E-16	4.02E-16
ge 72	.00E+00	8.33E-17	1.86E-16	2.89E-16	3.92E-16	3.92E-16
eu152	.00E+00	8.17E-17	1.66E-16	2.57E-16	3.57E-16	3.57E-16
se 76	.00E+00	5.68E-17	1.19E-16	1.80E-16	2.42E-16	2.42E-16
sr 86	.00E+00	2.40E-17	7.85E-17	1.48E-16	2.26E-16	2.26E-16
rb 86	.00E+00	1.18E-16	1.78E-16	2.08E-16	2.23E-16	2.23E-16
dy165	.00E+00	2.08E-16	2.08E-16	2.08E-16	2.08E-16	2.07E-16
ba135	.00E+00	3.50E-17	7.35E-17	1.15E-16	1.61E-16	1.61E-16
tb160	.00E+00	4.73E-17	8.72E-17	1.21E-16	1.49E-16	1.49E-16
cd118	.00E+00	1.19E-16	1.19E-16	1.19E-16	1.19E-16	1.12E-16
ge 75	.00E+00	8.51E-17	8.51E-17	8.51E-17	8.51E-17	8.39E-17
xe128	.00E+00	1.36E-17	2.73E-17	4.09E-17	5.46E-17	5.46E-17
er166	.00E+00	9.94E-18	2.45E-17	3.92E-17	5.39E-17	5.39E-17
nd142	.00E+00	7.24E-18	1.63E-17	2.77E-17	4.22E-17	4.22E-17
gd152	.00E+00	7.41E-18	1.52E-17	2.33E-17	3.20E-17	3.20E-17
gd154	.00E+00	1.97E-18	7.50E-18	1.66E-17	2.95E-17	2.95E-17
sm148	.00E+00	4.19E-19	3.84E-18	1.29E-17	2.91E-17	2.91E-17
in119m	.00E+00	2.97E-17	2.97E-17	2.97E-17	2.97E-17	2.80E-17
cd110	.00E+00	3.68E-18	8.09E-18	1.32E-17	1.90E-17	1.90E-17

ba134	.00E+00	1.22E-18	4.73E-18	1.06E-17	1.88E-17	1.88E-17
kr 80	.00E+00	4.07E-18	8.19E-18	1.23E-17	1.64E-17	1.64E-17
dy160	.00E+00	9.41E-19	3.55E-18	7.55E-18	1.27E-17	1.27E-17
pd104	.00E+00	4.32E-19	1.64E-18	4.18E-18	8.50E-18	8.50E-18
br 79	.00E+00	3.76E-19	1.02E-18	1.94E-18	3.13E-18	3.13E-18
te122	.00E+00	4.26E-19	9.68E-19	1.52E-18	2.07E-18	2.07E-18
in119	.00E+00	2.32E-18	2.32E-18	2.32E-18	2.32E-18	1.54E-18
be 9	.00E+00	3.43E-19	6.85E-19	1.02E-18	1.37E-18	1.37E-18
pr142	.00E+00	6.42E-19	7.95E-19	1.01E-18	1.27E-18	1.27E-18
xe129	.00E+00	1.03E-19	3.39E-19	7.15E-19	1.24E-18	1.24E-18
ag107	.00E+00	6.99E-20	2.83E-19	6.39E-19	1.13E-18	1.13E-18
nb 93	.00E+00	1.76E-19	3.56E-19	5.36E-19	7.22E-19	7.22E-19
sn116	.00E+00	1.53E-19	3.16E-19	4.82E-19	6.55E-19	6.55E-19
li 7	.00E+00	1.33E-19	2.66E-19	3.99E-19	5.32E-19	5.32E-19
te123	.00E+00	7.98E-20	1.80E-19	3.03E-19	4.42E-19	4.42E-19
er167	.00E+00	5.32E-20	1.06E-19	1.60E-19	2.13E-19	2.13E-19
cd109	.00E+00	3.33E-21	9.98E-21	1.33E-20	2.00E-20	2.00E-20
cs134m	.00E+00	.00E+00	3.33E-21	6.65E-21	9.98E-21	9.98E-21

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 8

0 fraction of total absorption rate

power= .00mw, burnup= 0.mwd, flux= 3.00E+08n/cm**2-sec

	initial	18.3 d	36.5 d	54.8 d	73.1 d	73.1 d
cd108	.00E+00	3.33E-21	6.65E-21	6.65E-21	9.98E-21	9.98E-21

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 9

power= 4.000E-03mw, burnup=2.9220E-01mwd, flux= 3.00E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	18.3 d	36.5 d	54.8 d	73.1 d	73.1 d
h 1	.00E+00	4.40E-09	8.81E-09	1.32E-08	1.76E-08	1.76E-08
h 2	.00E+00	1.31E-11	2.61E-11	3.92E-11	5.22E-11	5.22E-11
h 3	.00E+00	9.56E-14	1.91E-13	2.86E-13	3.81E-13	3.81E-13
h 4	.00E+00	3.87E-37	7.72E-37	1.16E-36	1.54E-36	.00E+00
he 3	.00E+00	1.34E-16	5.37E-16	1.21E-15	2.15E-15	2.15E-15
he 4	.00E+00	7.28E-10	1.46E-09	2.18E-09	2.91E-09	2.91E-09
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
na 22	.00E+00	5.68E-13	1.13E-12	1.68E-12	2.23E-12	2.23E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	.00E+00	3.64E-08	3.64E-08	3.64E-08	3.64E-08	3.63E-08
na 24m	.00E+00	5.99E-15	5.99E-15	5.99E-15	5.99E-15	5.99E-30
na 25	.00E+00	2.88E-30	5.76E-30	8.64E-30	1.15E-29	6.08E-31
mg 24	.00E+00	7.55E-07	1.55E-06	2.34E-06	3.13E-06	3.13E-06
mg 25	.00E+00	9.58E-14	1.92E-13	2.87E-13	3.83E-13	3.83E-13
mg 26	.00E+00	1.31E-11	2.61E-11	3.92E-11	5.22E-11	5.22E-11
mg 27	.00E+00	2.18E-12	2.18E-12	2.18E-12	2.18E-12	1.60E-12
mg 28	.00E+00	4.41E-24	4.41E-24	4.41E-24	4.41E-24	4.40E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	.00E+00	2.70E-10	2.70E-10	2.70E-10	2.70E-10	7.33E-11
al 29	.00E+00	3.80E-32	1.52E-31	3.42E-31	6.08E-31	3.89E-31
al 30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
si 28	.00E+00	2.20E-06	4.40E-06	6.60E-06	8.79E-06	8.79E-06
si 29	.00E+00	1.41E-16	5.64E-16	1.27E-15	2.26E-15	2.26E-15
si 30	.00E+00	9.70E-27	7.76E-26	2.62E-25	6.21E-25	6.21E-25
si 31	.00E+00	6.95E-39	5.56E-38	1.88E-37	4.45E-37	4.37E-37
si 32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		3.00E+08	3.00E+08	3.00E+08	3.00E+08	3.00E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 10

power= 4.000E-03mw, burnup=2.9220E-01mwd, flux= 3.00E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	18.3 d	36.5 d	54.8 d	73.1 d	73.1 d
he 4	.00E+00	2.54E-06	5.08E-06	7.63E-06	1.02E-05	1.02E-05
th226	.00E+00	5.65E-31	2.72E-30	6.90E-30	1.34E-29	1.34E-29
th227	.00E+00	8.47E-18	6.06E-17	1.82E-16	3.85E-16	3.85E-16
th228	.00E+00	3.89E-17	2.14E-16	6.13E-16	1.32E-15	1.32E-15
th229	.00E+00	1.04E-14	7.46E-14	2.28E-13	4.93E-13	4.93E-13
th230	.00E+00	1.28E-06	2.55E-06	3.83E-06	5.11E-06	5.11E-06
th231	.00E+00	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09
th232	.00E+00	2.58E-07	5.16E-07	7.74E-07	1.03E-06	1.03E-06
th233	.00E+00	2.39E-18	4.78E-18	7.17E-18	9.57E-18	8.39E-18
th234	.00E+00	2.19E-07	3.49E-07	4.26E-07	4.71E-07	4.71E-07
pa231	.00E+00	3.60E-08	7.50E-08	1.14E-07	1.53E-07	1.53E-07
pa232	.00E+00	6.18E-16	1.29E-15	1.96E-15	2.63E-15	2.63E-15
pa233	.00E+00	5.45E-07	8.86E-07	1.10E-06	1.23E-06	1.23E-06
pa234m	.00E+00	7.40E-12	1.18E-11	1.44E-11	1.59E-11	1.59E-11
pa234	.00E+00	3.31E-12	5.26E-12	6.42E-12	7.10E-12	7.10E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	5.48E-28	2.63E-27	6.69E-27	1.29E-26	1.29E-26
u231	.00E+00	6.12E-23	2.84E-22	6.26E-22	1.04E-21	1.04E-21
u232	.00E+00	1.86E-13	5.56E-13	1.11E-12	1.84E-12	1.84E-12
u233	.00E+00	1.38E-07	4.79E-07	9.49E-07	1.50E-06	1.50E-06
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02
u237	.00E+00	2.74E-06	3.16E-06	3.22E-06	3.23E-06	3.23E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	.00E+00	3.29E-07	3.29E-07	3.29E-07	3.29E-07	2.90E-07
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	2.85E-13	5.62E-13	8.30E-13	1.09E-12	1.09E-12
np236m	.00E+00	2.16E-12	2.16E-12	2.16E-12	2.16E-12	2.15E-12
np236	.00E+00	1.02E-11	2.05E-11	3.07E-11	4.10E-11	4.10E-11
np237	4.22E+01	4.22E+01	4.22E+01	4.22E+01	4.22E+01	4.22E+01
np238	.00E+00	1.57E-06	1.58E-06	1.58E-06	1.58E-06	1.58E-06
np239	.00E+00	4.73E-05	4.75E-05	4.75E-05	4.75E-05	4.75E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	.00E+00	9.69E-15	9.74E-15	9.74E-15	9.74E-15	9.29E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	.00E+00	1.39E-11	2.87E-11	4.33E-11	5.77E-11	5.77E-11
pu237	.00E+00	9.13E-18	3.94E-17	8.62E-17	1.46E-16	1.46E-16
pu238	.00E+00	7.86E-06	1.73E-05	2.67E-05	3.62E-05	3.62E-05
pu239	.00E+00	2.08E-04	4.63E-04	7.19E-04	9.74E-04	9.74E-04
pu240	.00E+00	4.61E-11	2.14E-10	5.08E-10	9.28E-10	9.28E-10
pu241	.00E+00	1.42E-17	1.37E-16	4.97E-16	1.22E-15	1.22E-15
pu242	.00E+00	1.26E-24	2.52E-23	1.39E-22	4.61E-22	4.61E-22
pu243	.00E+00	2.77E-33	5.52E-32	3.05E-31	1.01E-30	1.00E-30
pu244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		3.00E+08	3.00E+08	3.00E+08	3.00E+08	3.00E-07

0 1q array has 20 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 4q array has 1 entries.
0 54q array has 12 entries.

```
1library information...

          cross-section data taken from position number  2 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *        see information above this box (if present) for later updates         *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                  8/28/1996    date library was produced
0                       1697    total number of nuclides in library
                         689    number of light-element nuclides
                         129    number of actinide nuclides
                         879    number of fission product nuclides
0                       7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   11
        power=    .00mw, burnup=      1.mwd, flux= 2.82E+08n/cm**2-sec
0                                    basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial        91.3 d        109.6 d        127.8 d        146.1 d        146.1 d
     productions   1.090702E+06   1.090702E+06   1.090703E+06   1.090703E+06   1.090703E+06   1.090703E+06
     absorptions   8.934394E+05   8.934399E+05   8.934406E+05   8.934413E+05   8.934419E+05   8.934419E+05
     k infinity    1.220790E+00   1.220790E+00   1.220789E+00   1.220789E+00   1.220788E+00   1.220788E+00
0                    initial        91.3 d        109.6 d        127.8 d        146.1 d        146.1 d
     actinide
     absorptions   8.900519E+05   8.900521E+05   8.900524E+05   8.900527E+05   8.900529E+05   8.900529E+05
     non-actinide
```

abs. fracs. 3.791451E-03 3.791869E-03 3.792226E-03 3.792703E-03 3.793120E-03 3.793120E-03

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 12

0 fraction of total absorption rate

power= .00mw, burnup= 1.mwd, flux= 2.82E+08n/cm**2-sec

0

	initial	91.3 d	109.6 d	127.8 d	146.1 d	146.1 d
sm149	1.42E-06	1.79E-06	2.17E-06	2.54E-06	2.91E-06	2.91E-06
xe135	2.31E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06
sm151	6.68E-08	8.38E-08	1.01E-07	1.18E-07	1.35E-07	1.35E-07
nd143	2.40E-08	3.21E-08	4.04E-08	4.87E-08	5.69E-08	5.69E-08
gd157	1.57E-08	1.97E-08	2.37E-08	2.76E-08	3.16E-08	3.16E-08
cd113	1.31E-08	1.63E-08	1.96E-08	2.29E-08	2.61E-08	2.61E-08
pm147	1.11E-08	1.45E-08	1.79E-08	2.13E-08	2.46E-08	2.46E-08
rh103	6.05E-09	8.69E-09	1.16E-08	1.46E-08	1.77E-08	1.77E-08
xe131	7.97E-09	1.04E-08	1.27E-08	1.51E-08	1.75E-08	1.75E-08
cs133	6.97E-09	8.95E-09	1.09E-08	1.29E-08	1.49E-08	1.49E-08
tc 99	5.15E-09	6.52E-09	7.88E-09	9.25E-09	1.06E-08	1.06E-08
eu155	4.64E-09	5.78E-09	6.91E-09	8.03E-09	9.14E-09	9.14E-09
nd145	4.22E-09	5.28E-09	6.34E-09	7.40E-09	8.46E-09	8.46E-09
rh105	8.35E-09	8.33E-09	8.33E-09	8.33E-09	8.33E-09	8.33E-09
sm152	2.20E-09	2.75E-09	3.30E-09	3.85E-09	4.40E-09	4.40E-09
kr 83	1.80E-09	2.26E-09	2.71E-09	3.16E-09	3.61E-09	3.61E-09
cs135	1.67E-09	2.09E-09	2.52E-09	2.94E-09	3.36E-09	3.36E-09
pr143	2.79E-09	2.84E-09	2.86E-09	2.86E-09	2.87E-09	2.87E-09
ru101	1.28E-09	1.60E-09	1.92E-09	2.24E-09	2.56E-09	2.56E-09
eu153	1.07E-09	1.35E-09	1.63E-09	1.91E-09	2.18E-09	2.18E-09
xe133	2.05E-09	2.05E-09	2.05E-09	2.05E-09	2.05E-09	2.05E-09
la139	1.00E-09	1.26E-09	1.51E-09	1.76E-09	2.01E-09	2.01E-09
pr141	6.10E-10	8.66E-10	1.14E-09	1.42E-09	1.72E-09	1.72E-09
mo 95	3.26E-10	5.65E-10	8.69E-10	1.23E-09	1.65E-09	1.65E-09
ce141	1.27E-09	1.38E-09	1.46E-09	1.51E-09	1.54E-09	1.54E-09
gd155	2.93E-10	4.56E-10	6.55E-10	8.89E-10	1.16E-09	1.16E-09
pm149	9.75E-10	9.75E-10	9.75E-10	9.75E-10	9.75E-10	9.75E-10
nd147	9.27E-10	9.33E-10	9.36E-10	9.36E-10	9.36E-10	9.36E-10
pd105	4.60E-10	5.78E-10	6.96E-10	8.15E-10	9.33E-10	9.33E-10
zr 93	4.18E-10	5.23E-10	6.28E-10	7.34E-10	8.39E-10	8.39E-10
i129	2.81E-10	3.56E-10	4.32E-10	5.09E-10	5.86E-10	5.86E-10
mo 97	2.25E-10	2.82E-10	3.39E-10	3.96E-10	4.53E-10	4.53E-10
sm147	9.31E-11	1.57E-10	2.37E-10	3.34E-10	4.48E-10	4.48E-10
ru103	2.59E-10	2.86E-10	3.06E-10	3.20E-10	3.30E-10	3.30E-10
ag109	1.58E-10	1.97E-10	2.37E-10	2.76E-10	3.16E-10	3.16E-10
ru102	9.24E-11	1.15E-10	1.39E-10	1.62E-10	1.85E-10	1.85E-10
ce144	9.81E-11	1.20E-10	1.41E-10	1.61E-10	1.80E-10	1.80E-10
sr 90	8.43E-11	1.05E-10	1.26E-10	1.47E-10	1.68E-10	1.68E-10
ce142	8.34E-11	1.04E-10	1.25E-10	1.46E-10	1.67E-10	1.67E-10
nd148	8.01E-11	1.00E-10	1.20E-10	1.40E-10	1.60E-10	1.60E-10
eu151	3.80E-11	5.97E-11	8.62E-11	1.18E-10	1.54E-10	1.54E-10
nd146	6.72E-11	8.40E-11	1.01E-10	1.18E-10	1.34E-10	1.34E-10
zr 95	9.09E-11	1.04E-10	1.16E-10	1.25E-10	1.32E-10	1.32E-10
y 91	8.36E-11	9.56E-11	1.05E-10	1.13E-10	1.19E-10	1.19E-10
y 89	3.78E-11	5.51E-11	7.43E-11	9.49E-11	1.17E-10	1.17E-10
ba138	5.74E-11	7.17E-11	8.61E-11	1.00E-10	1.15E-10	1.15E-10
zr 91	3.57E-11	5.25E-11	7.14E-11	9.18E-11	1.14E-10	1.14E-10
pm151	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10
pd108	5.43E-11	6.78E-11	8.12E-11	9.47E-11	1.08E-10	1.08E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 13

0 fraction of total absorption rate

power= .00mw, burnup= 1.mwd, flux= 2.82E+08n/cm**2-sec

0

	initial	91.3 d	109.6 d	127.8 d	146.1 d	146.1 d

in115	5.22E-11	6.61E-11	8.00E-11	9.39E-11	1.08E-10	1.08E-10
ce140	4.13E-11	5.52E-11	6.93E-11	8.34E-11	9.75E-11	9.75E-11
nd144	2.52E-11	3.88E-11	5.50E-11	7.38E-11	9.51E-11	9.51E-11
xe132	4.54E-11	5.76E-11	6.98E-11	8.19E-11	9.41E-11	9.41E-11
nb 95	4.35E-11	5.78E-11	7.12E-11	8.33E-11	9.41E-11	9.41E-11
mo 98	3.34E-11	4.18E-11	5.02E-11	5.85E-11	6.69E-11	6.69E-11
mo100	3.23E-11	4.03E-11	4.84E-11	5.65E-11	6.45E-11	6.45E-11
pd107	3.21E-11	4.00E-11	4.80E-11	5.60E-11	6.39E-11	6.39E-11
xe134	3.17E-11	3.97E-11	4.76E-11	5.56E-11	6.35E-11	6.35E-11
zr 92	2.59E-11	3.24E-11	3.90E-11	4.55E-11	5.20E-11	5.20E-11
ba140	4.65E-11	4.71E-11	4.73E-11	4.74E-11	4.74E-11	4.74E-11
zr 96	2.04E-11	2.55E-11	3.06E-11	3.57E-11	4.08E-11	4.08E-11
ru104	1.98E-11	2.48E-11	2.98E-11	3.47E-11	3.97E-11	3.97E-11
sm153	3.82E-11	3.81E-11	3.81E-11	3.81E-11	3.81E-11	3.81E-11
i127	1.69E-11	2.17E-11	2.65E-11	3.14E-11	3.64E-11	3.64E-11
nd150	1.78E-11	2.22E-11	2.66E-11	3.11E-11	3.55E-11	3.55E-11
cs137	1.74E-11	2.18E-11	2.61E-11	3.05E-11	3.48E-11	3.48E-11
eu156	3.35E-11	3.42E-11	3.45E-11	3.46E-11	3.46E-11	3.46E-11
xe136	1.71E-11	2.14E-11	2.57E-11	3.00E-11	3.43E-11	3.43E-11
sr 89	1.95E-11	2.20E-11	2.39E-11	2.54E-11	2.66E-11	2.66E-11
br 81	1.29E-11	1.61E-11	1.94E-11	2.26E-11	2.58E-11	2.58E-11
zr 94	1.09E-11	1.37E-11	1.64E-11	1.92E-11	2.19E-11	2.19E-11
kr 87	2.23E-11	2.30E-11	2.30E-11	2.30E-11	2.30E-11	2.15E-11
rb 85	1.00E-11	1.25E-11	1.51E-11	1.76E-11	2.01E-11	2.01E-11
ce143	1.75E-11	1.75E-11	1.75E-11	1.75E-11	1.75E-11	1.75E-11
la140	1.59E-11	1.61E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11
te130	7.78E-12	9.73E-12	1.17E-11	1.36E-11	1.56E-11	1.56E-11
cd111	7.09E-12	9.16E-12	1.12E-11	1.33E-11	1.54E-11	1.54E-11
sm154	7.55E-12	9.44E-12	1.13E-11	1.32E-11	1.51E-11	1.51E-11
kr 85	7.45E-12	9.31E-12	1.12E-11	1.30E-11	1.48E-11	1.48E-11
rb 87	7.31E-12	9.14E-12	1.10E-11	1.28E-11	1.46E-11	1.46E-11
mo 99	1.32E-11	1.32E-11	1.32E-11	1.32E-11	1.32E-11	1.32E-11
se 77	5.63E-12	7.08E-12	8.54E-12	9.99E-12	1.14E-11	1.14E-11
kr 84	3.45E-12	4.31E-12	5.17E-12	6.04E-12	6.90E-12	6.90E-12
i131	6.79E-12	6.80E-12	6.80E-12	6.80E-12	6.80E-12	6.80E-12
ru106	3.25E-12	3.99E-12	4.70E-12	5.40E-12	6.07E-12	6.07E-12
sb121	2.68E-12	3.36E-12	4.04E-12	4.73E-12	5.41E-12	5.41E-12
se 79	2.64E-12	3.30E-12	3.96E-12	4.62E-12	5.29E-12	5.29E-12
ba137	1.17E-12	1.81E-12	2.58E-12	3.49E-12	4.54E-12	4.54E-12
te127m	2.59E-12	3.12E-12	3.60E-12	4.02E-12	4.39E-12	4.39E-12
kr 86	1.91E-12	2.39E-12	2.87E-12	3.35E-12	3.83E-12	3.83E-12
sb123	1.88E-12	2.36E-12	2.84E-12	3.33E-12	3.82E-12	3.82E-12
te128	1.71E-12	2.14E-12	2.56E-12	2.99E-12	3.42E-12	3.42E-12
se 80	1.23E-12	1.54E-12	1.85E-12	2.16E-12	2.47E-12	2.47E-12
gd156	9.52E-13	1.28E-12	1.61E-12	1.95E-12	2.28E-12	2.28E-12
dy161	9.25E-13	1.19E-12	1.46E-12	1.72E-12	1.99E-12	1.99E-12
te129m	1.41E-12	1.54E-12	1.62E-12	1.68E-12	1.72E-12	1.72E-12
tb159	7.62E-13	9.55E-13	1.15E-12	1.34E-12	1.53E-12	1.53E-12
sb125	6.99E-13	8.79E-13	1.06E-12	1.23E-12	1.40E-12	1.40E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 14

0 fraction of total absorption rate

power= .00mw, burnup= 1.mwd, flux= 2.82E+08n/cm**2-sec

0

	initial	91.3 d	109.6 d	127.8 d	146.1 d	146.1 d
li 6	7.01E-13	8.76E-13	1.05E-12	1.23E-12	1.40E-12	1.40E-12
cd112	6.93E-13	8.69E-13	1.05E-12	1.22E-12	1.40E-12	1.40E-12
sm150	3.47E-13	5.32E-13	7.55E-13	1.02E-12	1.32E-12	1.32E-12
sn117	5.54E-13	6.93E-13	8.32E-13	9.71E-13	1.11E-12	1.11E-12
pd106	2.40E-13	3.71E-13	5.29E-13	7.11E-13	9.19E-13	9.19E-13
sn119	4.55E-13	5.68E-13	6.82E-13	7.96E-13	9.09E-13	9.09E-13

sn115	4.04E-13	5.10E-13	6.15E-13	7.21E-13	8.27E-13	8.27E-13
sr 88	3.51E-13	4.39E-13	5.27E-13	6.15E-13	7.03E-13	7.03E-13
pm148m	1.50E-13	2.31E-13	3.21E-13	4.19E-13	5.22E-13	5.22E-13
pd110	2.51E-13	3.13E-13	3.75E-13	4.38E-13	5.00E-13	5.00E-13
cd114	2.43E-13	3.04E-13	3.65E-13	4.26E-13	4.86E-13	4.86E-13
se 82	2.38E-13	2.98E-13	3.58E-13	4.17E-13	4.77E-13	4.77E-13
gd158	2.27E-13	2.84E-13	3.41E-13	3.98E-13	4.54E-13	4.54E-13
sn126	1.91E-13	2.38E-13	2.86E-13	3.34E-13	3.81E-13	3.81E-13
se 78	1.81E-13	2.27E-13	2.72E-13	3.18E-13	3.63E-13	3.63E-13
ag111	3.17E-13	3.17E-13	3.17E-13	3.17E-13	3.17E-13	3.17E-13
eu157	2.97E-13	2.96E-13	2.96E-13	2.96E-13	2.96E-13	2.96E-13
sn124	1.46E-13	1.82E-13	2.19E-13	2.55E-13	2.91E-13	2.91E-13
dy162	1.40E-13	1.74E-13	2.09E-13	2.43E-13	2.78E-13	2.78E-13
dy164	1.26E-13	1.57E-13	1.89E-13	2.20E-13	2.51E-13	2.51E-13
eu154	1.10E-13	1.39E-13	1.69E-13	1.98E-13	2.28E-13	2.28E-13
as 75	1.08E-13	1.35E-13	1.62E-13	1.90E-13	2.17E-13	2.17E-13
cd115m	1.61E-13	1.80E-13	1.94E-13	2.04E-13	2.12E-13	2.12E-13
y 90	7.60E-14	9.60E-14	1.16E-13	1.36E-13	1.56E-13	1.56E-13
sn118	5.96E-14	7.45E-14	8.93E-14	1.04E-13	1.19E-13	1.19E-13
cd116	5.05E-14	6.32E-14	7.58E-14	8.84E-14	1.01E-13	1.01E-13
sn122	5.02E-14	6.27E-14	7.52E-14	8.77E-14	1.00E-13	1.00E-13
ba136	4.28E-14	5.70E-14	7.13E-14	8.56E-14	9.99E-14	1.00E-13
zr 90	2.25E-14	3.58E-14	5.23E-14	7.18E-14	9.44E-14	9.44E-14
te125	2.01E-14	3.22E-14	4.73E-14	6.53E-14	8.64E-14	8.64E-14
sn120	3.76E-14	4.70E-14	5.63E-14	6.57E-14	7.51E-14	7.51E-14
kr 82	3.41E-14	4.29E-14	5.17E-14	6.04E-14	6.92E-14	6.92E-14
cs134	3.12E-14	3.93E-14	4.75E-14	5.58E-14	6.42E-14	6.42E-14
dy163	3.08E-14	3.84E-14	4.61E-14	5.37E-14	6.13E-14	6.13E-14
ge 73	2.92E-14	3.66E-14	4.39E-14	5.13E-14	5.86E-14	5.86E-14
cs136	5.43E-14	5.51E-14	5.54E-14	5.55E-14	5.56E-14	5.55E-14
ru 99	2.66E-14	3.38E-14	4.10E-14	4.82E-14	5.54E-14	5.54E-14
xe130	1.98E-14	2.48E-14	2.99E-14	3.49E-14	3.99E-14	3.99E-14
pm148	1.31E-14	1.76E-14	2.22E-14	2.67E-14	3.13E-14	3.12E-14
ru105	2.97E-14	2.96E-14	2.96E-14	2.96E-14	2.96E-14	2.95E-14
sn125	2.91E-14	2.92E-14	2.92E-14	2.93E-14	2.93E-14	2.92E-14
mo 96	1.44E-14	1.81E-14	2.17E-14	2.54E-14	2.91E-14	2.91E-14
ge 76	1.07E-14	1.34E-14	1.60E-14	1.87E-14	2.14E-14	2.14E-14
gd160	6.76E-15	8.44E-15	1.01E-14	1.18E-14	1.35E-14	1.35E-14
rb 88	1.28E-14	1.29E-14	1.29E-14	1.29E-14	1.29E-14	1.28E-14
i135	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.00E-14
te126	4.62E-15	5.91E-15	7.21E-15	8.50E-15	9.80E-15	9.80E-15
te132	9.56E-15	9.56E-15	9.56E-15	9.56E-15	9.56E-15	9.56E-15
sn123	3.30E-15	3.94E-15	4.52E-15	5.05E-15	5.53E-15	5.53E-15

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 15

0 fraction of total absorption rate

power= .00mw, burnup= 1.mwd, flux= 2.82E+08n/cm**2-sec

0

	initial	91.3 d	109.6 d	127.8 d	146.1 d	146.1 d
ru100	2.66E-15	3.34E-15	4.03E-15	4.72E-15	5.42E-15	5.42E-15
te134	5.46E-15	5.85E-15	5.85E-15	5.85E-15	5.85E-15	5.09E-15
ho165	2.12E-15	2.65E-15	3.18E-15	3.71E-15	4.24E-15	4.24E-15
sb126	2.95E-15	2.98E-15	3.00E-15	3.00E-15	3.00E-15	3.00E-15
sr 87	1.23E-15	1.53E-15	1.84E-15	2.15E-15	2.45E-15	2.45E-15
in117m	2.09E-15	2.09E-15	2.09E-15	2.09E-15	2.09E-15	2.09E-15
sb124	1.19E-15	1.37E-15	1.51E-15	1.62E-15	1.71E-15	1.71E-15
in113	4.02E-16	6.28E-16	9.04E-16	1.23E-15	1.61E-15	1.61E-15
nb 94	6.97E-16	8.72E-16	1.05E-15	1.22E-15	1.40E-15	1.40E-15
te124	4.52E-16	6.49E-16	8.67E-16	1.10E-15	1.35E-15	1.35E-15
ge 74	5.93E-16	7.41E-16	8.89E-16	1.04E-15	1.19E-15	1.19E-15
eu152	3.61E-16	4.74E-16	6.03E-16	7.51E-16	9.22E-16	9.22E-16

ge 72	3.96E-16	5.00E-16	6.04E-16	7.09E-16	8.13E-16	8.13E-16
i130	7.11E-16	7.14E-16	7.14E-16	7.15E-16	7.15E-16	7.10E-16
in117	6.15E-16	6.14E-16	6.14E-16	6.14E-16	6.14E-16	6.14E-16
sr 86	2.28E-16	3.11E-16	3.96E-16	4.81E-16	5.68E-16	5.68E-16
se 76	2.45E-16	3.08E-16	3.71E-16	4.33E-16	4.96E-16	4.96E-16
ba135	1.61E-16	2.09E-16	2.61E-16	3.17E-16	3.76E-16	3.76E-16
rb 86	2.25E-16	2.33E-16	2.37E-16	2.39E-16	2.40E-16	2.40E-16
tb160	1.51E-16	1.75E-16	1.95E-16	2.12E-16	2.27E-16	2.27E-16
dy165	2.10E-16	2.09E-16	2.09E-16	2.09E-16	2.09E-16	2.06E-16
sm148	2.92E-17	5.32E-17	8.55E-17	1.26E-16	1.76E-16	1.76E-16
nd142	4.27E-17	6.09E-17	8.30E-17	1.09E-16	1.40E-16	1.40E-16
gd154	2.98E-17	4.65E-17	6.71E-17	9.16E-17	1.20E-16	1.20E-16
er166	5.43E-17	6.91E-17	8.40E-17	9.88E-17	1.14E-16	1.14E-16
xe128	5.51E-17	6.90E-17	8.28E-17	9.67E-17	1.11E-16	1.11E-16
cd118	1.14E-16	1.20E-16	1.20E-16	1.20E-16	1.20E-16	1.07E-16
ge 75	8.50E-17	8.64E-17	8.64E-17	8.64E-17	8.64E-17	8.26E-17
ba134	1.88E-17	2.95E-17	4.25E-17	5.80E-17	7.61E-17	7.61E-17
gd152	3.24E-17	4.16E-17	5.17E-17	6.27E-17	7.49E-17	7.49E-17
cd110	1.92E-17	2.57E-17	3.29E-17	4.07E-17	4.92E-17	4.92E-17
pd104	8.40E-18	1.46E-17	2.31E-17	3.40E-17	4.73E-17	4.73E-17
dy160	1.27E-17	1.88E-17	2.58E-17	3.35E-17	4.18E-17	4.18E-17
kr 80	1.66E-17	2.07E-17	2.49E-17	2.91E-17	3.32E-17	3.32E-17
in119m	2.83E-17	3.01E-17	3.01E-17	3.01E-17	3.01E-17	2.50E-17
br 79	3.13E-18	4.59E-18	6.32E-18	8.32E-18	1.06E-17	1.06E-17
xe129	1.24E-18	1.91E-18	2.73E-18	3.70E-18	4.82E-18	4.82E-18
ag107	1.14E-18	1.79E-18	2.57E-18	3.50E-18	4.57E-18	4.57E-18
te122	2.05E-18	2.60E-18	3.16E-18	3.71E-18	4.27E-18	4.27E-18
be 9	1.34E-18	1.68E-18	2.01E-18	2.35E-18	2.69E-18	2.69E-18
pr142	1.28E-18	1.57E-18	1.88E-18	2.21E-18	2.54E-18	2.52E-18
nb 93	7.25E-19	9.13E-19	1.11E-18	1.31E-18	1.52E-18	1.52E-18
sn116	6.45E-19	8.19E-19	1.00E-18	1.19E-18	1.38E-18	1.38E-18
te123	4.43E-19	5.98E-19	7.65E-19	9.47E-19	1.14E-18	1.14E-18
li 7	5.40E-19	6.75E-19	8.09E-19	9.43E-19	1.08E-18	1.08E-18
in119	1.56E-18	2.35E-18	2.35E-18	2.35E-18	2.35E-18	7.42E-19
er167	2.15E-19	2.69E-19	3.26E-19	3.79E-19	4.33E-19	4.33E-19
cd109	2.01E-20	2.35E-20	2.69E-20	3.36E-20	3.69E-20	3.69E-20
cd108	1.01E-20	1.34E-20	1.68E-20	2.01E-20	2.35E-20	2.35E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 16
0 fraction of total absorption rate
power= .00mw, burnup= 1.mwd, flux= 2.82E+08n/cm**2-sec

0	initial	91.3 d	109.6 d	127.8 d	146.1 d	146.1 d
cs134m	1.01E-20	1.34E-20	1.68E-20	1.68E-20	2.01E-20	2.01E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 17
power= 4.000E-03mw, burnup=5.8440E-01mwd, flux= 2.82E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	91.3 d	109.6 d	127.8 d	146.1 d	146.1 d
h 1	1.76E-08	2.19E-08	2.62E-08	3.05E-08	3.48E-08	3.48E-08
h 2	5.22E-11	6.50E-11	7.77E-11	9.04E-11	1.03E-10	1.03E-10
h 3	3.81E-13	4.73E-13	5.65E-13	6.57E-13	7.48E-13	7.48E-13
h 4	.00E+00	1.92E-36	2.29E-36	2.67E-36	3.04E-36	.00E+00
he 3	2.15E-15	3.35E-15	4.81E-15	6.52E-15	8.50E-15	8.50E-15
he 4	2.91E-09	3.62E-09	4.33E-09	5.04E-09	5.75E-09	5.75E-09
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	3.50E-10	4.35E-10	5.20E-10	6.05E-10	6.91E-10	6.91E-10
ne 21	2.62E-18	4.03E-18	5.71E-18	7.66E-18	9.88E-18	9.88E-18
ne 22	5.99E-14	9.31E-14	1.33E-13	1.80E-13	2.34E-13	2.34E-13
ne 23	6.56E-17	7.10E-15	7.10E-15	7.10E-15	7.10E-15	5.66E-19

na 22	2.23E-12	2.75E-12	3.27E-12	3.78E-12	4.28E-12	4.28E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.63E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08	3.05E-08
na 24m	5.99E-30	5.05E-15	5.05E-15	5.05E-15	5.05E-15	5.05E-30
na 25	6.08E-31	1.39E-29	1.66E-29	1.93E-29	2.20E-29	6.06E-32
mg 24	3.13E-06	3.80E-06	4.47E-06	5.14E-06	5.81E-06	5.81E-06
mg 25	3.83E-13	4.77E-13	5.70E-13	6.64E-13	7.58E-13	7.58E-13
mg 26	5.22E-11	6.50E-11	7.77E-11	9.04E-11	1.03E-10	1.03E-10
mg 27	1.60E-12	2.12E-12	2.12E-12	2.12E-12	2.12E-12	1.14E-12
mg 28	4.40E-24	4.32E-24	4.32E-24	4.32E-24	4.32E-24	4.30E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	7.33E-11	2.28E-10	2.28E-10	2.28E-10	2.28E-10	1.67E-11
al 29	3.89E-31	9.14E-31	1.30E-30	1.75E-30	2.27E-30	9.29E-31
al 30	.00E+00	7.01E-45	7.01E-45	1.40E-44	1.40E-44	.00E+00
si 28	8.79E-06	1.06E-05	1.25E-05	1.44E-05	1.62E-05	1.62E-05
si 29	2.26E-15	3.51E-15	5.00E-15	6.73E-15	8.70E-15	8.70E-15
si 30	6.21E-25	1.21E-24	2.09E-24	3.30E-24	4.90E-24	4.90E-24
si 31	4.37E-37	8.72E-37	1.50E-36	2.37E-36	3.51E-36	3.39E-36
si 32	.00E+00	.00E+00	.00E+00	.00E+00	1.40E-45	1.40E-45
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.82E+08	2.82E+08	2.82E+08	2.82E+08	2.82E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 18
power= 4.000E-03mw, burnup=5.8440E-01mwd, flux= 2.82E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	91.3 d	109.6 d	127.8 d	146.1 d	146.1 d
he 4	1.02E-05	1.27E-05	1.53E-05	1.78E-05	2.04E-05	2.04E-05
th226	1.34E-29	2.17E-29	3.24E-29	4.55E-29	6.08E-29	6.08E-29
th227	3.85E-16	6.77E-16	1.06E-15	1.54E-15	2.11E-15	2.11E-15
th228	1.32E-15	2.42E-15	3.98E-15	6.09E-15	8.81E-15	8.81E-15
th229	4.93E-13	8.84E-13	1.41E-12	2.07E-12	2.88E-12	2.88E-12
th230	5.11E-06	6.39E-06	7.66E-06	8.94E-06	1.02E-05	1.02E-05
th231	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09
th232	1.03E-06	1.29E-06	1.55E-06	1.81E-06	2.07E-06	2.07E-06
th233	8.39E-18	1.19E-17	1.43E-17	1.66E-17	1.90E-17	1.46E-17
th234	4.71E-07	4.98E-07	5.14E-07	5.23E-07	5.29E-07	5.29E-07
pa231	1.53E-07	1.92E-07	2.31E-07	2.70E-07	3.09E-07	3.09E-07
pa232	2.63E-15	3.30E-15	3.97E-15	4.64E-15	5.31E-15	5.29E-15
pa233	1.23E-06	1.32E-06	1.37E-06	1.40E-06	1.42E-06	1.42E-06
pa234m	1.59E-11	1.68E-11	1.73E-11	1.76E-11	1.78E-11	1.78E-11
pa234	7.10E-12	7.50E-12	7.74E-12	7.88E-12	7.97E-12	7.97E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.29E-26	2.10E-26	3.14E-26	4.40E-26	5.89E-26	5.89E-26
u231	1.04E-21	1.46E-21	1.94E-21	2.43E-21	2.94E-21	2.94E-21
u232	1.84E-12	2.74E-12	3.81E-12	5.05E-12	6.46E-12	6.46E-12
u233	1.50E-06	2.10E-06	2.73E-06	3.38E-06	4.04E-06	4.04E-06
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02
u237	3.23E-06	3.16E-06	3.15E-06	3.15E-06	3.15E-06	3.15E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	2.90E-07	3.22E-07	3.22E-07	3.22E-07	3.22E-07	2.51E-07
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	1.09E-12	1.33E-12	1.57E-12	1.79E-12	2.01E-12	2.01E-12
np236m	2.15E-12	2.09E-12	2.09E-12	2.09E-12	2.09E-12	2.08E-12
np236	4.10E-11	5.09E-11	6.08E-11	7.07E-11	8.06E-11	8.06E-11
np237	4.22E+01	4.22E+01	4.22E+01	4.22E+01	4.22E+01	4.22E+01
np238	1.58E-06	1.56E-06	1.56E-06	1.56E-06	1.56E-06	1.56E-06

```
      np239   4.75E-05  4.65E-05  4.65E-05  4.65E-05  4.65E-05  4.65E-05
      np240m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      np240   9.29E-15  9.48E-15  9.48E-15  9.48E-15  9.48E-15  8.63E-15
      np241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      pu236   5.77E-11  7.15E-11  8.51E-11  9.85E-11  1.12E-10  1.12E-10
      pu237   1.46E-16  2.11E-16  2.83E-16  3.61E-16  4.42E-16  4.42E-16
      pu238   3.62E-05  4.55E-05  5.48E-05  6.42E-05  7.35E-05  7.35E-05
      pu239   9.74E-04  1.23E-03  1.48E-03  1.73E-03  1.98E-03  1.98E-03
      pu240   9.28E-10  1.47E-09  2.14E-09  2.92E-09  3.83E-09  3.83E-09
      pu241   1.22E-15  2.42E-15  4.21E-15  6.73E-15  1.01E-14  1.01E-14
      pu242   4.61E-22  1.15E-21  2.42E-21  4.53E-21  7.79E-21  7.79E-21
      pu243   1.00E-30  2.46E-30  5.18E-30  9.69E-30  1.67E-29  1.63E-29
      pu244    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      pu245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
    totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0     flux               2.82E+08  2.82E+08  2.82E+08  2.82E+08  2.82E-07
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number  3 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *                photon libraries use an 18-energy-group structure             *
          *               the photon data are from the master photon data base,          *
          *                produced to include bremsstrahlung from uo2 matrix            *
          *                                                                              *
          *         see information above this box (if present) for later updates        *
          *                                                                              *
          ********************************************************************************
```

```
         *                                                                                *
0        ********************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/28/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   19
        power=    .00mw, burnup=      1.mwd, flux= 2.74E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial        164.4 d        182.6 d        200.9 d        219.2 d        219.2 d
     productions   1.122439E+06   1.122440E+06   1.122440E+06   1.122440E+06   1.122441E+06   1.122441E+06
     absorptions   9.157813E+05   9.157819E+05   9.157824E+05   9.157831E+05   9.157836E+05   9.157836E+05
     k infinity    1.225663E+00   1.225662E+00   1.225662E+00   1.225662E+00   1.225661E+00   1.225661E+00
0                   initial        164.4 d        182.6 d        200.9 d        219.2 d        219.2 d
     actinide
     absorptions   9.125454E+05   9.125456E+05   9.125458E+05   9.125460E+05   9.125463E+05   9.125463E+05
     non-actinide
     abs. fracs.   3.533483E-03   3.533840E-03   3.534257E-03   3.534734E-03   3.535092E-03   3.535092E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products    page   20
0                                  fraction of total absorption rate
        power=    .00mw, burnup=      1.mwd, flux= 2.74E+08n/cm**2-sec
0                initial   164.4 d   182.6 d   200.9 d   219.2 d   219.2 d

     sm149     2.93E-06  3.30E-06  3.67E-06  4.05E-06  4.42E-06  4.42E-06
     xe135     2.33E-06  2.33E-06  2.33E-06  2.33E-06  2.33E-06  2.33E-06
     sm151     1.36E-07  1.53E-07  1.70E-07  1.87E-07  2.04E-07  2.04E-07
     nd143     5.72E-08  6.55E-08  7.39E-08  8.22E-08  9.06E-08  9.06E-08
     gd157     3.18E-08  3.58E-08  3.97E-08  4.37E-08  4.77E-08  4.77E-08
     cd113     2.63E-08  2.96E-08  3.29E-08  3.62E-08  3.94E-08  3.94E-08
     pm147     2.45E-08  2.77E-08  3.09E-08  3.41E-08  3.72E-08  3.72E-08
     rh103     1.77E-08  2.09E-08  2.42E-08  2.75E-08  3.09E-08  3.09E-08
     xe131     1.74E-08  1.98E-08  2.22E-08  2.46E-08  2.69E-08  2.69E-08
     cs133     1.48E-08  1.68E-08  1.88E-08  2.07E-08  2.27E-08  2.27E-08
     tc 99     1.06E-08  1.19E-08  1.33E-08  1.47E-08  1.60E-08  1.60E-08
     eu155     9.13E-09  1.02E-08  1.13E-08  1.24E-08  1.35E-08  1.35E-08
     nd145     8.46E-09  9.52E-09  1.06E-08  1.16E-08  1.27E-08  1.27E-08
     rh105     8.36E-09  8.36E-09  8.36E-09  8.36E-09  8.36E-09  8.36E-09
     sm152     4.38E-09  4.93E-09  5.48E-09  6.02E-09  6.57E-09  6.57E-09
     kr 83     3.63E-09  4.08E-09  4.54E-09  4.99E-09  5.45E-09  5.45E-09
     cs135     3.36E-09  3.78E-09  4.20E-09  4.62E-09  5.05E-09  5.05E-09
     ru101     2.54E-09  2.86E-09  3.18E-09  3.49E-09  3.81E-09  3.81E-09
     mo 95     1.65E-09  2.11E-09  2.62E-09  3.16E-09  3.73E-09  3.73E-09
     eu153     2.18E-09  2.46E-09  2.74E-09  3.02E-09  3.29E-09  3.29E-09
     la139     2.02E-09  2.27E-09  2.52E-09  2.77E-09  3.03E-09  3.03E-09
     pr141     1.72E-09  2.02E-09  2.33E-09  2.63E-09  2.94E-09  2.94E-09
     pr143     2.87E-09  2.87E-09  2.87E-09  2.87E-09  2.87E-09  2.87E-09
     gd155     1.17E-09  1.47E-09  1.81E-09  2.19E-09  2.60E-09  2.60E-09
     xe133     2.06E-09  2.06E-09  2.06E-09  2.06E-09  2.06E-09  2.06E-09
     ce141     1.55E-09  1.57E-09  1.59E-09  1.60E-09  1.61E-09  1.61E-09
     pd105     9.31E-10  1.05E-09  1.17E-09  1.28E-09  1.40E-09  1.40E-09
     zr 93     8.36E-10  9.41E-10  1.05E-09  1.15E-09  1.26E-09  1.26E-09
     sm147     4.46E-10  5.76E-10  7.22E-10  8.83E-10  1.06E-09  1.06E-09
     pm149     9.80E-10  9.80E-10  9.80E-10  9.80E-10  9.80E-10  9.80E-10
     nd147     9.33E-10  9.33E-10  9.33E-10  9.33E-10  9.33E-10  9.33E-10
```

i129	5.89E-10	6.67E-10	7.45E-10	8.23E-10	9.01E-10	9.01E-10
mo 97	4.53E-10	5.11E-10	5.68E-10	6.25E-10	6.82E-10	6.82E-10
ag109	3.15E-10	3.54E-10	3.93E-10	4.33E-10	4.72E-10	4.72E-10
ru103	3.31E-10	3.38E-10	3.44E-10	3.48E-10	3.50E-10	3.50E-10
eu151	1.55E-10	1.96E-10	2.42E-10	2.93E-10	3.49E-10	3.49E-10
ru102	1.85E-10	2.09E-10	2.32E-10	2.55E-10	2.78E-10	2.78E-10
sr 90	1.69E-10	1.90E-10	2.11E-10	2.32E-10	2.53E-10	2.53E-10
ce142	1.68E-10	1.89E-10	2.10E-10	2.31E-10	2.52E-10	2.52E-10
ce144	1.81E-10	1.99E-10	2.17E-10	2.33E-10	2.50E-10	2.49E-10
nd148	1.61E-10	1.81E-10	2.01E-10	2.21E-10	2.41E-10	2.41E-10
y 89	1.17E-10	1.40E-10	1.63E-10	1.87E-10	2.11E-10	2.11E-10
zr 91	1.14E-10	1.37E-10	1.61E-10	1.85E-10	2.10E-10	2.10E-10
nd144	9.56E-11	1.19E-10	1.45E-10	1.73E-10	2.04E-10	2.04E-10
nd146	1.35E-10	1.52E-10	1.69E-10	1.86E-10	2.02E-10	2.02E-10
ba138	1.15E-10	1.30E-10	1.44E-10	1.59E-10	1.73E-10	1.73E-10
in115	1.08E-10	1.22E-10	1.36E-10	1.50E-10	1.64E-10	1.64E-10
pd108	1.08E-10	1.21E-10	1.34E-10	1.48E-10	1.61E-10	1.61E-10
ce140	9.79E-11	1.12E-10	1.26E-10	1.40E-10	1.55E-10	1.55E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 21
0 fraction of total absorption rate
power= .00mw, burnup= 1.mwd, flux= 2.74E+08n/cm**2-sec

0	initial	164.4 d	182.6 d	200.9 d	219.2 d	219.2 d
zr 95	1.32E-10	1.38E-10	1.43E-10	1.47E-10	1.50E-10	1.50E-10
xe132	9.40E-11	1.06E-10	1.18E-10	1.30E-10	1.43E-10	1.43E-10
y 91	1.20E-10	1.25E-10	1.29E-10	1.32E-10	1.35E-10	1.35E-10
nb 95	9.40E-11	1.03E-10	1.12E-10	1.18E-10	1.24E-10	1.24E-10
pm151	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10
mo 98	6.65E-11	7.49E-11	8.32E-11	9.15E-11	9.98E-11	9.98E-11
mo100	6.44E-11	7.25E-11	8.05E-11	8.86E-11	9.67E-11	9.67E-11
pd107	6.41E-11	7.21E-11	8.00E-11	8.80E-11	9.60E-11	9.60E-11
xe134	6.38E-11	7.17E-11	7.97E-11	8.77E-11	9.57E-11	9.57E-11
zr 92	5.22E-11	5.87E-11	6.52E-11	7.18E-11	7.83E-11	7.83E-11
zr 96	4.04E-11	4.55E-11	5.05E-11	5.56E-11	6.07E-11	6.07E-11
ru104	3.97E-11	4.46E-11	4.96E-11	5.45E-11	5.95E-11	5.95E-11
i127	3.63E-11	4.13E-11	4.63E-11	5.14E-11	5.65E-11	5.65E-11
nd150	3.55E-11	4.00E-11	4.44E-11	4.88E-11	5.33E-11	5.33E-11
cs137	3.48E-11	3.91E-11	4.34E-11	4.77E-11	5.20E-11	5.20E-11
xe136	3.44E-11	3.87E-11	4.30E-11	4.73E-11	5.16E-11	5.16E-11
ba140	4.75E-11	4.75E-11	4.75E-11	4.75E-11	4.75E-11	4.75E-11
br 81	2.58E-11	2.90E-11	3.22E-11	3.55E-11	3.87E-11	3.87E-11
sm153	3.82E-11	3.82E-11	3.82E-11	3.82E-11	3.82E-11	3.82E-11
eu156	3.48E-11	3.48E-11	3.48E-11	3.48E-11	3.48E-11	3.48E-11
zr 94	2.18E-11	2.46E-11	2.73E-11	3.00E-11	3.28E-11	3.28E-11
rb 85	2.01E-11	2.26E-11	2.52E-11	2.77E-11	3.02E-11	3.02E-11
sr 89	2.67E-11	2.77E-11	2.84E-11	2.90E-11	2.94E-11	2.94E-11
cd111	1.54E-11	1.75E-11	1.96E-11	2.17E-11	2.38E-11	2.38E-11
te130	1.56E-11	1.76E-11	1.96E-11	2.15E-11	2.35E-11	2.35E-11
sm154	1.51E-11	1.70E-11	1.89E-11	2.08E-11	2.27E-11	2.27E-11
kr 85	1.49E-11	1.67E-11	1.86E-11	2.04E-11	2.22E-11	2.22E-11
rb 87	1.46E-11	1.64E-11	1.83E-11	2.01E-11	2.19E-11	2.19E-11
kr 87	2.16E-11	2.31E-11	2.31E-11	2.31E-11	2.31E-11	2.08E-11
ce143	1.76E-11	1.76E-11	1.76E-11	1.76E-11	1.76E-11	1.75E-11
se 77	1.15E-11	1.30E-11	1.44E-11	1.59E-11	1.74E-11	1.74E-11
la140	1.62E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11
mo 99	1.31E-11	1.32E-11	1.32E-11	1.32E-11	1.32E-11	1.31E-11
kr 84	6.87E-12	7.73E-12	8.59E-12	9.45E-12	1.03E-11	1.03E-11
ba137	4.56E-12	5.76E-12	7.08E-12	8.55E-12	1.02E-11	1.02E-11
ru106	6.03E-12	6.68E-12	7.30E-12	7.90E-12	8.48E-12	8.48E-12
sb121	5.40E-12	6.08E-12	6.76E-12	7.44E-12	8.12E-12	8.12E-12

se 79	5.31E-12	5.98E-12	6.64E-12	7.31E-12	7.97E-12	7.97E-12
i131	6.81E-12	6.81E-12	6.81E-12	6.81E-12	6.81E-12	6.81E-12
sb123	3.81E-12	4.30E-12	4.79E-12	5.28E-12	5.78E-12	5.78E-12
kr 86	3.84E-12	4.32E-12	4.80E-12	5.28E-12	5.76E-12	5.76E-12
te127m	4.41E-12	4.74E-12	5.04E-12	5.31E-12	5.54E-12	5.54E-12
te128	3.42E-12	3.85E-12	4.27E-12	4.70E-12	5.13E-12	5.13E-12
se 80	2.48E-12	2.79E-12	3.10E-12	3.41E-12	3.72E-12	3.72E-12
gd156	2.27E-12	2.60E-12	2.93E-12	3.27E-12	3.60E-12	3.60E-12
dy161	2.00E-12	2.26E-12	2.53E-12	2.79E-12	3.06E-12	3.06E-12
sm150	1.32E-12	1.66E-12	2.04E-12	2.46E-12	2.92E-12	2.92E-12
tb159	1.53E-12	1.72E-12	1.91E-12	2.11E-12	2.30E-12	2.30E-12
li 6	1.41E-12	1.59E-12	1.76E-12	1.94E-12	2.11E-12	2.11E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 22
0 fraction of total absorption rate
power= .00mw, burnup= 1.mwd, flux= 2.74E+08n/cm**2-sec

0	initial	164.4 d	182.6 d	200.9 d	219.2 d	219.2 d
cd112	1.40E-12	1.58E-12	1.75E-12	1.93E-12	2.11E-12	2.11E-12
sb125	1.40E-12	1.57E-12	1.74E-12	1.91E-12	2.07E-12	2.07E-12
pd106	9.16E-13	1.15E-12	1.40E-12	1.67E-12	1.97E-12	1.97E-12
te129m	1.73E-12	1.76E-12	1.78E-12	1.79E-12	1.80E-12	1.80E-12
sn117	1.11E-12	1.25E-12	1.39E-12	1.53E-12	1.67E-12	1.67E-12
sn119	9.14E-13	1.03E-12	1.14E-12	1.26E-12	1.37E-12	1.37E-12
sn115	8.31E-13	9.38E-13	1.04E-12	1.15E-12	1.26E-12	1.26E-12
sr 88	7.05E-13	7.94E-13	8.82E-13	9.70E-13	1.06E-12	1.06E-12
pm148m	5.25E-13	6.30E-13	7.37E-13	8.45E-13	9.54E-13	9.54E-13
pd110	4.99E-13	5.61E-13	6.23E-13	6.85E-13	7.47E-13	7.47E-13
cd114	4.84E-13	5.44E-13	6.05E-13	6.65E-13	7.25E-13	7.25E-13
se 82	4.79E-13	5.39E-13	5.99E-13	6.58E-13	7.18E-13	7.18E-13
gd158	4.53E-13	5.10E-13	5.67E-13	6.23E-13	6.80E-13	6.80E-13
sn126	3.83E-13	4.31E-13	4.79E-13	5.27E-13	5.75E-13	5.75E-13
se 78	3.64E-13	4.09E-13	4.55E-13	5.00E-13	5.46E-13	5.46E-13
sn124	2.90E-13	3.26E-13	3.63E-13	3.99E-13	4.35E-13	4.35E-13
dy162	2.78E-13	3.13E-13	3.47E-13	3.81E-13	4.16E-13	4.16E-13
dy164	2.53E-13	2.84E-13	3.15E-13	3.47E-13	3.78E-13	3.78E-13
eu154	2.29E-13	2.60E-13	2.91E-13	3.23E-13	3.55E-13	3.55E-13
as 75	2.17E-13	2.44E-13	2.71E-13	2.98E-13	3.25E-13	3.25E-13
ag111	3.16E-13	3.15E-13	3.15E-13	3.15E-13	3.15E-13	3.15E-13
eu157	2.96E-13	2.96E-13	2.96E-13	2.96E-13	2.96E-13	2.95E-13
y 90	1.57E-13	1.77E-13	1.96E-13	2.16E-13	2.36E-13	2.36E-13
cd115m	2.13E-13	2.19E-13	2.23E-13	2.27E-13	2.29E-13	2.29E-13
zr 90	9.47E-14	1.20E-13	1.49E-13	1.81E-13	2.16E-13	2.16E-13
te125	8.63E-14	1.10E-13	1.37E-13	1.67E-13	2.00E-13	2.00E-13
sn118	1.18E-13	1.33E-13	1.48E-13	1.63E-13	1.77E-13	1.77E-13
ba136	9.98E-14	1.14E-13	1.29E-13	1.43E-13	1.57E-13	1.57E-13
cd116	1.01E-13	1.13E-13	1.26E-13	1.38E-13	1.51E-13	1.51E-13
sn122	1.01E-13	1.13E-13	1.26E-13	1.38E-13	1.51E-13	1.51E-13
sn120	7.52E-14	8.45E-14	9.39E-14	1.03E-13	1.13E-13	1.13E-13
kr 82	6.94E-14	7.82E-14	8.70E-14	9.58E-14	1.05E-13	1.05E-13
cs134	6.44E-14	7.30E-14	8.16E-14	9.03E-14	9.92E-14	9.92E-14
dy163	6.14E-14	6.90E-14	7.66E-14	8.42E-14	9.18E-14	9.18E-14
ge 73	5.88E-14	6.62E-14	7.36E-14	8.09E-14	8.83E-14	8.83E-14
ru 99	5.53E-14	6.26E-14	6.99E-14	7.73E-14	8.47E-14	8.47E-14
xe130	4.01E-14	4.51E-14	5.02E-14	5.52E-14	6.03E-14	6.03E-14
cs136	5.54E-14	5.54E-14	5.55E-14	5.55E-14	5.55E-14	5.54E-14
pm148	3.11E-14	3.53E-14	3.97E-14	4.40E-14	4.83E-14	4.82E-14
mo 96	2.90E-14	3.27E-14	3.64E-14	4.01E-14	4.37E-14	4.37E-14
ge 76	2.14E-14	2.41E-14	2.68E-14	2.94E-14	3.21E-14	3.21E-14
sn125	2.92E-14	2.92E-14	2.92E-14	2.92E-14	2.92E-14	2.92E-14
ru105	2.94E-14	2.95E-14	2.95E-14	2.95E-14	2.95E-14	2.91E-14

gd160	1.35E-14	1.51E-14	1.68E-14	1.85E-14	2.02E-14	2.02E-14
te126	9.81E-15	1.11E-14	1.24E-14	1.37E-14	1.50E-14	1.50E-14
rb 88	1.29E-14	1.30E-14	1.30E-14	1.30E-14	1.30E-14	1.28E-14
i135	1.00E-14	1.02E-14	1.02E-14	1.02E-14	1.02E-14	9.98E-15
te132	9.58E-15	9.59E-15	9.59E-15	9.59E-15	9.59E-15	9.58E-15
ru100	5.45E-15	6.16E-15	6.87E-15	7.59E-15	8.32E-15	8.32E-15

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 23
0 fraction of total absorption rate
power= .00mw, burnup= 1.mwd, flux= 2.74E+08n/cm**2-sec

0	initial	164.4 d	182.6 d	200.9 d	219.2 d	219.2 d
sn123	5.49E-15	5.92E-15	6.31E-15	6.67E-15	6.99E-15	6.99E-15
ho165	4.24E-15	4.77E-15	5.30E-15	5.82E-15	6.35E-15	6.35E-15
te134	5.12E-15	5.89E-15	5.89E-15	5.89E-15	5.89E-15	4.78E-15
sr 87	2.46E-15	2.77E-15	3.08E-15	3.39E-15	3.70E-15	3.70E-15
in113	1.60E-15	2.03E-15	2.50E-15	3.03E-15	3.60E-15	3.60E-15
sb126	3.01E-15	3.01E-15	3.01E-15	3.01E-15	3.01E-15	3.01E-15
te124	1.36E-15	1.62E-15	1.89E-15	2.17E-15	2.46E-15	2.46E-15
in117m	2.10E-15	2.10E-15	2.10E-15	2.10E-15	2.10E-15	2.10E-15
nb 94	1.39E-15	1.57E-15	1.74E-15	1.92E-15	2.09E-15	2.09E-15
sb124	1.71E-15	1.79E-15	1.85E-15	1.89E-15	1.93E-15	1.93E-15
eu152	9.26E-16	1.12E-15	1.35E-15	1.61E-15	1.90E-15	1.90E-15
ge 74	1.19E-15	1.34E-15	1.49E-15	1.64E-15	1.79E-15	1.79E-15
ge 72	8.17E-16	9.21E-16	1.03E-15	1.13E-15	1.24E-15	1.24E-15
sr 86	5.70E-16	6.57E-16	7.44E-16	8.31E-16	9.19E-16	9.19E-16
se 76	4.98E-16	5.62E-16	6.25E-16	6.88E-16	7.51E-16	7.51E-16
i130	7.11E-16	7.16E-16	7.16E-16	7.16E-16	7.16E-16	7.09E-16
ba135	3.76E-16	4.38E-16	5.04E-16	5.73E-16	6.45E-16	6.45E-16
in117	6.17E-16	6.17E-16	6.17E-16	6.17E-16	6.17E-16	6.16E-16
sm148	1.76E-16	2.35E-16	3.03E-16	3.80E-16	4.66E-16	4.66E-16
nd142	1.40E-16	1.75E-16	2.15E-16	2.58E-16	3.07E-16	3.07E-16
gd154	1.21E-16	1.53E-16	1.90E-16	2.31E-16	2.76E-16	2.76E-16
tb160	2.28E-16	2.40E-16	2.50E-16	2.59E-16	2.67E-16	2.67E-16
rb 86	2.41E-16	2.42E-16	2.42E-16	2.42E-16	2.42E-16	2.42E-16
dy165	2.07E-16	2.10E-16	2.10E-16	2.10E-16	2.10E-16	2.03E-16
ba134	7.61E-17	9.67E-17	1.20E-16	1.46E-16	1.74E-16	1.74E-16
er166	1.14E-16	1.29E-16	1.44E-16	1.59E-16	1.74E-16	1.74E-16
xe128	1.11E-16	1.25E-16	1.39E-16	1.53E-16	1.67E-16	1.67E-16
gd152	7.54E-17	8.89E-17	1.04E-16	1.21E-16	1.39E-16	1.39E-16
pd104	4.71E-17	6.29E-17	8.13E-17	1.02E-16	1.26E-16	1.26E-16
cd118	1.08E-16	1.21E-16	1.21E-16	1.21E-16	1.21E-16	1.02E-16
cd110	4.94E-17	5.85E-17	6.81E-17	7.84E-17	8.93E-17	8.93E-17
ge 75	8.31E-17	8.69E-17	8.69E-17	8.69E-17	8.69E-17	8.04E-17
dy160	4.17E-17	5.05E-17	5.97E-17	6.93E-17	7.91E-17	7.91E-17
kr 80	3.33E-17	3.75E-17	4.17E-17	4.59E-17	5.00E-17	5.00E-17
br 79	1.06E-17	1.31E-17	1.60E-17	1.90E-17	2.24E-17	2.24E-17
in119m	2.51E-17	3.02E-17	3.02E-17	3.02E-17	3.02E-17	2.17E-17
xe129	4.82E-18	6.10E-18	7.52E-18	9.10E-18	1.08E-17	1.08E-17
ag107	4.59E-18	5.81E-18	7.16E-18	8.66E-18	1.03E-17	1.03E-17
te122	4.26E-18	4.82E-18	5.38E-18	5.95E-18	6.51E-18	6.51E-18
be 9	2.67E-18	3.00E-18	3.33E-18	3.67E-18	4.00E-18	4.00E-18
pr142	2.53E-18	2.88E-18	3.22E-18	3.57E-18	3.92E-18	3.89E-18
nb 93	1.53E-18	1.75E-18	1.98E-18	2.23E-18	2.48E-18	2.48E-18
sn116	1.37E-18	1.57E-18	1.78E-18	1.98E-18	2.20E-18	2.20E-18
te123	1.14E-18	1.35E-18	1.56E-18	1.78E-18	2.01E-18	2.01E-18
li 7	1.09E-18	1.22E-18	1.36E-18	1.49E-18	1.63E-18	1.63E-18
er167	4.35E-19	4.89E-19	5.43E-19	6.00E-19	6.54E-19	6.54E-19
in119	7.45E-19	2.36E-18	2.36E-18	2.36E-18	2.36E-18	3.40E-19
cd109	3.71E-20	4.04E-20	4.38E-20	4.72E-20	5.05E-20	5.05E-20
cd108	2.36E-20	2.36E-20	2.70E-20	3.03E-20	3.37E-20	3.37E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 24
0 fraction of total absorption rate
power= .00mw, burnup= 1.mwd, flux= 2.74E+08n/cm**2-sec
0 initial 164.4 d 182.6 d 200.9 d 219.2 d 219.2 d

cs134m	2.02E-20	2.36E-20	2.70E-20	3.03E-20	3.03E-20	3.03E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 25
power= 4.000E-03mw, burnup=8.7659E-01mwd, flux= 2.74E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	164.4 d	182.6 d	200.9 d	219.2 d	219.2 d
h 1	3.48E-08	3.91E-08	4.33E-08	4.76E-08	5.18E-08	5.18E-08
h 2	1.03E-10	1.16E-10	1.28E-10	1.41E-10	1.54E-10	1.54E-10
h 3	7.48E-13	8.39E-13	9.29E-13	1.02E-12	1.11E-12	1.11E-12
h 4	.00E+00	3.41E-36	3.78E-36	4.14E-36	4.51E-36	.00E+00
he 3	8.50E-15	1.07E-14	1.32E-14	1.59E-14	1.89E-14	1.89E-14
he 4	5.75E-09	6.45E-09	7.16E-09	7.86E-09	8.57E-09	8.57E-09
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	6.91E-10	7.75E-10	8.60E-10	9.44E-10	1.03E-09	1.03E-09
ne 21	9.88E-18	1.23E-17	1.50E-17	1.80E-17	2.12E-17	2.12E-17
ne 22	2.34E-13	2.94E-13	3.61E-13	4.34E-13	5.14E-13	5.14E-13
ne 23	5.66E-19	7.04E-15	7.04E-15	7.04E-15	7.04E-15	5.25E-21
na 22	4.28E-12	4.78E-12	5.26E-12	5.74E-12	6.22E-12	6.22E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.05E-08	2.85E-08	2.85E-08	2.85E-08	2.85E-08	2.82E-08
na 24m	5.05E-30	4.68E-15	4.68E-15	4.68E-15	4.68E-15	4.68E-30
na 25	6.06E-32	2.44E-29	2.71E-29	2.97E-29	3.24E-29	4.81E-33
mg 24	5.81E-06	6.43E-06	7.05E-06	7.67E-06	8.29E-06	8.29E-06
mg 25	7.58E-13	8.51E-13	9.43E-13	1.04E-12	1.13E-12	1.13E-12
mg 26	1.03E-10	1.16E-10	1.28E-10	1.41E-10	1.54E-10	1.54E-10
mg 27	1.14E-12	2.10E-12	2.10E-12	2.10E-12	2.10E-12	8.34E-13
mg 28	4.30E-24	4.29E-24	4.29E-24	4.29E-24	4.29E-24	4.26E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	1.67E-11	2.11E-10	2.11E-10	2.11E-10	2.11E-10	4.24E-12
al 29	9.29E-31	2.80E-30	3.42E-30	4.10E-30	4.84E-30	1.27E-30
al 30	.00E+00	2.24E-44	2.94E-44	4.34E-44	5.89E-44	.00E+00
si 28	1.62E-05	1.79E-05	1.96E-05	2.14E-05	2.31E-05	2.31E-05
si 29	8.70E-15	1.09E-14	1.33E-14	1.60E-14	1.88E-14	1.88E-14
si 30	4.90E-24	6.93E-24	9.43E-24	1.25E-23	1.61E-23	1.61E-23
si 31	3.39E-36	4.98E-36	6.78E-36	8.96E-36	1.16E-35	1.09E-35
si 32	1.40E-45	2.80E-45	4.20E-45	7.01E-45	1.12E-44	1.12E-44
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.74E+08	2.74E+08	2.74E+08	2.74E+08	2.74E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 26
power= 4.000E-03mw, burnup=8.7659E-01mwd, flux= 2.74E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	164.4 d	182.6 d	200.9 d	219.2 d	219.2 d
he 4	2.04E-05	2.30E-05	2.56E-05	2.81E-05	3.07E-05	3.07E-05
th226	6.08E-29	7.78E-29	9.72E-29	1.19E-28	1.43E-28	1.43E-28
th227	2.11E-15	2.77E-15	3.53E-15	4.39E-15	5.33E-15	5.34E-15
th228	8.81E-15	1.22E-14	1.64E-14	2.13E-14	2.72E-14	2.72E-14
th229	2.88E-12	3.83E-12	4.93E-12	6.18E-12	7.57E-12	7.57E-12
th230	1.02E-05	1.15E-05	1.28E-05	1.41E-05	1.53E-05	1.53E-05
th231	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09
th232	2.07E-06	2.32E-06	2.58E-06	2.84E-06	3.10E-06	3.10E-06
th233	1.46E-17	2.13E-17	2.37E-17	2.61E-17	2.84E-17	1.92E-17
th234	5.29E-07	5.32E-07	5.34E-07	5.35E-07	5.36E-07	5.36E-07

```
      pa231   3.09E-07  3.48E-07  3.87E-07  4.26E-07  4.65E-07  4.65E-07
      pa232   5.29E-15  5.98E-15  6.65E-15  7.32E-15  7.99E-15  7.96E-15
      pa233   1.42E-06  1.43E-06  1.44E-06  1.45E-06  1.45E-06  1.45E-06
      pa234m  1.78E-11  1.79E-11  1.80E-11  1.81E-11  1.81E-11  1.81E-11
      pa234   7.97E-12  8.02E-12  8.05E-12  8.06E-12  8.07E-12  8.07E-12
      pa235    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
       u230   5.89E-26  7.54E-26  9.42E-26  1.15E-25  1.38E-25  1.38E-25
       u231   2.94E-21  3.41E-21  3.91E-21  4.43E-21  4.94E-21  4.94E-21
       u232   6.46E-12  8.02E-12  9.75E-12  1.16E-11  1.37E-11  1.37E-11
       u233   4.04E-06  4.71E-06  5.38E-06  6.06E-06  6.74E-06  6.74E-06
       u234   9.06E+00  9.06E+00  9.06E+00  9.06E+00  9.06E+00  9.06E+00
       u235   7.30E+02  7.30E+02  7.30E+02  7.30E+02  7.30E+02  7.30E+02
       u236   1.74E+02  1.74E+02  1.74E+02  1.74E+02  1.74E+02  1.74E+02
       u237   3.15E-06  3.12E-06  3.11E-06  3.11E-06  3.11E-06  3.11E-06
       u238   3.64E+04  3.64E+04  3.64E+04  3.64E+04  3.64E+04  3.64E+04
       u239   2.51E-07  3.19E-07  3.19E-07  3.19E-07  3.19E-07  2.19E-07
       u240    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
       u241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      np235   2.01E-12  2.22E-12  2.42E-12  2.62E-12  2.81E-12  2.81E-12
      np236m  2.08E-12  2.06E-12  2.06E-12  2.06E-12  2.06E-12  2.05E-12
      np236   8.06E-11  9.04E-11  1.00E-10  1.10E-10  1.20E-10  1.20E-10
      np237   4.22E+01  4.22E+01  4.22E+01  4.22E+01  4.22E+01  4.22E+01
      np238   1.56E-06  1.56E-06  1.56E-06  1.56E-06  1.56E-06  1.55E-06
      np239   4.65E-05  4.61E-05  4.61E-05  4.61E-05  4.61E-05  4.61E-05
      np240m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      np240   8.63E-15  9.37E-15  9.37E-15  9.37E-15  9.37E-15  8.14E-15
      np241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      pu236   1.12E-10  1.25E-10  1.38E-10  1.50E-10  1.63E-10  1.63E-10
      pu237   4.42E-16  5.24E-16  6.08E-16  6.95E-16  7.82E-16  7.82E-16
      pu238   7.35E-05  8.28E-05  9.20E-05  1.01E-04  1.11E-04  1.11E-04
      pu239   1.98E-03  2.22E-03  2.47E-03  2.72E-03  2.97E-03  2.97E-03
      pu240   3.83E-09  4.87E-09  6.02E-09  7.29E-09  8.69E-09  8.69E-09
      pu241   1.01E-14  1.44E-14  1.98E-14  2.63E-14  3.42E-14  3.42E-14
      pu242   7.79E-21  1.25E-20  1.92E-20  2.81E-20  3.99E-20  3.99E-20
      pu243   1.63E-29  2.65E-29  4.05E-29  5.95E-29  8.44E-29  8.19E-29
      pu244    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      pu245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals     3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux                2.74E+08  2.74E+08  2.74E+08  2.74E+08  2.74E-07
0        1q array has       20 entries.
0        3q array has        1 entries.
0        3q array has        1 entries.
0        3q array has        1 entries.
0        4q array has        1 entries.
0       54q array has       12 entries.
1library information...

          cross-section data taken from position number  4 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
```

```
        used a time-dependent neutron spectrum, for each of the above passes
          pass 0 applies start-up fuel densiities
          pass n applies mid time densities of nth library interval
        first library updated was...
        ******************************************************************************
        *                                                                            *
        *            prelim lwr origen-s binary working library--id = 1143           *
        *         made from modified card-image origen-s libraries of scale 4.2      *
        *      data from the light element, actinide, and fission product libraries  *
        *        decay data, including gamma and total energy, are from endf/b-vi    *
        *                                                                            *
        *      neutron flux spectrum factors and cross sections were produced from   *
        *     the "presas2" case updating all nuclides on the scale "burnup" library *
        *                                                                            *
        *                  fission product yields are from endf/b-v                  *
        *                                                                            *
        *              photon libraries use an 18-energy-group structure             *
        *             the photon data are from the master photon data base,          *
        *              produced to include bremsstrahlung from uo2 matrix            *
        *                                                                            *
        *        see information above this box (if present) for later updates       *
        *                                                                            *
        ******************************************************************************
        *                                                                            *
0       ******************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/28/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0       ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   27
        power=    .00mw, burnup=      1.mwd, flux= 2.71E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial        237.4 d        255.7 d        274.0 d        292.2 d        292.2 d
     productions   1.134699E+06   1.134700E+06   1.134700E+06   1.134700E+06   1.134701E+06   1.134701E+06
     absorptions   9.243443E+05   9.243449E+05   9.243456E+05   9.243463E+05   9.243468E+05   9.243468E+05
     k infinity    1.227572E+00   1.227571E+00   1.227571E+00   1.227570E+00   1.227570E+00   1.227570E+00
0                   initial        237.4 d        255.7 d        274.0 d        292.2 d        292.2 d
     actinide
     absorptions   9.211681E+05   9.211683E+05   9.211685E+05   9.211688E+05   9.211689E+05   9.211689E+05
     non-actinide
     abs. fracs.   3.436208E-03   3.436625E-03   3.437161E-03   3.437579E-03   3.437996E-03   3.437996E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products    page   28
0                                  fraction of total absorption rate
        power=    .00mw, burnup=      1.mwd, flux= 2.71E+08n/cm**2-sec
0                initial   237.4 d   255.7 d   274.0 d   292.2 d   292.2 d

     sm149     4.43E-06  4.81E-06  5.18E-06  5.56E-06  5.93E-06  5.93E-06
     xe135     2.33E-06  2.33E-06  2.33E-06  2.33E-06  2.33E-06  2.33E-06
     sm151     2.04E-07  2.21E-07  2.39E-07  2.56E-07  2.73E-07  2.73E-07
     nd143     9.07E-08  9.91E-08  1.07E-07  1.16E-07  1.24E-07  1.24E-07
     gd157     4.78E-08  5.18E-08  5.58E-08  5.97E-08  6.37E-08  6.37E-08
     cd113     3.95E-08  4.28E-08  4.61E-08  4.94E-08  5.27E-08  5.27E-08
     pm147     3.72E-08  4.03E-08  4.33E-08  4.63E-08  4.93E-08  4.93E-08
     rh103     3.09E-08  3.43E-08  3.77E-08  4.11E-08  4.45E-08  4.45E-08
```

xe131	2.69E-08	2.93E-08	3.17E-08	3.40E-08	3.64E-08	3.64E-08
cs133	2.27E-08	2.46E-08	2.66E-08	2.86E-08	3.06E-08	3.06E-08
tc 99	1.60E-08	1.73E-08	1.87E-08	2.01E-08	2.14E-08	2.14E-08
eu155	1.35E-08	1.46E-08	1.56E-08	1.67E-08	1.77E-08	1.77E-08
nd145	1.27E-08	1.38E-08	1.48E-08	1.59E-08	1.69E-08	1.69E-08
sm152	6.56E-09	7.11E-09	7.65E-09	8.20E-09	8.75E-09	8.75E-09
rh105	8.37E-09	8.36E-09	8.36E-09	8.36E-09	8.36E-09	8.36E-09
kr 83	5.46E-09	5.91E-09	6.37E-09	6.82E-09	7.28E-09	7.28E-09
cs135	5.04E-09	5.47E-09	5.89E-09	6.31E-09	6.73E-09	6.73E-09
mo 95	3.72E-09	4.32E-09	4.94E-09	5.57E-09	6.22E-09	6.22E-09
ru101	3.80E-09	4.12E-09	4.44E-09	4.75E-09	5.07E-09	5.07E-09
gd155	2.61E-09	3.05E-09	3.53E-09	4.04E-09	4.58E-09	4.58E-09
eu153	3.29E-09	3.57E-09	3.85E-09	4.13E-09	4.40E-09	4.40E-09
pr141	2.94E-09	3.25E-09	3.56E-09	3.87E-09	4.18E-09	4.18E-09
la139	3.03E-09	3.28E-09	3.53E-09	3.79E-09	4.04E-09	4.04E-09
pr143	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09
xe133	2.07E-09	2.07E-09	2.07E-09	2.07E-09	2.07E-09	2.07E-09
sm147	1.06E-09	1.25E-09	1.46E-09	1.68E-09	1.92E-09	1.92E-09
pd105	1.40E-09	1.52E-09	1.64E-09	1.75E-09	1.87E-09	1.87E-09
zr 93	1.25E-09	1.36E-09	1.46E-09	1.57E-09	1.67E-09	1.67E-09
ce141	1.61E-09	1.61E-09	1.62E-09	1.62E-09	1.62E-09	1.62E-09
i129	9.03E-10	9.81E-10	1.06E-09	1.14E-09	1.22E-09	1.22E-09
pm149	9.82E-10	9.82E-10	9.82E-10	9.82E-10	9.82E-10	9.82E-10
nd147	9.31E-10	9.31E-10	9.32E-10	9.32E-10	9.32E-10	9.31E-10
mo 97	6.83E-10	7.40E-10	7.97E-10	8.54E-10	9.11E-10	9.11E-10
ag109	4.71E-10	5.11E-10	5.50E-10	5.89E-10	6.29E-10	6.29E-10
eu151	3.49E-10	4.10E-10	4.76E-10	5.47E-10	6.22E-10	6.22E-10
ru102	2.78E-10	3.02E-10	3.25E-10	3.48E-10	3.71E-10	3.71E-10
ru103	3.51E-10	3.53E-10	3.54E-10	3.55E-10	3.56E-10	3.56E-10
nd144	2.04E-10	2.36E-10	2.70E-10	3.06E-10	3.44E-10	3.44E-10
sr 90	2.53E-10	2.74E-10	2.95E-10	3.16E-10	3.37E-10	3.37E-10
ce142	2.52E-10	2.73E-10	2.95E-10	3.16E-10	3.37E-10	3.37E-10
nd148	2.41E-10	2.61E-10	2.81E-10	3.01E-10	3.21E-10	3.21E-10
zr 91	2.10E-10	2.36E-10	2.61E-10	2.87E-10	3.14E-10	3.14E-10
y 89	2.12E-10	2.37E-10	2.61E-10	2.87E-10	3.12E-10	3.12E-10
ce144	2.50E-10	2.65E-10	2.80E-10	2.94E-10	3.07E-10	3.07E-10
nd146	2.03E-10	2.20E-10	2.37E-10	2.53E-10	2.70E-10	2.70E-10
ba138	1.73E-10	1.88E-10	2.02E-10	2.17E-10	2.31E-10	2.31E-10
in115	1.64E-10	1.78E-10	1.92E-10	2.06E-10	2.20E-10	2.20E-10
pd108	1.61E-10	1.74E-10	1.87E-10	2.01E-10	2.14E-10	2.14E-10
ce140	1.55E-10	1.69E-10	1.83E-10	1.98E-10	2.12E-10	2.12E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 29

0 fraction of total absorption rate

power= .00mw, burnup= 1.mwd, flux= 2.71E+08n/cm**2-sec

0	initial	237.4 d	255.7 d	274.0 d	292.2 d	292.2 d
xe132	1.43E-10	1.55E-10	1.67E-10	1.79E-10	1.91E-10	1.91E-10
zr 95	1.50E-10	1.53E-10	1.55E-10	1.57E-10	1.58E-10	1.58E-10
y 91	1.35E-10	1.37E-10	1.39E-10	1.41E-10	1.42E-10	1.42E-10
nb 95	1.24E-10	1.29E-10	1.33E-10	1.37E-10	1.40E-10	1.40E-10
mo 98	9.96E-11	1.08E-10	1.16E-10	1.25E-10	1.33E-10	1.33E-10
mo100	9.66E-11	1.05E-10	1.13E-10	1.21E-10	1.29E-10	1.29E-10
pd107	9.60E-11	1.04E-10	1.12E-10	1.20E-10	1.28E-10	1.28E-10
xe134	9.58E-11	1.04E-10	1.12E-10	1.20E-10	1.28E-10	1.28E-10
pm151	1.10E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10	1.10E-10
zr 92	7.84E-11	8.50E-11	9.15E-11	9.81E-11	1.05E-10	1.05E-10
zr 96	6.05E-11	6.55E-11	7.05E-11	7.56E-11	8.06E-11	8.06E-11
ru104	5.95E-11	6.44E-11	6.93E-11	7.43E-11	7.92E-11	7.93E-11
i127	5.65E-11	6.16E-11	6.67E-11	7.19E-11	7.71E-11	7.71E-11
nd150	5.33E-11	5.77E-11	6.22E-11	6.66E-11	7.10E-11	7.10E-11

cs137	5.20E-11	5.63E-11	6.06E-11	6.49E-11	6.92E-11	6.92E-11
xe136	5.17E-11	5.60E-11	6.03E-11	6.46E-11	6.89E-11	6.89E-11
br 81	3.87E-11	4.19E-11	4.51E-11	4.84E-11	5.16E-11	5.16E-11
ba140	4.75E-11	4.76E-11	4.76E-11	4.76E-11	4.76E-11	4.75E-11
zr 94	3.27E-11	3.54E-11	3.82E-11	4.09E-11	4.36E-11	4.36E-11
rb 85	3.02E-11	3.28E-11	3.53E-11	3.79E-11	4.04E-11	4.04E-11
sm153	3.82E-11	3.82E-11	3.82E-11	3.82E-11	3.82E-11	3.82E-11
eu156	3.48E-11	3.48E-11	3.48E-11	3.48E-11	3.48E-11	3.48E-11
cd111	2.38E-11	2.59E-11	2.80E-11	3.01E-11	3.21E-11	3.21E-11
te130	2.35E-11	2.55E-11	2.74E-11	2.94E-11	3.13E-11	3.13E-11
sr 89	2.94E-11	2.98E-11	3.01E-11	3.03E-11	3.04E-11	3.04E-11
sm154	2.27E-11	2.46E-11	2.65E-11	2.84E-11	3.03E-11	3.03E-11
kr 85	2.23E-11	2.41E-11	2.59E-11	2.77E-11	2.95E-11	2.95E-11
rb 87	2.19E-11	2.38E-11	2.56E-11	2.74E-11	2.92E-11	2.92E-11
se 77	1.74E-11	1.89E-11	2.03E-11	2.18E-11	2.33E-11	2.33E-11
kr 87	2.09E-11	2.32E-11	2.32E-11	2.32E-11	2.32E-11	2.01E-11
ba137	1.02E-11	1.19E-11	1.38E-11	1.58E-11	1.80E-11	1.80E-11
ce143	1.76E-11	1.76E-11	1.76E-11	1.76E-11	1.76E-11	1.76E-11
la140	1.62E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11
kr 84	1.03E-11	1.11E-11	1.20E-11	1.29E-11	1.37E-11	1.37E-11
mo 99	1.31E-11	1.32E-11	1.32E-11	1.32E-11	1.32E-11	1.31E-11
sb121	8.11E-12	8.79E-12	9.47E-12	1.02E-11	1.08E-11	1.08E-11
se 79	7.99E-12	8.66E-12	9.32E-12	9.99E-12	1.07E-11	1.07E-11
ru106	8.46E-12	9.02E-12	9.56E-12	1.01E-11	1.06E-11	1.06E-11
sb123	5.77E-12	6.27E-12	6.76E-12	7.26E-12	7.76E-12	7.76E-12
kr 86	5.77E-12	6.25E-12	6.73E-12	7.22E-12	7.70E-12	7.70E-12
te128	5.13E-12	5.56E-12	5.98E-12	6.41E-12	6.84E-12	6.84E-12
i131	6.81E-12	6.81E-12	6.81E-12	6.81E-12	6.81E-12	6.81E-12
te127m	5.55E-12	5.76E-12	5.95E-12	6.12E-12	6.27E-12	6.27E-12
sm150	2.92E-12	3.42E-12	3.96E-12	4.54E-12	5.15E-12	5.15E-12
se 80	3.72E-12	4.03E-12	4.34E-12	4.65E-12	4.96E-12	4.96E-12
gd156	3.59E-12	3.92E-12	4.26E-12	4.59E-12	4.92E-12	4.92E-12
dy161	3.06E-12	3.33E-12	3.59E-12	3.86E-12	4.13E-12	4.13E-12
pd106	1.97E-12	2.29E-12	2.62E-12	2.98E-12	3.35E-12	3.35E-12
tb159	2.30E-12	2.49E-12	2.68E-12	2.87E-12	3.06E-12	3.06E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 30
0 fraction of total absorption rate
power= .00mw, burnup= 1.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 237.4 d 255.7 d 274.0 d 292.2 d 292.2 d

li 6	2.12E-12	2.30E-12	2.47E-12	2.65E-12	2.83E-12	2.83E-12
cd112	2.11E-12	2.29E-12	2.46E-12	2.64E-12	2.81E-12	2.81E-12
sb125	2.07E-12	2.23E-12	2.39E-12	2.55E-12	2.71E-12	2.71E-12
sn117	1.67E-12	1.81E-12	1.95E-12	2.09E-12	2.23E-12	2.23E-12
sn119	1.37E-12	1.49E-12	1.60E-12	1.72E-12	1.83E-12	1.83E-12
te129m	1.80E-12	1.81E-12	1.81E-12	1.81E-12	1.82E-12	1.82E-12
sn115	1.26E-12	1.37E-12	1.47E-12	1.58E-12	1.68E-12	1.68E-12
sr 88	1.06E-12	1.15E-12	1.24E-12	1.33E-12	1.41E-12	1.41E-12
pm148m	9.56E-13	1.06E-12	1.17E-12	1.28E-12	1.39E-12	1.39E-12
pd110	7.46E-13	8.08E-13	8.71E-13	9.33E-13	9.95E-13	9.95E-13
cd114	7.24E-13	7.84E-13	8.44E-13	9.05E-13	9.65E-13	9.65E-13
se 82	7.19E-13	7.79E-13	8.39E-13	8.99E-13	9.59E-13	9.59E-13
gd158	6.79E-13	7.36E-13	7.92E-13	8.49E-13	9.06E-13	9.06E-13
sn126	5.76E-13	6.25E-13	6.73E-13	7.21E-13	7.69E-13	7.69E-13
se 78	5.46E-13	5.92E-13	6.37E-13	6.83E-13	7.28E-13	7.28E-13
sn124	4.34E-13	4.70E-13	5.07E-13	5.43E-13	5.79E-13	5.79E-13
dy162	4.16E-13	4.50E-13	4.85E-13	5.19E-13	5.53E-13	5.53E-13
dy164	3.79E-13	4.10E-13	4.41E-13	4.73E-13	5.04E-13	5.04E-13
eu154	3.56E-13	3.88E-13	4.21E-13	4.55E-13	4.89E-13	4.89E-13
as 75	3.25E-13	3.53E-13	3.80E-13	4.07E-13	4.34E-13	4.34E-13

zr 90	2.17E-13	2.55E-13	2.96E-13	3.41E-13	3.88E-13	3.88E-13
te125	2.00E-13	2.36E-13	2.75E-13	3.16E-13	3.61E-13	3.61E-13
y 90	2.37E-13	2.57E-13	2.77E-13	2.96E-13	3.16E-13	3.16E-13
ag111	3.15E-13	3.15E-13	3.15E-13	3.15E-13	3.15E-13	3.15E-13
eu157	2.96E-13	2.97E-13	2.97E-13	2.97E-13	2.97E-13	2.95E-13
sn118	1.77E-13	1.92E-13	2.06E-13	2.21E-13	2.36E-13	2.36E-13
cd115m	2.30E-13	2.32E-13	2.33E-13	2.34E-13	2.35E-13	2.35E-13
ba136	1.57E-13	1.72E-13	1.86E-13	2.00E-13	2.15E-13	2.15E-13
sn122	1.51E-13	1.64E-13	1.76E-13	1.89E-13	2.01E-13	2.01E-13
cd116	1.51E-13	1.63E-13	1.76E-13	1.88E-13	2.01E-13	2.01E-13
sn120	1.13E-13	1.22E-13	1.31E-13	1.41E-13	1.50E-13	1.50E-13
kr 82	1.05E-13	1.14E-13	1.22E-13	1.31E-13	1.40E-13	1.40E-13
cs134	9.93E-14	1.08E-13	1.17E-13	1.26E-13	1.36E-13	1.36E-13
dy163	9.19E-14	9.95E-14	1.07E-13	1.15E-13	1.22E-13	1.22E-13
ge 73	8.84E-14	9.58E-14	1.03E-13	1.11E-13	1.18E-13	1.18E-13
ru 99	8.46E-14	9.20E-14	9.95E-14	1.07E-13	1.15E-13	1.15E-13
xe130	6.04E-14	6.54E-14	7.05E-14	7.56E-14	8.06E-14	8.06E-14
pm148	4.81E-14	5.23E-14	5.64E-14	6.05E-14	6.45E-14	6.44E-14
mo 96	4.37E-14	4.74E-14	5.11E-14	5.47E-14	5.84E-14	5.84E-14
cs136	5.54E-14	5.54E-14	5.54E-14	5.54E-14	5.54E-14	5.54E-14
ge 76	3.21E-14	3.48E-14	3.75E-14	4.02E-14	4.29E-14	4.29E-14
sn125	2.91E-14	2.92E-14	2.92E-14	2.92E-14	2.92E-14	2.91E-14
ru105	2.91E-14	2.94E-14	2.94E-14	2.94E-14	2.94E-14	2.89E-14
gd160	2.02E-14	2.18E-14	2.35E-14	2.52E-14	2.69E-14	2.69E-14
te126	1.50E-14	1.63E-14	1.76E-14	1.89E-14	2.02E-14	2.02E-14
rb 88	1.28E-14	1.30E-14	1.30E-14	1.30E-14	1.30E-14	1.27E-14
ru100	8.33E-15	9.07E-15	9.81E-15	1.06E-14	1.13E-14	1.13E-14
i135	1.00E-14	1.02E-14	1.02E-14	1.02E-14	1.02E-14	9.92E-15
te132	9.59E-15	9.60E-15	9.61E-15	9.61E-15	9.61E-15	9.59E-15

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 31
0 fraction of total absorption rate
power= .00mw, burnup= 1.mwd, flux= 2.71E+08n/cm**2-sec

0	initial	237.4 d	255.7 d	274.0 d	292.2 d	292.2 d
ho165	6.35E-15	6.88E-15	7.41E-15	7.93E-15	8.46E-15	8.46E-15
sn123	6.97E-15	7.26E-15	7.52E-15	7.76E-15	7.98E-15	7.98E-15
in113	3.60E-15	4.22E-15	4.89E-15	5.61E-15	6.38E-15	6.38E-15
sr 87	3.70E-15	4.01E-15	4.32E-15	4.63E-15	4.93E-15	4.93E-15
te134	4.79E-15	5.90E-15	5.90E-15	5.90E-15	5.90E-15	4.46E-15
te124	2.47E-15	2.76E-15	3.05E-15	3.35E-15	3.65E-15	3.65E-15
eu152	1.91E-15	2.24E-15	2.62E-15	3.04E-15	3.51E-15	3.51E-15
sb126	3.01E-15	3.02E-15	3.02E-15	3.02E-15	3.02E-15	3.02E-15
nb 94	2.09E-15	2.26E-15	2.44E-15	2.61E-15	2.78E-15	2.78E-15
ge 74	1.79E-15	1.94E-15	2.09E-15	2.24E-15	2.39E-15	2.39E-15
in117m	2.10E-15	2.10E-15	2.10E-15	2.10E-15	2.10E-15	2.10E-15
sb124	1.93E-15	1.97E-15	1.99E-15	2.01E-15	2.03E-15	2.03E-15
ge 72	1.24E-15	1.34E-15	1.45E-15	1.55E-15	1.66E-15	1.66E-15
sr 86	9.20E-16	1.01E-15	1.10E-15	1.18E-15	1.27E-15	1.27E-15
se 76	7.52E-16	8.15E-16	8.79E-16	9.42E-16	1.00E-15	1.00E-15
ba135	6.45E-16	7.21E-16	8.01E-16	8.83E-16	9.69E-16	9.69E-16
sm148	4.66E-16	5.61E-16	6.64E-16	7.77E-16	8.99E-16	8.99E-16
i130	7.10E-16	7.17E-16	7.17E-16	7.17E-16	7.17E-16	7.08E-16
in117	6.18E-16	6.18E-16	6.18E-16	6.18E-16	6.18E-16	6.17E-16
nd142	3.07E-16	3.60E-16	4.18E-16	4.80E-16	5.46E-16	5.46E-16
gd154	2.76E-16	3.26E-16	3.79E-16	4.38E-16	5.00E-16	5.00E-16
ba134	1.74E-16	2.05E-16	2.39E-16	2.75E-16	3.14E-16	3.14E-16
tb160	2.67E-16	2.74E-16	2.79E-16	2.84E-16	2.88E-16	2.88E-16
pd104	1.26E-16	1.52E-16	1.81E-16	2.13E-16	2.47E-16	2.47E-16
rb 86	2.42E-16	2.43E-16	2.43E-16	2.43E-16	2.43E-16	2.43E-16
gd152	1.39E-16	1.60E-16	1.83E-16	2.08E-16	2.35E-16	2.35E-16

er166	1.74E-16	1.89E-16	2.04E-16	2.19E-16	2.34E-16	2.34E-16
xe128	1.67E-16	1.81E-16	1.95E-16	2.09E-16	2.23E-16	2.23E-16
dy165	2.03E-16	2.10E-16	2.10E-16	2.10E-16	2.10E-16	1.99E-16
cd110	8.94E-17	1.01E-16	1.13E-16	1.25E-16	1.38E-16	1.38E-16
dy160	7.91E-17	8.92E-17	9.95E-17	1.10E-16	1.21E-16	1.21E-16
cd118	1.02E-16	1.21E-16	1.21E-16	1.21E-16	1.21E-16	9.61E-17
ge 75	8.06E-17	8.71E-17	8.71E-17	8.71E-17	8.71E-17	7.78E-17
kr 80	5.01E-17	5.43E-17	5.85E-17	6.27E-17	6.69E-17	6.69E-17
br 79	2.24E-17	2.60E-17	2.99E-17	3.41E-17	3.85E-17	3.85E-17
xe129	1.08E-17	1.27E-17	1.48E-17	1.70E-17	1.93E-17	1.93E-17
in119m	2.17E-17	3.03E-17	3.03E-17	3.03E-17	3.03E-17	1.85E-17
ag107	1.03E-17	1.21E-17	1.40E-17	1.61E-17	1.83E-17	1.83E-17
te122	6.51E-18	7.08E-18	7.65E-18	8.23E-18	8.81E-18	8.81E-18
be 9	3.99E-18	4.32E-18	4.65E-18	4.98E-18	5.32E-18	5.32E-18
pr142	3.90E-18	4.28E-18	4.63E-18	4.98E-18	5.33E-18	5.28E-18
nb 93	2.48E-18	2.76E-18	3.04E-18	3.35E-18	3.67E-18	3.67E-18
sn116	2.19E-18	2.42E-18	2.64E-18	2.88E-18	3.12E-18	3.12E-18
te123	2.01E-18	2.25E-18	2.49E-18	2.74E-18	2.99E-18	2.99E-18
li 7	1.63E-18	1.77E-18	1.90E-18	2.04E-18	2.18E-18	2.18E-18
er167	6.55E-19	7.09E-19	7.63E-19	8.17E-19	8.74E-19	8.74E-19
in119	3.41E-19	2.37E-18	2.37E-18	2.37E-18	2.37E-18	1.65E-19
cd109	5.06E-20	5.74E-20	6.07E-20	6.41E-20	6.75E-20	6.75E-20
cd108	3.37E-20	3.71E-20	3.71E-20	4.05E-20	4.39E-20	4.39E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 32

0 fraction of total absorption rate

power= .00mw, burnup= 1.mwd, flux= 2.71E+08n/cm**2-sec

	initial	237.4 d	255.7 d	274.0 d	292.2 d	292.2 d
cs134m	3.04E-20	3.37E-20	3.71E-20	4.05E-20	4.39E-20	4.05E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 33

power= 4.000E-03mw, burnup=1.1688E+00mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	237.4 d	255.7 d	274.0 d	292.2 d	292.2 d
h 1	5.18E-08	5.61E-08	6.03E-08	6.46E-08	6.88E-08	6.88E-08
h 2	1.54E-10	1.66E-10	1.79E-10	1.92E-10	2.04E-10	2.04E-10
h 3	1.11E-12	1.20E-12	1.29E-12	1.38E-12	1.46E-12	1.46E-12
h 4	.00E+00	4.87E-36	5.24E-36	5.60E-36	5.96E-36	.00E+00
he 3	1.89E-14	2.22E-14	2.57E-14	2.94E-14	3.34E-14	3.34E-14
he 4	8.57E-09	9.27E-09	9.97E-09	1.07E-08	1.14E-08	1.14E-08
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.03E-09	1.11E-09	1.20E-09	1.28E-09	1.37E-09	1.37E-09
ne 21	2.12E-17	2.46E-17	2.82E-17	3.21E-17	3.62E-17	3.62E-17
ne 22	5.14E-13	6.00E-13	6.92E-13	7.90E-13	8.94E-13	8.94E-13
ne 23	5.25E-21	7.03E-15	7.03E-15	7.03E-15	7.03E-15	4.64E-23
na 22	6.22E-12	6.68E-12	7.14E-12	7.60E-12	8.04E-12	8.04E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.82E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.73E-08
na 24m	4.68E-30	4.55E-15	4.55E-15	4.55E-15	4.55E-15	4.55E-30
na 25	4.81E-33	3.49E-29	3.75E-29	4.02E-29	4.28E-29	3.31E-34
mg 24	8.29E-06	8.89E-06	9.49E-06	1.01E-05	1.07E-05	1.07E-05
mg 25	1.13E-12	1.22E-12	1.32E-12	1.41E-12	1.50E-12	1.50E-12
mg 26	1.54E-10	1.66E-10	1.79E-10	1.92E-10	2.04E-10	2.04E-10
mg 27	8.34E-13	2.10E-12	2.10E-12	2.10E-12	2.10E-12	6.11E-13
mg 28	4.26E-24	4.29E-24	4.29E-24	4.29E-24	4.29E-24	4.25E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	4.24E-12	2.05E-10	2.05E-10	2.05E-10	2.05E-10	1.11E-12
al 29	1.27E-30	5.60E-30	6.44E-30	7.34E-30	8.29E-30	1.40E-30
al 30	.00E+00	7.29E-44	8.69E-44	1.02E-43	1.23E-43	.00E+00

si 28	2.31E-05	2.48E-05	2.64E-05	2.81E-05	2.98E-05	2.98E-05
si 29	1.88E-14	2.19E-14	2.52E-14	2.87E-14	3.25E-14	3.25E-14
si 30	1.61E-23	2.03E-23	2.52E-23	3.08E-23	3.71E-23	3.71E-23
si 31	1.09E-35	1.46E-35	1.81E-35	2.21E-35	2.67E-35	2.48E-35
si 32	1.12E-44	1.54E-44	2.10E-44	2.80E-44	3.64E-44	3.64E-44
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.71E+08	2.71E+08	2.71E+08	2.71E+08	2.71E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 34
power= 4.000E-03mw, burnup=1.1688E+00mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	237.4 d	255.7 d	274.0 d	292.2 d	292.2 d
he 4	3.07E-05	3.33E-05	3.59E-05	3.85E-05	4.11E-05	4.11E-05
ra222	2.97E-30	3.45E-30	4.01E-30	4.62E-30	5.28E-30	5.35E-30
ra223	2.81E-15	3.40E-15	4.05E-15	4.76E-15	5.53E-15	5.53E-15
ra224	1.33E-16	1.67E-16	2.06E-16	2.51E-16	3.01E-16	3.01E-16
ra225	3.11E-17	3.82E-17	4.60E-17	5.46E-17	6.39E-17	6.39E-17
ra226	4.23E-11	4.96E-11	5.76E-11	6.61E-11	7.52E-11	7.52E-11
ra228	4.48E-17	5.24E-17	6.07E-17	6.95E-17	7.90E-17	7.90E-17
th226	1.43E-28	1.68E-28	1.96E-28	2.26E-28	2.58E-28	2.57E-28
th227	5.34E-15	6.38E-15	7.51E-15	8.74E-15	1.01E-14	1.01E-14
th228	2.72E-14	3.39E-14	4.17E-14	5.05E-14	6.05E-14	6.05E-14
th229	7.57E-12	9.11E-12	1.08E-11	1.26E-11	1.46E-11	1.46E-11
th230	1.53E-05	1.66E-05	1.79E-05	1.92E-05	2.04E-05	2.04E-05
th231	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09
th232	3.10E-06	3.36E-06	3.61E-06	3.87E-06	4.13E-06	4.13E-06
th233	1.92E-17	3.08E-17	3.31E-17	3.55E-17	3.79E-17	2.24E-17
th234	5.36E-07	5.36E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	4.65E-07	5.04E-07	5.43E-07	5.82E-07	6.21E-07	6.21E-07
pa232	7.96E-15	8.66E-15	9.33E-15	1.00E-14	1.07E-14	1.06E-14
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.46E-06	1.46E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.07E-12	8.08E-12	8.08E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.38E-25	1.63E-25	1.90E-25	2.19E-25	2.49E-25	2.49E-25
u231	4.94E-21	5.43E-21	5.94E-21	6.46E-21	6.97E-21	6.96E-21
u232	1.37E-11	1.59E-11	1.82E-11	2.07E-11	2.33E-11	2.33E-11
u233	6.74E-06	7.42E-06	8.10E-06	8.79E-06	9.47E-06	9.47E-06
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02
u237	3.11E-06	3.10E-06	3.10E-06	3.10E-06	3.10E-06	3.09E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	2.19E-07	3.18E-07	3.18E-07	3.18E-07	3.18E-07	1.93E-07
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	2.81E-12	2.99E-12	3.17E-12	3.34E-12	3.51E-12	3.51E-12
np236m	2.05E-12	2.05E-12	2.05E-12	2.05E-12	2.05E-12	2.03E-12
np236	1.20E-10	1.29E-10	1.39E-10	1.49E-10	1.59E-10	1.59E-10
np237	4.22E+01	4.22E+01	4.22E+01	4.22E+01	4.22E+01	4.22E+01
np238	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06
np239	4.61E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	8.14E-15	9.33E-15	9.33E-15	9.33E-15	9.33E-15	7.73E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.63E-10	1.75E-10	1.87E-10	1.99E-10	2.11E-10	2.11E-10
pu237	7.82E-16	8.69E-16	9.57E-16	1.05E-15	1.14E-15	1.14E-15
pu238	1.11E-04	1.20E-04	1.29E-04	1.38E-04	1.48E-04	1.48E-04
pu239	2.97E-03	3.22E-03	3.46E-03	3.71E-03	3.96E-03	3.96E-03

```
     pu240   8.69E-09  1.02E-08  1.18E-08  1.36E-08  1.55E-08  1.55E-08
     pu241   3.42E-14  4.35E-14  5.43E-14  6.68E-14  8.10E-14  8.10E-14
     pu242   3.99E-20  5.50E-20  7.41E-20  9.77E-20  1.27E-19  1.27E-19
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page   35
       power= 4.000E-03mw, burnup=1.1688E+00mwd, flux= 2.71E+08n/cm**2-sec
0                                          nuclide concentrations, gram atoms
                                           basis = single reactor assembly
            charge   237.4 d   255.7 d   274.0 d   292.2 d   292.2 d
     pu243  8.19E-29  1.16E-28  1.56E-28  2.06E-28  2.66E-28  2.56E-28
     pu244   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu245   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu246   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              2.71E+08  2.71E+08  2.71E+08  2.71E+08  2.71E-07
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number  1 of library on unit 15.

          pass   5
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *           prelim lwr origen-s binary working library--id = 1143              *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                   fission product yields are from endf/b-v                   *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *         see information above this box (if present) for later updates        *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
```

```
0          ********************************************************************************
0                    .other identification and sizes of library.
0                     data set name:  ft15f001
0                   8/28/1996    date library was produced
0                        1697    total number of nuclides in library
                          689    number of light-element nuclides
                          129    number of actinide nuclides
                          879    number of fission product nuclides
0                        7993    number of nonzero off-diagonal matrix elements
0          ********************************************************************************
1     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   36
          power=    .00mw, burnup=      1.mwd, flux= 2.70E+08n/cm**2-sec
0                                        basis =
0     (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial        310.5 d        328.8 d        347.0 d        365.3 d
      productions   1.138348E+06   1.138348E+06   1.138348E+06   1.138349E+06   1.138349E+06
      absorptions   9.268934E+05   9.268941E+05   9.268948E+05   9.268954E+05   9.268959E+05
      k infinity    1.228132E+00   1.228132E+00   1.228131E+00   1.228131E+00   1.228130E+00
0                    initial        310.5 d        328.8 d        347.0 d        365.3 d
      actinide
      absorptions   9.237305E+05   9.237308E+05   9.237310E+05   9.237313E+05   9.237315E+05
      non-actinide
      abs. fracs.   3.412426E-03   3.412783E-03   3.413260E-03   3.413677E-03   3.414035E-03
1     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              fission products        page   37
0                              fraction of total absorption rate
          power=    .00mw, burnup=      1.mwd, flux= 2.70E+08n/cm**2-sec
0                 initial   310.5 d   328.8 d   347.0 d   365.3 d

      sm149     5.94E-06  6.31E-06  6.69E-06  7.06E-06  7.44E-06
      xe135     2.33E-06  2.34E-06  2.34E-06  2.34E-06  2.34E-06
      sm151     2.73E-07  2.90E-07  3.07E-07  3.24E-07  3.41E-07
      nd143     1.24E-07  1.33E-07  1.41E-07  1.49E-07  1.58E-07
      gd157     6.38E-08  6.77E-08  7.17E-08  7.57E-08  7.97E-08
      cd113     5.27E-08  5.60E-08  5.93E-08  6.26E-08  6.59E-08
      pm147     4.93E-08  5.22E-08  5.51E-08  5.79E-08  6.07E-08
      rh103     4.45E-08  4.79E-08  5.14E-08  5.48E-08  5.82E-08
      xe131     3.64E-08  3.88E-08  4.11E-08  4.35E-08  4.59E-08
      cs133     3.05E-08  3.25E-08  3.45E-08  3.64E-08  3.84E-08
      tc 99     2.14E-08  2.28E-08  2.41E-08  2.55E-08  2.68E-08
      eu155     1.77E-08  1.87E-08  1.98E-08  2.08E-08  2.18E-08
      nd145     1.69E-08  1.80E-08  1.91E-08  2.01E-08  2.12E-08
      sm152     8.74E-09  9.29E-09  9.84E-09  1.04E-08  1.09E-08
      kr 83     7.28E-09  7.74E-09  8.19E-09  8.65E-09  9.10E-09
      mo 95     6.22E-09  6.88E-09  7.55E-09  8.23E-09  8.92E-09
      cs135     6.73E-09  7.15E-09  7.57E-09  8.00E-09  8.42E-09
      rh105     8.37E-09  8.37E-09  8.37E-09  8.37E-09  8.37E-09
      gd155     4.59E-09  5.17E-09  5.78E-09  6.42E-09  7.10E-09
      ru101     5.07E-09  5.38E-09  5.70E-09  6.02E-09  6.33E-09
      eu153     4.40E-09  4.68E-09  4.96E-09  5.24E-09  5.51E-09
      pr141     4.18E-09  4.49E-09  4.81E-09  5.12E-09  5.43E-09
      la139     4.04E-09  4.29E-09  4.55E-09  4.80E-09  5.05E-09
      sm147     1.92E-09  2.17E-09  2.44E-09  2.72E-09  3.01E-09
      pr143     2.88E-09  2.88E-09  2.88E-09  2.88E-09  2.88E-09
      pd105     1.87E-09  1.99E-09  2.11E-09  2.23E-09  2.34E-09
      zr 93     1.67E-09  1.78E-09  1.88E-09  1.99E-09  2.09E-09
      xe133     2.07E-09  2.07E-09  2.07E-09  2.07E-09  2.07E-09
      ce141     1.62E-09  1.62E-09  1.62E-09  1.63E-09  1.63E-09
       i129     1.22E-09  1.30E-09  1.37E-09  1.45E-09  1.53E-09
      mo 97     9.12E-10  9.69E-10  1.03E-09  1.08E-09  1.14E-09
      pm149     9.82E-10  9.82E-10  9.82E-10  9.82E-10  9.82E-10
```

eu151	6.22E-10	7.03E-10	7.88E-10	8.78E-10	9.73E-10
nd147	9.31E-10	9.31E-10	9.31E-10	9.31E-10	9.31E-10
ag109	6.28E-10	6.67E-10	7.07E-10	7.46E-10	7.85E-10
nd144	3.44E-10	3.83E-10	4.24E-10	4.66E-10	5.10E-10
ru102	3.71E-10	3.95E-10	4.18E-10	4.41E-10	4.64E-10
ce142	3.37E-10	3.58E-10	3.79E-10	4.00E-10	4.21E-10
zr 91	3.14E-10	3.40E-10	3.67E-10	3.94E-10	4.21E-10
sr 90	3.37E-10	3.58E-10	3.79E-10	4.00E-10	4.20E-10
y 89	3.12E-10	3.37E-10	3.63E-10	3.89E-10	4.14E-10
nd148	3.21E-10	3.42E-10	3.62E-10	3.82E-10	4.02E-10
ru103	3.56E-10	3.57E-10	3.57E-10	3.57E-10	3.58E-10
ce144	3.07E-10	3.20E-10	3.33E-10	3.45E-10	3.56E-10
nd146	2.70E-10	2.87E-10	3.04E-10	3.21E-10	3.38E-10
ba138	2.31E-10	2.46E-10	2.60E-10	2.75E-10	2.89E-10
in115	2.20E-10	2.34E-10	2.48E-10	2.62E-10	2.76E-10
ce140	2.12E-10	2.26E-10	2.40E-10	2.55E-10	2.69E-10
pd108	2.14E-10	2.27E-10	2.41E-10	2.54E-10	2.67E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 38
0 fraction of total absorption rate
power= .00mw, burnup= 1.mwd, flux= 2.70E+08n/cm**2-sec
0

	initial	310.5 d	328.8 d	347.0 d	365.3 d
xe132	1.91E-10	2.03E-10	2.15E-10	2.28E-10	2.40E-10
mo 98	1.33E-10	1.41E-10	1.49E-10	1.58E-10	1.66E-10
zr 95	1.58E-10	1.60E-10	1.61E-10	1.61E-10	1.62E-10
mo100	1.29E-10	1.37E-10	1.45E-10	1.53E-10	1.61E-10
xe134	1.28E-10	1.36E-10	1.44E-10	1.52E-10	1.60E-10
pd107	1.28E-10	1.36E-10	1.44E-10	1.52E-10	1.60E-10
nb 95	1.40E-10	1.42E-10	1.44E-10	1.46E-10	1.47E-10
y 91	1.42E-10	1.43E-10	1.43E-10	1.44E-10	1.44E-10
zr 92	1.05E-10	1.11E-10	1.18E-10	1.24E-10	1.31E-10
pm151	1.10E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10
zr 96	8.05E-11	8.56E-11	9.06E-11	9.56E-11	1.01E-10
ru104	7.92E-11	8.42E-11	8.91E-11	9.41E-11	9.90E-11
i127	7.70E-11	8.22E-11	8.75E-11	9.27E-11	9.79E-11
nd150	7.10E-11	7.55E-11	7.99E-11	8.44E-11	8.88E-11
cs137	6.92E-11	7.35E-11	7.78E-11	8.20E-11	8.63E-11
xe136	6.89E-11	7.32E-11	7.76E-11	8.19E-11	8.62E-11
br 81	5.16E-11	5.48E-11	5.80E-11	6.12E-11	6.45E-11
zr 94	4.36E-11	4.63E-11	4.91E-11	5.18E-11	5.45E-11
rb 85	4.04E-11	4.30E-11	4.55E-11	4.81E-11	5.06E-11
ba140	4.75E-11	4.76E-11	4.76E-11	4.76E-11	4.76E-11
cd111	3.22E-11	3.42E-11	3.63E-11	3.84E-11	4.05E-11
te130	3.14E-11	3.33E-11	3.53E-11	3.72E-11	3.92E-11
sm153	3.82E-11	3.83E-11	3.83E-11	3.83E-11	3.83E-11
sm154	3.03E-11	3.22E-11	3.41E-11	3.60E-11	3.79E-11
kr 85	2.95E-11	3.13E-11	3.31E-11	3.49E-11	3.67E-11
rb 87	2.92E-11	3.11E-11	3.29E-11	3.47E-11	3.66E-11
eu156	3.48E-11	3.48E-11	3.48E-11	3.48E-11	3.48E-11
sr 89	3.04E-11	3.06E-11	3.07E-11	3.07E-11	3.08E-11
se 77	2.33E-11	2.47E-11	2.62E-11	2.77E-11	2.91E-11
ba137	1.80E-11	2.03E-11	2.27E-11	2.53E-11	2.80E-11
kr 87	2.01E-11	2.32E-11	2.32E-11	2.32E-11	2.32E-11
ce143	1.76E-11	1.76E-11	1.76E-11	1.76E-11	1.76E-11
kr 84	1.37E-11	1.46E-11	1.54E-11	1.63E-11	1.71E-11
la140	1.62E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11
sb121	1.08E-11	1.15E-11	1.22E-11	1.29E-11	1.35E-11
se 79	1.07E-11	1.13E-11	1.20E-11	1.27E-11	1.33E-11
mo 99	1.31E-11	1.32E-11	1.32E-11	1.32E-11	1.32E-11
ru106	1.06E-11	1.11E-11	1.15E-11	1.20E-11	1.24E-11

sb123	7.76E-12	8.26E-12	8.76E-12	9.27E-12	9.77E-12
kr 86	7.70E-12	8.18E-12	8.66E-12	9.15E-12	9.63E-12
te128	6.84E-12	7.27E-12	7.70E-12	8.12E-12	8.55E-12
sm150	5.15E-12	5.81E-12	6.50E-12	7.24E-12	8.01E-12
i131	6.81E-12	6.81E-12	6.81E-12	6.81E-12	6.81E-12
te127m	6.27E-12	6.40E-12	6.52E-12	6.63E-12	6.72E-12
gd156	4.92E-12	5.25E-12	5.58E-12	5.91E-12	6.24E-12
se 80	4.97E-12	5.28E-12	5.59E-12	5.90E-12	6.21E-12
dy161	4.13E-12	4.39E-12	4.66E-12	4.92E-12	5.19E-12
pd106	3.35E-12	3.75E-12	4.16E-12	4.58E-12	5.03E-12
tb159	3.06E-12	3.26E-12	3.45E-12	3.64E-12	3.83E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 39
0 fraction of total absorption rate
power= .00mw, burnup= 1.mwd, flux= 2.70E+08n/cm**2-sec

	initial	310.5 d	328.8 d	347.0 d	365.3 d
li 6	2.83E-12	3.00E-12	3.18E-12	3.36E-12	3.53E-12
cd112	2.82E-12	2.99E-12	3.17E-12	3.35E-12	3.52E-12
sb125	2.71E-12	2.86E-12	3.01E-12	3.16E-12	3.31E-12
sn117	2.23E-12	2.37E-12	2.51E-12	2.65E-12	2.78E-12
sn119	1.83E-12	1.95E-12	2.06E-12	2.17E-12	2.29E-12
sn115	1.69E-12	1.79E-12	1.90E-12	2.01E-12	2.11E-12
te129m	1.82E-12	1.82E-12	1.82E-12	1.82E-12	1.82E-12
pm148m	1.39E-12	1.49E-12	1.60E-12	1.70E-12	1.80E-12
sr 88	1.41E-12	1.50E-12	1.59E-12	1.68E-12	1.77E-12
pd110	9.94E-13	1.06E-12	1.12E-12	1.18E-12	1.24E-12
cd114	9.64E-13	1.02E-12	1.08E-12	1.15E-12	1.21E-12
se 82	9.60E-13	1.02E-12	1.08E-12	1.14E-12	1.20E-12
gd158	9.05E-13	9.62E-13	1.02E-12	1.08E-12	1.13E-12
sn126	7.69E-13	8.17E-13	8.65E-13	9.14E-13	9.62E-13
se 78	7.28E-13	7.74E-13	8.19E-13	8.65E-13	9.11E-13
sn124	5.79E-13	6.15E-13	6.51E-13	6.87E-13	7.23E-13
dy162	5.53E-13	5.88E-13	6.22E-13	6.56E-13	6.90E-13
dy164	5.04E-13	5.36E-13	5.67E-13	5.98E-13	6.30E-13
eu154	4.89E-13	5.23E-13	5.58E-13	5.93E-13	6.29E-13
zr 90	3.88E-13	4.39E-13	4.92E-13	5.49E-13	6.09E-13
te125	3.61E-13	4.08E-13	4.58E-13	5.11E-13	5.66E-13
as 75	4.34E-13	4.61E-13	4.88E-13	5.15E-13	5.43E-13
y 90	3.17E-13	3.36E-13	3.56E-13	3.76E-13	3.96E-13
ag111	3.15E-13	3.15E-13	3.15E-13	3.15E-13	3.15E-13
eu157	2.95E-13	2.97E-13	2.97E-13	2.97E-13	2.97E-13
sn118	2.36E-13	2.50E-13	2.65E-13	2.80E-13	2.95E-13
ba136	2.15E-13	2.29E-13	2.43E-13	2.58E-13	2.72E-13
sn122	2.01E-13	2.14E-13	2.26E-13	2.39E-13	2.52E-13
cd116	2.01E-13	2.13E-13	2.26E-13	2.38E-13	2.51E-13
cd115m	2.35E-13	2.36E-13	2.36E-13	2.36E-13	2.37E-13
sn120	1.50E-13	1.60E-13	1.69E-13	1.78E-13	1.88E-13
kr 82	1.40E-13	1.49E-13	1.58E-13	1.67E-13	1.75E-13
cs134	1.36E-13	1.45E-13	1.54E-13	1.64E-13	1.73E-13
dy163	1.22E-13	1.30E-13	1.38E-13	1.45E-13	1.53E-13
ge 73	1.18E-13	1.25E-13	1.33E-13	1.40E-13	1.48E-13
ru 99	1.14E-13	1.22E-13	1.30E-13	1.37E-13	1.45E-13
xe130	8.07E-14	8.57E-14	9.08E-14	9.59E-14	1.01E-13
pm148	6.44E-14	6.84E-14	7.23E-14	7.62E-14	8.00E-14
mo 96	5.84E-14	6.21E-14	6.58E-14	6.94E-14	7.31E-14
cs136	5.54E-14	5.54E-14	5.54E-14	5.54E-14	5.54E-14
ge 76	4.29E-14	4.55E-14	4.82E-14	5.09E-14	5.36E-14
gd160	2.69E-14	2.85E-14	3.02E-14	3.19E-14	3.36E-14
ru105	2.88E-14	2.94E-14	2.94E-14	2.94E-14	2.94E-14
sn125	2.91E-14	2.91E-14	2.92E-14	2.92E-14	2.92E-14

te126	2.02E-14	2.15E-14	2.29E-14	2.42E-14	2.55E-14
ru100	1.13E-14	1.21E-14	1.28E-14	1.36E-14	1.44E-14
rb 88	1.27E-14	1.30E-14	1.30E-14	1.30E-14	1.30E-14
ho165	8.46E-15	8.99E-15	9.51E-15	1.00E-14	1.06E-14
i135	9.93E-15	1.02E-14	1.02E-14	1.02E-14	1.02E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 40

0 fraction of total absorption rate

power= .00mw, burnup= 1.mwd, flux= 2.70E+08n/cm**2-sec

0	initial	310.5 d	328.8 d	347.0 d	365.3 d
in113	6.38E-15	7.19E-15	8.06E-15	8.97E-15	9.93E-15
te132	9.59E-15	9.61E-15	9.61E-15	9.61E-15	9.61E-15
sn123	7.97E-15	8.17E-15	8.35E-15	8.51E-15	8.66E-15
sr 87	4.94E-15	5.24E-15	5.55E-15	5.86E-15	6.17E-15
eu152	3.51E-15	4.03E-15	4.61E-15	5.25E-15	5.94E-15
te134	4.47E-15	5.90E-15	5.90E-15	5.90E-15	5.90E-15
te124	3.66E-15	3.96E-15	4.27E-15	4.57E-15	4.88E-15
nb 94	2.78E-15	2.96E-15	3.13E-15	3.31E-15	3.48E-15
sb126	3.02E-15	3.02E-15	3.02E-15	3.02E-15	3.02E-15
ge 74	2.39E-15	2.54E-15	2.69E-15	2.84E-15	2.99E-15
in117m	2.10E-15	2.11E-15	2.11E-15	2.11E-15	2.11E-15
ge 72	1.66E-15	1.76E-15	1.87E-15	1.97E-15	2.08E-15
sb124	2.03E-15	2.04E-15	2.06E-15	2.07E-15	2.07E-15
sr 86	1.27E-15	1.36E-15	1.45E-15	1.53E-15	1.62E-15
sm148	8.99E-16	1.03E-15	1.17E-15	1.32E-15	1.47E-15
ba135	9.69E-16	1.06E-15	1.15E-15	1.25E-15	1.35E-15
se 76	1.01E-15	1.07E-15	1.13E-15	1.20E-15	1.26E-15
nd142	5.46E-16	6.18E-16	6.93E-16	7.73E-16	8.58E-16
gd154	5.00E-16	5.68E-16	6.39E-16	7.16E-16	7.97E-16
i130	7.08E-16	7.17E-16	7.18E-16	7.18E-16	7.18E-16
in117	6.17E-16	6.19E-16	6.19E-16	6.19E-16	6.19E-16
ba134	3.14E-16	3.56E-16	4.01E-16	4.49E-16	4.99E-16
pd104	2.47E-16	2.85E-16	3.25E-16	3.67E-16	4.13E-16
gd152	2.36E-16	2.66E-16	2.99E-16	3.35E-16	3.74E-16
tb160	2.88E-16	2.91E-16	2.94E-16	2.97E-16	2.99E-16
er166	2.34E-16	2.49E-16	2.64E-16	2.79E-16	2.93E-16
xe128	2.23E-16	2.38E-16	2.52E-16	2.66E-16	2.80E-16
rb 86	2.43E-16	2.43E-16	2.43E-16	2.43E-16	2.43E-16
dy165	1.99E-16	2.10E-16	2.10E-16	2.10E-16	2.10E-16
cd110	1.39E-16	1.52E-16	1.66E-16	1.81E-16	1.96E-16
dy160	1.21E-16	1.32E-16	1.42E-16	1.54E-16	1.65E-16
cd118	9.62E-17	1.21E-16	1.21E-16	1.21E-16	1.21E-16
ge 75	7.78E-17	8.72E-17	8.72E-17	8.72E-17	8.72E-17
kr 80	6.69E-17	7.11E-17	7.53E-17	7.94E-17	8.36E-17
br 79	3.85E-17	4.32E-17	4.82E-17	5.35E-17	5.90E-17
in119m	1.86E-17	3.03E-17	3.03E-17	3.03E-17	3.03E-17
xe129	1.93E-17	2.18E-17	2.45E-17	2.73E-17	3.03E-17
ag107	1.83E-17	2.07E-17	2.32E-17	2.58E-17	2.86E-17
te122	8.80E-18	9.38E-18	9.96E-18	1.05E-17	1.11E-17
pr142	5.28E-18	5.68E-18	6.04E-18	6.39E-18	6.74E-18
be 9	5.31E-18	5.64E-18	5.98E-18	6.31E-18	6.64E-18
nb 93	3.67E-18	4.01E-18	4.37E-18	4.75E-18	5.16E-18
sn116	3.11E-18	3.36E-18	3.61E-18	3.86E-18	4.12E-18
te123	2.99E-18	3.25E-18	3.51E-18	3.78E-18	4.05E-18
li 7	2.18E-18	2.31E-18	2.45E-18	2.59E-18	2.72E-18
in119	1.65E-19	2.37E-18	2.37E-18	2.37E-18	2.37E-18
er167	8.74E-19	9.29E-19	9.84E-19	1.04E-18	1.09E-18
cd109	6.62E-20	6.95E-20	7.26E-20	7.57E-20	7.88E-20
cd108	4.40E-20	4.68E-20	4.96E-20	5.23E-20	5.51E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 41

0 fraction of total absorption rate

power= .00mw, burnup= 1.mwd, flux= 2.70E+08n/cm**2-sec

0	initial	310.5 d	328.8 d	347.0 d	365.3 d
cs134m	4.02E-20	4.57E-20	4.84E-20	5.12E-20	5.40E-20
ag110	9.08E-24	1.40E-21	1.45E-21	1.50E-21	1.55E-21
sn114	5.77E-22	6.18E-22	6.59E-22	7.00E-22	7.42E-22
in120	4.33E-28	3.98E-22	3.98E-22	3.98E-22	3.98E-22
in120m	1.09E-29	4.28E-23	4.28E-23	4.28E-23	4.28E-23

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 42

power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	310.5 d	328.8 d	347.0 d	365.3 d
h 1	6.88E-08	7.31E-08	7.74E-08	8.16E-08	8.59E-08
h 2	2.04E-10	2.17E-10	2.29E-10	2.42E-10	2.55E-10
h 3	1.46E-12	1.55E-12	1.64E-12	1.73E-12	1.82E-12
h 4	.00E+00	6.32E-36	6.68E-36	7.03E-36	7.39E-36
he 3	3.34E-14	3.76E-14	4.21E-14	4.69E-14	5.18E-14
he 4	1.14E-08	1.21E-08	1.28E-08	1.35E-08	1.42E-08
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.37E-09	1.45E-09	1.54E-09	1.62E-09	1.70E-09
ne 21	3.62E-17	4.06E-17	4.52E-17	5.00E-17	5.51E-17
ne 22	8.94E-13	1.00E-12	1.12E-12	1.24E-12	1.37E-12
ne 23	4.64E-23	7.03E-15	7.03E-15	7.03E-15	7.03E-15
na 22	8.04E-12	8.49E-12	8.92E-12	9.35E-12	9.78E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.73E-08	2.74E-08	2.74E-08	2.74E-08	2.74E-08
na 24m	4.55E-30	4.51E-15	4.51E-15	4.51E-15	4.51E-15
na 25	3.31E-34	4.54E-29	4.80E-29	5.07E-29	5.33E-29
mg 24	1.07E-05	1.13E-05	1.19E-05	1.25E-05	1.31E-05
mg 25	1.50E-12	1.59E-12	1.69E-12	1.78E-12	1.87E-12
mg 26	2.04E-10	2.17E-10	2.29E-10	2.42E-10	2.55E-10
mg 27	6.11E-13	2.10E-12	2.10E-12	2.10E-12	2.10E-12
mg 28	4.25E-24	4.29E-24	4.29E-24	4.29E-24	4.29E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	1.11E-12	2.03E-10	2.03E-10	2.03E-10	2.03E-10
al 29	1.40E-30	9.29E-30	1.03E-29	1.15E-29	1.26E-29
al 30	.00E+00	1.53E-43	1.75E-43	2.12E-43	2.40E-43
si 28	2.98E-05	3.14E-05	3.31E-05	3.47E-05	3.64E-05
si 29	3.25E-14	3.64E-14	4.06E-14	4.49E-14	4.95E-14
si 30	3.71E-23	4.43E-23	5.23E-23	6.12E-23	7.10E-23
si 31	2.48E-35	3.18E-35	3.76E-35	4.40E-35	5.10E-35
si 32	3.64E-44	4.62E-44	5.89E-44	7.29E-44	8.97E-44
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.70E+08	2.70E+08	2.70E+08	2.70E+08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 43

power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	310.5 d	328.8 d	347.0 d	365.3 d
he 4	4.11E-05	4.37E-05	4.63E-05	4.89E-05	5.15E-05
ra222	5.35E-30	5.97E-30	6.70E-30	7.47E-30	8.28E-30
ra223	5.53E-15	6.36E-15	7.25E-15	8.19E-15	9.19E-15
ra224	3.01E-16	3.58E-16	4.20E-16	4.89E-16	5.65E-16
ra225	6.39E-17	7.40E-17	8.48E-17	9.64E-17	1.09E-16
ra226	7.52E-11	8.49E-11	9.51E-11	1.06E-10	1.17E-10
ra228	7.90E-17	8.90E-17	9.95E-17	1.11E-16	1.22E-16

th226	2.57E-28	2.91E-28	3.27E-28	3.65E-28	4.04E-28
th227	1.01E-14	1.15E-14	1.30E-14	1.46E-14	1.63E-14
th228	6.05E-14	7.15E-14	8.38E-14	9.74E-14	1.12E-13
th229	1.46E-11	1.68E-11	1.90E-11	2.15E-11	2.41E-11
th230	2.04E-05	2.17E-05	2.30E-05	2.43E-05	2.55E-05
th231	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09
th232	4.13E-06	4.39E-06	4.65E-06	4.91E-06	5.16E-06
th233	2.24E-17	4.02E-17	4.26E-17	4.50E-17	4.73E-17
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	6.21E-07	6.60E-07	6.99E-07	7.38E-07	7.77E-07
pa232	1.06E-14	1.13E-14	1.20E-14	1.27E-14	1.34E-14
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	2.49E-25	2.82E-25	3.17E-25	3.53E-25	3.92E-25
u231	6.96E-21	7.48E-21	7.99E-21	8.51E-21	9.02E-21
u232	2.33E-11	2.61E-11	2.90E-11	3.21E-11	3.53E-11
u233	9.47E-06	1.02E-05	1.08E-05	1.15E-05	1.22E-05
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02
u237	3.09E-06	3.09E-06	3.09E-06	3.09E-06	3.09E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.93E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	3.51E-12	3.67E-12	3.82E-12	3.97E-12	4.12E-12
np236m	2.03E-12	2.05E-12	2.05E-12	2.05E-12	2.05E-12
np236	1.59E-10	1.68E-10	1.78E-10	1.88E-10	1.97E-10
np237	4.22E+01	4.22E+01	4.22E+01	4.22E+01	4.22E+01
np238	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06
np239	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	7.73E-15	9.32E-15	9.32E-15	9.32E-15	9.32E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	2.11E-10	2.22E-10	2.34E-10	2.45E-10	2.57E-10
pu237	1.14E-15	1.22E-15	1.31E-15	1.40E-15	1.49E-15
pu238	1.48E-04	1.57E-04	1.66E-04	1.75E-04	1.84E-04
pu239	3.96E-03	4.20E-03	4.45E-03	4.70E-03	4.94E-03
pu240	1.55E-08	1.75E-08	1.96E-08	2.18E-08	2.42E-08
pu241	8.10E-14	9.72E-14	1.15E-13	1.36E-13	1.58E-13
pu242	1.27E-19	1.61E-19	2.03E-19	2.52E-19	3.09E-19

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 44
power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	310.5 d	328.8 d	347.0 d	365.3 d
pu243	2.56E-28	3.39E-28	4.26E-28	5.29E-28	6.50E-28
pu244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.70E+08	2.70E+08	2.70E+08	2.70E+08

0 .results on logical unit no. 71, position 1, for time step 4, subcase 6. (run position 1, case position 1)
title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 45
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec

0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
na 23	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05
mg 24	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04
al 27	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06
si 28	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
total	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 46
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec
0 element radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
totals	2.55E+01	1.13E-06	9.10E-07	7.36E-07	5.97E-07	4.85E-07	3.95E-07

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 47
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec
0 element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
na	1.70E-01	1.52E-08	1.22E-08	9.77E-09	7.83E-09	6.27E-09	5.02E-09
totals	4.76E-01	1.52E-08	1.22E-08	9.77E-09	7.83E-09	6.27E-09	5.02E-09

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 48
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
na 22	1.75E-08	1.40E-08	1.12E-08	8.98E-09	7.19E-09	5.76E-09	4.61E-09
total	3.31E-01	1.40E-08	1.12E-08	8.98E-09	7.19E-09	5.76E-09	4.61E-09

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 49
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he 4	5.15E-05	9.51E-05	1.39E-04	1.82E-04	2.26E-04	2.70E-04	3.13E-04
th230	2.55E-05	4.68E-05	6.81E-05	8.94E-05	1.11E-04	1.32E-04	1.53E-04
th232	5.16E-06	9.47E-06	1.38E-05	1.81E-05	2.24E-05	2.67E-05	3.10E-05
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	7.77E-07	1.38E-06	1.98E-06	2.58E-06	3.19E-06	3.79E-06	4.39E-06
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
u233	1.22E-05	2.50E-05	3.79E-05	5.07E-05	6.35E-05	7.64E-05	8.92E-05
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
np237	4.22E+01	4.22E+01	4.22E+01	4.22E+01	4.22E+01	4.22E+01	4.22E+01
pu238	1.84E-04	1.85E-04	1.84E-04	1.82E-04	1.81E-04	1.80E-04	1.79E-04
pu239	4.94E-03	4.99E-03	4.99E-03	4.99E-03	4.99E-03	4.99E-03	4.99E-03
total	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 50
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec
0 element concentrations, gram atoms
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	5.15E-05	9.51E-05	1.39E-04	1.82E-04	2.26E-04	2.70E-04	3.13E-04
th	3.13E-05	5.68E-05	8.24E-05	1.08E-04	1.34E-04	1.59E-04	1.85E-04

pa	2.23E-06	2.84E-06	3.44E-06	4.04E-06	4.64E-06	5.25E-06	5.85E-06
u	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
np	4.22E+01	4.22E+01	4.22E+01	4.22E+01	4.22E+01	4.22E+01	4.22E+01
pu	5.13E-03	5.17E-03	5.17E-03	5.17E-03	5.17E-03	5.17E-03	5.17E-03
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 51
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he 4	2.06E-04	3.81E-04	5.55E-04	7.29E-04	9.04E-04	1.08E-03	1.25E-03
ra226	2.65E-08	8.92E-08	1.89E-07	3.25E-07	4.98E-07	7.08E-07	9.55E-07
th230	5.88E-03	1.08E-02	1.57E-02	2.06E-02	2.55E-02	3.04E-02	3.53E-02
th231	6.98E-07	6.98E-07	6.98E-07	6.98E-07	6.98E-07	6.98E-07	6.98E-07
th232	1.20E-03	2.20E-03	3.19E-03	4.19E-03	5.19E-03	6.19E-03	7.19E-03
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	1.79E-04	3.19E-04	4.58E-04	5.97E-04	7.36E-04	8.75E-04	1.01E-03
pa233	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04
u233	2.84E-03	5.83E-03	8.82E-03	1.18E-02	1.48E-02	1.78E-02	2.08E-02
u234	2.12E+03	2.12E+03	2.12E+03	2.12E+03	2.12E+03	2.12E+03	2.12E+03
u235	1.72E+05	1.72E+05	1.72E+05	1.72E+05	1.72E+05	1.72E+05	1.72E+05
u236	4.12E+04	4.12E+04	4.12E+04	4.12E+04	4.12E+04	4.12E+04	4.12E+04
u238	8.66E+06	8.66E+06	8.66E+06	8.66E+06	8.66E+06	8.66E+06	8.66E+06
np237	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03
pu238	4.39E-02	4.40E-02	4.37E-02	4.34E-02	4.31E-02	4.28E-02	4.26E-02
pu239	1.18E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00
pu240	5.81E-06	5.81E-06	5.81E-06	5.81E-06	5.81E-06	5.80E-06	5.80E-06
total	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 52
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec
0 element concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	2.06E-04	3.81E-04	5.55E-04	7.29E-04	9.04E-04	1.08E-03	1.25E-03
ra	2.65E-08	8.92E-08	1.89E-07	3.25E-07	4.98E-07	7.08E-07	9.55E-07
th	7.20E-03	1.31E-02	1.90E-02	2.49E-02	3.08E-02	3.67E-02	4.26E-02
pa	5.19E-04	6.58E-04	7.97E-04	9.36E-04	1.08E-03	1.21E-03	1.35E-03
u	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06
np	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03
pu	1.23E+00	1.24E+00	1.24E+00	1.24E+00	1.24E+00	1.24E+00	1.23E+00
totals	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 53
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl207	1.05E-07	4.38E-07	9.07E-07	1.54E-06	2.32E-06	3.26E-06	4.34E-06
pb211	1.05E-07	4.39E-07	9.10E-07	1.54E-06	2.33E-06	3.27E-06	4.35E-06
pb212	2.02E-08	9.61E-08	2.07E-07	3.34E-07	4.64E-07	5.89E-07	7.05E-07
pb214	2.55E-08	8.82E-08	1.87E-07	3.21E-07	4.93E-07	7.00E-07	9.44E-07
bi211	1.05E-07	4.39E-07	9.10E-07	1.54E-06	2.33E-06	3.27E-06	4.35E-06
bi212	2.02E-08	9.61E-08	2.07E-07	3.34E-07	4.64E-07	5.89E-07	7.05E-07
bi214	2.55E-08	8.82E-08	1.87E-07	3.21E-07	4.93E-07	7.00E-07	9.44E-07
po214	2.55E-08	8.82E-08	1.87E-07	3.21E-07	4.93E-07	7.00E-07	9.44E-07
po215	1.05E-07	4.39E-07	9.10E-07	1.54E-06	2.33E-06	3.27E-06	4.35E-06
po216	2.02E-08	9.61E-08	2.07E-07	3.34E-07	4.64E-07	5.89E-07	7.05E-07
po218	2.55E-08	8.82E-08	1.87E-07	3.21E-07	4.93E-07	7.00E-07	9.44E-07

rn219	1.05E-07	4.39E-07	9.10E-07	1.54E-06	2.33E-06	3.27E-06	4.35E-06
rn220	2.02E-08	9.61E-08	2.07E-07	3.34E-07	4.64E-07	5.89E-07	7.05E-07
rn222	2.55E-08	8.82E-08	1.87E-07	3.21E-07	4.93E-07	7.00E-07	9.44E-07
ra223	1.05E-07	4.39E-07	9.10E-07	1.54E-06	2.33E-06	3.27E-06	4.35E-06
ra224	2.02E-08	9.61E-08	2.07E-07	3.34E-07	4.64E-07	5.89E-07	7.05E-07
ra226	2.63E-08	8.82E-08	1.87E-07	3.21E-07	4.93E-07	7.00E-07	9.44E-07
ac227	1.34E-07	4.39E-07	9.09E-07	1.54E-06	2.32E-06	3.26E-06	4.34E-06
th227	1.14E-07	4.33E-07	8.97E-07	1.52E-06	2.29E-06	3.22E-06	4.29E-06
th228	2.10E-08	9.60E-08	2.07E-07	3.33E-07	4.63E-07	5.87E-07	7.02E-07
th230	1.21E-04	2.22E-04	3.23E-04	4.24E-04	5.25E-04	6.26E-04	7.27E-04
th231	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	8.48E-06	1.51E-05	2.16E-05	2.82E-05	3.48E-05	4.14E-05	4.79E-05
pa233	7.04E+00	7.05E+00	7.05E+00	7.05E+00	7.05E+00	7.05E+00	7.05E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.79E-03	3.79E-03	3.79E-03	3.79E-03	3.79E-03	3.79E-03
u232	1.81E-07	4.17E-07	6.08E-07	7.62E-07	8.86E-07	9.86E-07	1.07E-06
u233	2.74E-05	5.62E-05	8.51E-05	1.14E-04	1.43E-04	1.72E-04	2.00E-04
u234	1.32E+01	1.32E+01	1.32E+01	1.32E+01	1.32E+01	1.32E+01	1.32E+01
u235	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01
u236	2.66E+00	2.66E+00	2.66E+00	2.66E+00	2.66E+00	2.66E+00	2.66E+00
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
np237	7.04E+00	7.04E+00	7.04E+00	7.04E+00	7.04E+00	7.04E+00	7.04E+00
pu236	3.16E-05	2.60E-05	2.13E-05	1.75E-05	1.43E-05	1.17E-05	9.61E-06
pu238	7.52E-01	7.53E-01	7.49E-01	7.44E-01	7.39E-01	7.34E-01	7.29E-01
pu239	7.33E-02	7.40E-02	7.40E-02	7.40E-02	7.40E-02	7.40E-02	7.40E-02
pu240	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06
total	5.28E+03	4.02E+01	4.02E+01	4.02E+01	4.02E+01	4.02E+01	4.02E+01

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 54
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec
0 element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl	4.78E-10	2.10E-09	4.42E-09	7.34E-09	1.07E-08	1.46E-08	1.87E-08
pb	4.45E-10	1.83E-09	3.81E-09	6.45E-09	9.69E-09	1.35E-08	1.79E-08
bi	4.86E-09	2.03E-08	4.22E-08	7.13E-08	1.07E-07	1.49E-07	1.98E-07
po	8.36E-09	3.44E-08	7.22E-08	1.22E-07	1.81E-07	2.51E-07	3.29E-07
rn	5.97E-09	2.48E-08	5.18E-08	8.72E-08	1.30E-07	1.81E-07	2.39E-07
ra	5.18E-09	2.15E-08	4.48E-08	7.55E-08	1.13E-07	1.57E-07	2.06E-07
th	1.61E-03	1.62E-03	1.62E-03	1.62E-03	1.62E-03	1.63E-03	1.63E-03
pa	3.22E-02	3.22E-02	3.22E-02	3.22E-02	3.22E-02	3.22E-02	3.22E-02
u	7.55E+00	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
np	7.11E+00	2.01E-01	2.01E-01	2.01E-01	2.01E-01	2.01E-01	2.01E-01
pu	2.72E-02	2.73E-02	2.71E-02	2.69E-02	2.68E-02	2.66E-02	2.65E-02
totals	1.47E+01	7.98E-01	7.97E-01	7.97E-01	7.97E-01	7.97E-01	7.97E-01

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 55
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
bi214	2.28E-10	7.88E-10	1.67E-09	2.87E-09	4.40E-09	6.26E-09	8.44E-09
th230	1.21E-09	2.21E-09	3.22E-09	4.23E-09	5.23E-09	6.24E-09	7.24E-09
th231	6.82E-05	6.82E-05	6.82E-05	6.82E-05	6.82E-05	6.82E-05	6.82E-05
th234	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04
pa231	2.01E-09	3.57E-09	5.13E-09	6.69E-09	8.25E-09	9.81E-09	1.14E-08
pa233	9.33E-03	9.34E-03	9.34E-03	9.34E-03	9.34E-03	9.34E-03	9.34E-03
pa234m	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04
pa234	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05

u234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
u235	3.66E-04	3.66E-04	3.66E-04	3.66E-04	3.66E-04	3.66E-04	3.66E-04
u236	2.68E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05
u238	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05
np237	1.47E-03	1.47E-03	1.47E-03	1.47E-03	1.47E-03	1.47E-03	1.47E-03
pu238	8.47E-06	8.49E-06	8.43E-06	8.38E-06	8.32E-06	8.27E-06	8.21E-06
pu239	3.52E-07	3.55E-07	3.55E-07	3.55E-07	3.55E-07	3.55E-07	3.55E-07
total	3.97E+00	1.18E-02	1.18E-02	1.18E-02	1.18E-02	1.18E-02	1.18E-02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 56
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	2.09E-06	2.00E-06	1.91E-06	1.82E-06	1.74E-06	1.66E-06	1.58E-06
ge 73	5.53E-07	5.53E-07	5.53E-07	5.53E-07	5.53E-07	5.53E-07	5.53E-07
as 75	5.67E-06	5.67E-06	5.67E-06	5.67E-06	5.67E-06	5.67E-06	5.67E-06
ge 76	1.88E-05	1.88E-05	1.88E-05	1.88E-05	1.88E-05	1.88E-05	1.88E-05
se 77	4.68E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05
se 78	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
se 79	2.28E-04	2.28E-04	2.28E-04	2.28E-04	2.28E-04	2.28E-04	2.28E-04
se 80	6.79E-04	6.79E-04	6.79E-04	6.79E-04	6.79E-04	6.79E-04	6.79E-04
br 81	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03
se 82	1.75E-03	1.75E-03	1.75E-03	1.75E-03	1.75E-03	1.75E-03	1.75E-03
kr 83	2.92E-03	2.92E-03	2.92E-03	2.92E-03	2.92E-03	2.92E-03	2.92E-03
kr 84	5.87E-03	5.87E-03	5.87E-03	5.87E-03	5.87E-03	5.87E-03	5.87E-03
kr 85	1.43E-03	1.36E-03	1.29E-03	1.22E-03	1.15E-03	1.09E-03	1.04E-03
rb 85	5.45E-03	5.53E-03	5.60E-03	5.66E-03	5.73E-03	5.79E-03	5.85E-03
kr 86	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02
rb 87	1.44E-02	1.44E-02	1.44E-02	1.44E-02	1.44E-02	1.44E-02	1.44E-02
sr 88	2.08E-02	2.08E-02	2.08E-02	2.08E-02	2.08E-02	2.08E-02	2.08E-02
y 89	2.26E-02	2.81E-02	2.81E-02	2.81E-02	2.81E-02	2.81E-02	2.81E-02
sr 90	3.39E-02	3.32E-02	3.25E-02	3.19E-02	3.12E-02	3.06E-02	3.00E-02
y 90	8.72E-06	8.63E-06	8.45E-06	8.28E-06	8.11E-06	7.95E-06	7.79E-06
zr 90	4.10E-04	1.10E-03	1.77E-03	2.43E-03	3.08E-03	3.72E-03	4.34E-03
zr 91	2.74E-02	3.54E-02	3.56E-02	3.56E-02	3.56E-02	3.56E-02	3.56E-02
zr 92	3.61E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02
zr 93	2.64E-02	2.64E-02	2.64E-02	2.64E-02	2.64E-02	2.64E-02	2.64E-02
zr 94	3.95E-02	3.95E-02	3.95E-02	3.95E-02	3.95E-02	3.95E-02	3.95E-02
mo 95	2.49E-02	3.94E-02	4.02E-02	4.02E-02	4.02E-02	4.02E-02	4.02E-02
zr 96	3.94E-02	3.94E-02	3.94E-02	3.94E-02	3.94E-02	3.94E-02	3.94E-02
mo 96	3.67E-06	3.68E-06	3.68E-06	3.68E-06	3.68E-06	3.68E-06	3.68E-06
mo 97	3.58E-02	3.59E-02	3.59E-02	3.59E-02	3.59E-02	3.59E-02	3.59E-02
mo 98	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02
tc 99	3.98E-02	4.03E-02	4.03E-02	4.03E-02	4.03E-02	4.03E-02	4.03E-02
ru 99	1.36E-06	1.49E-06	1.60E-06	1.71E-06	1.82E-06	1.93E-06	2.04E-06
mo100	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02
ru101	3.39E-02	3.39E-02	3.39E-02	3.39E-02	3.39E-02	3.39E-02	3.39E-02
ru102	2.87E-02	2.87E-02	2.87E-02	2.87E-02	2.87E-02	2.87E-02	2.87E-02
rh103	1.79E-02	2.12E-02	2.12E-02	2.12E-02	2.12E-02	2.12E-02	2.12E-02
ru104	1.32E-02	1.32E-02	1.32E-02	1.32E-02	1.32E-02	1.32E-02	1.32E-02
pd105	8.13E-03	8.18E-03	8.18E-03	8.18E-03	8.18E-03	8.18E-03	8.18E-03
ru106	2.36E-03	1.34E-03	7.59E-04	4.30E-04	2.44E-04	1.38E-04	7.83E-05
pd106	8.97E-04	1.92E-03	2.50E-03	2.83E-03	3.01E-03	3.12E-03	3.18E-03
pd107	1.24E-03	1.24E-03	1.24E-03	1.24E-03	1.24E-03	1.24E-03	1.24E-03
pd108	5.94E-04	5.94E-04	5.94E-04	5.94E-04	5.94E-04	5.94E-04	5.94E-04
ag109	2.98E-04	2.99E-04	2.99E-04	2.99E-04	2.99E-04	2.99E-04	2.99E-04
pd110	2.43E-04	2.43E-04	2.43E-04	2.43E-04	2.43E-04	2.43E-04	2.43E-04
cd111	1.55E-04	1.60E-04	1.60E-04	1.60E-04	1.60E-04	1.60E-04	1.60E-04
cd112	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04

cd113	1.29E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
cd113m	2.10E-06	2.02E-06	1.94E-06	1.86E-06	1.79E-06	1.72E-06	1.65E-06
cd114	1.11E-04	1.11E-04	1.11E-04	1.11E-04	1.11E-04	1.11E-04	1.11E-04
in115	8.51E-05	8.65E-05	8.65E-05	8.65E-05	8.65E-05	8.65E-05	8.65E-05
sn115	4.32E-06	4.36E-06	4.36E-06	4.36E-06	4.36E-06	4.36E-06	4.36E-06
cd116	1.35E-04	1.35E-04	1.35E-04	1.35E-04	1.35E-04	1.35E-04	1.35E-04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 57
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec
0
nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
sn117	8.95E-05	8.96E-05	8.96E-05	8.96E-05	8.96E-05	8.96E-05	8.96E-05
sn118	9.16E-05	9.16E-05	9.16E-05	9.16E-05	9.16E-05	9.16E-05	9.16E-05
sn119	1.01E-04	1.01E-04	1.01E-04	1.01E-04	1.01E-04	1.01E-04	1.01E-04
sn120	1.01E-04	1.01E-04	1.01E-04	1.01E-04	1.01E-04	1.01E-04	1.01E-04
sn121m	6.65E-07	6.58E-07	6.51E-07	6.44E-07	6.38E-07	6.31E-07	6.24E-07
sb121	1.19E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04
sn122	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04
sb123	1.28E-04	1.33E-04	1.34E-04	1.34E-04	1.34E-04	1.35E-04	1.35E-04
sn124	2.15E-04	2.15E-04	2.15E-04	2.15E-04	2.15E-04	2.15E-04	2.15E-04
sb125	2.16E-04	1.77E-04	1.43E-04	1.16E-04	9.38E-05	7.59E-05	6.14E-05
te125	2.60E-05	6.75E-05	1.02E-04	1.29E-04	1.52E-04	1.70E-04	1.85E-04
te125m	2.27E-06	2.49E-06	2.03E-06	1.65E-06	1.33E-06	1.08E-06	8.73E-07
sn126	3.54E-04	3.54E-04	3.54E-04	3.54E-04	3.54E-04	3.54E-04	3.54E-04
te126	2.01E-06	2.06E-06	2.06E-06	2.06E-06	2.06E-06	2.06E-06	2.07E-06
i127	9.74E-04	1.05E-03	1.06E-03	1.06E-03	1.06E-03	1.06E-03	1.06E-03
te128	2.99E-03	2.99E-03	2.99E-03	2.99E-03	2.99E-03	2.99E-03	2.99E-03
i129	6.30E-03	6.46E-03	6.46E-03	6.46E-03	6.46E-03	6.46E-03	6.46E-03
te130	1.50E-02	1.50E-02	1.50E-02	1.50E-02	1.50E-02	1.50E-02	1.50E-02
xe130	1.86E-06	1.86E-06	1.86E-06	1.86E-06	1.86E-06	1.86E-06	1.86E-06
xe131	2.44E-02	2.52E-02	2.52E-02	2.52E-02	2.52E-02	2.52E-02	2.52E-02
xe132	3.72E-02	3.77E-02	3.77E-02	3.77E-02	3.77E-02	3.77E-02	3.77E-02
cs133	6.18E-02	6.32E-02	6.32E-02	6.32E-02	6.32E-02	6.32E-02	6.32E-02
xe134	6.89E-02	6.89E-02	6.89E-02	6.89E-02	6.89E-02	6.89E-02	6.89E-02
cs135	5.95E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02
xe136	5.63E-02	5.63E-02	5.63E-02	5.63E-02	5.63E-02	5.63E-02	5.63E-02
ba136	4.52E-05	4.76E-05	4.76E-05	4.76E-05	4.76E-05	4.76E-05	4.76E-05
cs137	5.58E-02	5.47E-02	5.36E-02	5.26E-02	5.16E-02	5.06E-02	4.97E-02
ba137	6.55E-04	1.72E-03	2.76E-03	3.78E-03	4.79E-03	5.77E-03	6.74E-03
ba138	6.05E-02	6.05E-02	6.05E-02	6.05E-02	6.05E-02	6.05E-02	6.05E-02
la139	5.81E-02	5.81E-02	5.81E-02	5.81E-02	5.81E-02	5.81E-02	5.81E-02
ce140	5.74E-02	6.07E-02	6.07E-02	6.07E-02	6.07E-02	6.07E-02	6.07E-02
pr141	4.72E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02
ce142	5.47E-02	5.47E-02	5.47E-02	5.47E-02	5.47E-02	5.47E-02	5.47E-02
nd143	5.84E-02	6.19E-02	6.19E-02	6.19E-02	6.19E-02	6.19E-02	6.19E-02
ce144	3.41E-02	1.62E-02	7.75E-03	3.70E-03	1.76E-03	8.41E-04	4.01E-04
nd144	1.73E-02	3.52E-02	4.37E-02	4.77E-02	4.96E-02	5.06E-02	5.10E-02
nd145	3.79E-02	3.79E-02	3.79E-02	3.79E-02	3.79E-02	3.79E-02	3.79E-02
nd146	2.86E-02	2.87E-02	2.87E-02	2.87E-02	2.87E-02	2.87E-02	2.87E-02
pm147	1.84E-02	1.56E-02	1.25E-02	1.00E-02	8.04E-03	6.45E-03	5.18E-03
sm147	2.43E-03	6.27E-03	9.34E-03	1.18E-02	1.38E-02	1.54E-02	1.67E-02
nd148	1.63E-02	1.63E-02	1.63E-02	1.63E-02	1.63E-02	1.63E-02	1.63E-02
sm149	1.05E-02	1.06E-02	1.06E-02	1.06E-02	1.06E-02	1.06E-02	1.06E-02
nd150	6.57E-03	6.57E-03	6.57E-03	6.57E-03	6.57E-03	6.57E-03	6.57E-03
sm150	7.53E-06	7.53E-06	7.53E-06	7.53E-06	7.53E-06	7.53E-06	7.53E-06
sm151	4.62E-03	4.61E-03	4.58E-03	4.55E-03	4.52E-03	4.50E-03	4.47E-03
eu151	1.78E-05	4.75E-05	7.70E-05	1.06E-04	1.35E-04	1.64E-04	1.93E-04
sm152	2.75E-03	2.75E-03	2.75E-03	2.75E-03	2.75E-03	2.75E-03	2.75E-03
eu153	1.68E-03	1.70E-03	1.70E-03	1.70E-03	1.70E-03	1.70E-03	1.70E-03

sm154	7.86E-04	7.86E-04	7.86E-04	7.86E-04	7.86E-04	7.86E-04	7.86E-04
eu155	3.33E-04	2.94E-04	2.60E-04	2.30E-04	2.03E-04	1.80E-04	1.59E-04
gd155	2.53E-05	6.40E-05	9.81E-05	1.28E-04	1.55E-04	1.79E-04	2.00E-04
gd156	1.48E-04	1.57E-04	1.57E-04	1.57E-04	1.57E-04	1.57E-04	1.57E-04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 58
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
gd157	7.73E-05	7.75E-05	7.75E-05	7.75E-05	7.75E-05	7.75E-05	7.75E-05
gd158	3.51E-05	3.51E-05	3.51E-05	3.51E-05	3.51E-05	3.51E-05	3.51E-05
tb159	1.35E-05	1.36E-05	1.36E-05	1.36E-05	1.36E-05	1.36E-05	1.36E-05
gd160	4.28E-06	4.28E-06	4.28E-06	4.28E-06	4.28E-06	4.28E-06	4.28E-06
dy161	1.26E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06
total	1.54E+00	1.54E+00	1.54E+00	1.54E+00	1.54E+00	1.54E+00	1.54E+00

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 59
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	2.03E-02	1.93E-02	1.84E-02	1.76E-02	1.68E-02	1.60E-02	1.53E-02
se 79	3.13E-06	3.13E-06	3.13E-06	3.13E-06	3.13E-06	3.13E-06	3.13E-06
kr 85	5.62E-01	5.33E-01	5.05E-01	4.78E-01	4.53E-01	4.29E-01	4.07E-01
sr 90	4.78E+00	4.69E+00	4.59E+00	4.50E+00	4.41E+00	4.32E+00	4.23E+00
y 90	4.74E+00	4.69E+00	4.59E+00	4.50E+00	4.41E+00	4.32E+00	4.23E+00
y 91	1.99E+02	5.43E+00	1.48E-01	4.01E-03	1.09E-04	2.96E-06	8.03E-08
zr 93	6.63E-05	6.64E-05	6.64E-05	6.64E-05	6.64E-05	6.64E-05	6.64E-05
nb 93m	1.42E-06	3.70E-06	5.91E-06	8.04E-06	1.01E-05	1.21E-05	1.40E-05
zr 95	2.14E+02	7.94E+00	2.94E-01	1.09E-02	4.03E-04	1.49E-05	5.54E-07
nb 95	2.09E+02	1.69E+01	6.46E-01	2.40E-02	8.88E-04	3.29E-05	1.22E-06
tc 99	6.81E-04	6.89E-04	6.89E-04	6.89E-04	6.89E-04	6.89E-04	6.89E-04
rh102	1.69E-06	1.38E-06	1.13E-06	9.27E-07	7.60E-07	6.23E-07	5.10E-07
ru106	7.83E+00	4.44E+00	2.52E+00	1.43E+00	8.08E-01	4.58E-01	2.60E-01
rh106	7.83E+00	4.44E+00	2.52E+00	1.43E+00	8.08E-01	4.58E-01	2.60E-01
pd107	6.39E-07	6.39E-07	6.39E-07	6.39E-07	6.39E-07	6.39E-07	6.39E-07
cd113m	4.72E-04	4.54E-04	4.35E-04	4.18E-04	4.01E-04	3.85E-04	3.70E-04
sn119m	8.83E-04	4.30E-04	2.09E-04	1.02E-04	4.96E-05	2.42E-05	1.18E-05
sn121	4.68E-01	2.74E-05	2.71E-05	2.69E-05	2.66E-05	2.63E-05	2.60E-05
sn121m	3.57E-05	3.54E-05	3.50E-05	3.46E-05	3.43E-05	3.39E-05	3.35E-05
sn123	4.99E-02	9.75E-03	1.90E-03	3.72E-04	7.26E-05	1.42E-05	2.77E-06
sb125	2.26E-01	1.85E-01	1.50E-01	1.21E-01	9.83E-02	7.96E-02	6.44E-02
te125m	4.10E-02	4.49E-02	3.66E-02	2.97E-02	2.40E-02	1.94E-02	1.57E-02
sn126	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05
sb126	3.85E-03	1.41E-06	1.41E-06	1.41E-06	1.41E-06	1.41E-06	1.41E-06
sb126m	5.29E-03	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05
te127	4.14E+00	9.77E-02	1.41E-02	2.04E-03	2.94E-04	4.24E-05	6.13E-06
te127m	6.64E-01	9.98E-02	1.44E-02	2.08E-03	3.00E-04	4.33E-05	6.25E-06
i129	1.11E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06
cs134	1.57E-04	1.19E-04	8.99E-05	6.80E-05	5.14E-05	3.88E-05	2.93E-05
cs135	6.85E-05	6.87E-05	6.87E-05	6.87E-05	6.87E-05	6.87E-05	6.87E-05
cs137	4.85E+00	4.76E+00	4.67E+00	4.58E+00	4.49E+00	4.41E+00	4.32E+00
ba137m	4.60E+00	4.49E+00	4.41E+00	4.32E+00	4.24E+00	4.16E+00	4.08E+00
ce144	1.08E+02	5.17E+01	2.47E+01	1.18E+01	5.61E+00	2.68E+00	1.28E+00
pr144	1.08E+02	5.17E+01	2.47E+01	1.18E+01	5.61E+00	2.68E+00	1.28E+00
pr144m	1.52E+00	7.24E-01	3.45E-01	1.65E-01	7.86E-02	3.75E-02	1.79E-02
pm147	1.71E+01	1.44E+01	1.16E+01	9.30E+00	7.46E+00	5.98E+00	4.80E+00
sm151	1.22E-01	1.21E-01	1.21E-01	1.20E-01	1.19E-01	1.18E-01	1.18E-01
eu154	8.29E-06	7.75E-06	7.25E-06	6.78E-06	6.34E-06	5.92E-06	5.54E-06

eu155	1.64E-01	1.45E-01	1.28E-01	1.13E-01	1.00E-01	8.86E-02	7.83E-02
total	1.97E+04	1.81E+02	8.67E+01	5.47E+01	3.87E+01	3.02E+01	2.55E+01

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 60
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec
0 element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h	6.83E-07	6.52E-07	6.22E-07	5.93E-07	5.66E-07	5.40E-07	5.16E-07
kr	1.29E+01	7.99E-04	7.57E-04	7.17E-04	6.80E-04	6.44E-04	6.10E-04
sr	2.00E+01	1.41E-02	5.47E-03	5.23E-03	5.12E-03	5.01E-03	4.91E-03
y	2.72E+01	4.55E-02	2.60E-02	2.49E-02	2.44E-02	2.39E-02	2.34E-02
zr	1.20E+01	4.00E-02	1.48E-03	5.49E-05	2.04E-06	8.28E-08	1.03E-08
nb	2.14E+01	8.09E-02	3.10E-03	1.15E-04	4.27E-06	1.60E-07	8.28E-09
tc	6.47E+00	3.46E-07	3.46E-07	3.46E-07	3.46E-07	3.46E-07	3.46E-07
ru	7.06E-01	1.90E-03	1.57E-04	8.48E-05	4.81E-05	2.72E-05	1.54E-05
rh	3.00E-01	4.27E-02	2.41E-02	1.37E-02	7.75E-03	4.39E-03	2.49E-03
cd	6.84E-02	1.04E-06	4.78E-07	4.55E-07	4.36E-07	4.19E-07	4.02E-07
sn	1.87E+00	3.07E-05	6.10E-06	1.26E-06	2.94E-07	9.83E-08	5.59E-08
sb	7.51E+00	5.87E-04	4.75E-04	3.84E-04	3.11E-04	2.52E-04	2.04E-04
te	9.30E+00	2.61E-04	5.78E-05	2.89E-05	2.08E-05	1.64E-05	1.32E-05
cs	1.81E+01	5.29E-03	5.19E-03	5.09E-03	4.99E-03	4.90E-03	4.80E-03
ba	1.12E+01	1.77E-02	1.73E-02	1.70E-02	1.67E-02	1.63E-02	1.60E-02
ce	4.36E+00	3.43E-02	1.61E-02	7.70E-03	3.67E-03	1.75E-03	8.35E-04
pr	5.72E+00	3.80E-01	1.81E-01	8.64E-02	4.12E-02	1.97E-02	9.37E-03
pm	3.18E-01	5.30E-03	4.25E-03	3.41E-03	2.74E-03	2.20E-03	1.76E-03
sm	2.00E-02	1.43E-05	1.42E-05	1.41E-05	1.40E-05	1.39E-05	1.38E-05
eu	8.23E-03	1.13E-04	9.97E-05	8.82E-05	7.79E-05	6.89E-05	6.09E-05
totals	2.58E+02	6.69E-01	2.86E-01	1.65E-01	1.08E-01	7.92E-02	6.46E-02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 61
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	7.43E-06	7.04E-06	6.67E-06	6.32E-06	5.99E-06	5.68E-06	5.38E-06
y 90	4.77E-08	4.72E-08	4.63E-08	4.53E-08	4.44E-08	4.35E-08	4.26E-08
zr 95	9.30E-01	3.44E-02	1.28E-03	4.73E-05	1.75E-06	6.48E-08	2.40E-09
nb 95	9.48E-01	7.63E-02	2.93E-03	1.09E-04	4.03E-06	1.49E-07	5.52E-09
rh102	2.16E-08	1.77E-08	1.45E-08	1.19E-08	9.73E-09	7.97E-09	6.53E-09
rh106	9.56E-03	5.42E-03	3.07E-03	1.74E-03	9.87E-04	5.60E-04	3.17E-04
sb125	5.82E-04	4.77E-04	3.86E-04	3.13E-04	2.53E-04	2.05E-04	1.66E-04
te125m	8.64E-06	9.48E-06	7.73E-06	6.26E-06	5.07E-06	4.10E-06	3.32E-06
sn126	7.78E-09	7.78E-09	7.78E-09	7.78E-09	7.78E-09	7.78E-09	7.78E-09
sb126	6.28E-05	2.30E-08	2.30E-08	2.30E-08	2.30E-08	2.30E-08	2.30E-08
sb126m	4.88E-05	9.27E-08	9.27E-08	9.27E-08	9.27E-08	9.27E-08	9.26E-08
cs134	1.45E-06	1.10E-06	8.29E-07	6.26E-07	4.73E-07	3.58E-07	2.70E-07
ba137m	1.63E-02	1.60E-02	1.57E-02	1.54E-02	1.51E-02	1.48E-02	1.45E-02
ce144	1.22E-02	5.83E-03	2.78E-03	1.32E-03	6.32E-04	3.01E-04	1.44E-04
pr144	1.86E-02	8.86E-03	4.23E-03	2.02E-03	9.61E-04	4.59E-04	2.19E-04
pr144m	1.13E-04	5.37E-05	2.56E-05	1.22E-05	5.82E-06	2.78E-06	1.32E-06
pm147	4.44E-07	3.75E-07	3.01E-07	2.41E-07	1.94E-07	1.55E-07	1.25E-07
sm151	1.02E-08	1.02E-08	1.01E-08	1.01E-08	1.00E-08	9.96E-09	9.89E-09
eu154	6.16E-08	5.76E-08	5.39E-08	5.04E-08	4.71E-08	4.40E-08	4.12E-08
eu155	6.30E-05	5.57E-05	4.92E-05	4.35E-05	3.84E-05	3.40E-05	3.00E-05
total	1.28E+02	1.49E-01	3.04E-02	2.10E-02	1.80E-02	1.63E-02	1.54E-02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 62
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+00mwd, flux= 2.79E+08n/cm**2-sec
0 element gamma power, watts

basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr	6.74E+00	7.04E-06	6.67E-06	6.32E-06	5.99E-06	5.68E-06	5.38E-06
y	9.80E+00	1.17E-04	3.21E-06	1.31E-07	4.68E-08	4.36E-08	4.26E-08
zr	4.79E+00	3.44E-02	1.28E-03	4.73E-05	1.75E-06	6.48E-08	2.40E-09
nb	9.09E+00	7.64E-02	2.93E-03	1.09E-04	4.03E-06	1.49E-07	5.70E-09
rh	9.50E-02	5.43E-03	3.07E-03	1.74E-03	9.87E-04	5.60E-04	3.17E-04
sn	1.23E+00	4.37E-07	1.01E-07	3.09E-08	1.51E-08	1.10E-08	9.69E-09
sb	5.15E+00	4.77E-04	3.86E-04	3.13E-04	2.53E-04	2.05E-04	1.66E-04
te	5.57E+00	2.30E-05	9.10E-06	6.46E-06	5.10E-06	4.10E-06	3.32E-06
cs	8.75E+00	1.10E-06	8.29E-07	6.26E-07	4.73E-07	3.58E-07	2.70E-07
ba	4.72E+00	1.60E-02	1.57E-02	1.54E-02	1.51E-02	1.48E-02	1.45E-02
ce	2.08E+00	5.96E-03	2.78E-03	1.32E-03	6.32E-04	3.01E-04	1.44E-04
pr	1.79E+00	8.92E-03	4.25E-03	2.03E-03	9.67E-04	4.61E-04	2.20E-04
pm	8.53E-02	3.87E-07	3.01E-07	2.41E-07	1.94E-07	1.55E-07	1.25E-07
sm	4.44E-03	1.02E-08	1.01E-08	1.01E-08	1.00E-08	9.96E-09	9.89E-09
eu	5.17E-03	5.57E-05	4.92E-05	4.35E-05	3.85E-05	3.40E-05	3.01E-05
totals	1.28E+02	1.49E-01	3.04E-02	2.10E-02	1.80E-02	1.63E-02	1.54E-02

1 page 63

photon spectrum as a function of time for light elements, cladding and structural materials

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 1.mwd, flux= 2.79E+08 n**2-sec

0 spectrum of photon release rates, photons/sec
basis = single reactor assembly

0

emean (mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	5.14E+11	1.31E+04	1.05E+04	8.41E+03	6.73E+03	5.39E+03	4.32E+03
3.00E-02	1.69E+11	4.17E+03	3.34E+03	2.68E+03	2.14E+03	1.72E+03	1.37E+03
5.50E-02	1.18E+11	2.82E+03	2.26E+03	1.81E+03	1.45E+03	1.16E+03	9.29E+02
8.50E-02	6.89E+10	1.59E+03	1.27E+03	1.02E+03	8.15E+02	6.52E+02	5.23E+02
1.20E-01	4.90E+10	1.08E+03	8.68E+02	6.95E+02	5.57E+02	4.46E+02	3.57E+02
1.70E-01	5.12E+10	1.06E+03	8.53E+02	6.83E+02	5.47E+02	4.38E+02	3.51E+02
3.00E-01	5.87E+10	1.06E+03	8.48E+02	6.79E+02	5.44E+02	4.36E+02	3.49E+02
6.50E-01	2.89E+10	5.66E+04	4.53E+04	3.63E+04	2.91E+04	2.33E+04	1.87E+04
1.13E+00	4.96E+09	4.51E+04	3.61E+04	2.89E+04	2.32E+04	1.86E+04	1.49E+04
1.58E+00	9.03E+11	1.13E-01	9.05E-02	7.25E-02	5.80E-02	4.65E-02	3.72E-02
2.00E+00	1.79E+08	1.00E-02	8.05E-03	6.44E-03	5.16E-03	4.13E-03	3.31E-03
2.40E+00	3.62E+07	2.25E-03	1.80E-03	1.44E-03	1.16E-03	9.27E-04	7.42E-04
2.80E+00	2.13E+11	3.53E-05	2.82E-05	2.26E-05	1.81E-05	1.45E-05	1.16E-05
3.25E+00	1.35E+04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
3.75E+00	1.39E+08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.25E+00	1.82E+06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.75E+00	6.61E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
5.50E+00	1.15E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0 total	2.18E+12	1.27E+05	1.01E+05	8.12E+04	6.50E+04	5.21E+04	4.17E+04
0 mev/sec	2.10E+12	8.87E+04	7.10E+04	5.69E+04	4.56E+04	3.65E+04	2.92E+04

0 spectrum of energy release rates, mev/watt-sec
basis = single reactor assembly

0

emean (mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	1.29E+06	3.28E-02	2.62E-02	2.10E-02	1.68E-02	1.35E-02	1.08E-02
3.00E-02	1.27E+06	3.13E-02	2.51E-02	2.01E-02	1.61E-02	1.29E-02	1.03E-02
5.50E-02	1.62E+06	3.87E-02	3.10E-02	2.49E-02	1.99E-02	1.59E-02	1.28E-02
8.50E-02	1.46E+06	3.37E-02	2.70E-02	2.16E-02	1.73E-02	1.39E-02	1.11E-02
1.20E-01	1.47E+06	3.25E-02	2.60E-02	2.09E-02	1.67E-02	1.34E-02	1.07E-02
1.70E-01	2.18E+06	4.52E-02	3.62E-02	2.90E-02	2.32E-02	1.86E-02	1.49E-02
3.00E-01	4.41E+06	7.94E-02	6.36E-02	5.10E-02	4.08E-02	3.27E-02	2.62E-02

		6.50E-01	4.70E+06	9.20E+00	7.37E+00	5.90E+00	4.72E+00	3.78E+00	3.03E+00
		1.13E+00	1.40E+06	1.27E+01	1.02E+01	8.14E+00	6.52E+00	5.22E+00	4.18E+00
		1.58E+00	3.56E+08	4.45E-05	3.56E-05	2.85E-05	2.29E-05	1.83E-05	1.47E-05
		2.00E+00	8.95E+04	5.02E-06	4.02E-06	3.22E-06	2.58E-06	2.07E-06	1.66E-06
		2.40E+00	2.17E+04	1.35E-06	1.08E-06	8.67E-07	6.94E-07	5.56E-07	4.45E-07
		2.80E+00	1.49E+08	2.47E-08	1.98E-08	1.58E-08	1.27E-08	1.02E-08	8.13E-09
		3.25E+00	1.10E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
		3.75E+00	1.30E+05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
		4.25E+00	1.93E+03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
		4.75E+00	7.85E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
		5.50E+00	1.58E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0		total	5.25E+08	2.22E+01	1.78E+01	1.42E+01	1.14E+01	9.12E+00	7.31E+00
0	gamma	watts	3.37E-01	1.42E-08	1.14E-08	9.12E-09	7.30E-09	5.85E-09	4.69E-09

1 page 64

photon spectrum as a function of time for fission products

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 1.mwd, flux= 2.79E+08 n**2-sec

0 spectrum of photon release rates, photons/sec
basis = single reactor assembly

0

emean		time after discharge					
(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	2.53E+14	1.84E+12	9.01E+11	5.05E+11	3.13E+11	2.17E+11	1.69E+11
3.00E-02	1.11E+14	8.29E+11	4.10E+11	2.27E+11	1.38E+11	9.41E+10	7.20E+10
5.50E-02	5.92E+13	4.27E+11	2.10E+11	1.16E+11	7.01E+10	4.75E+10	3.62E+10
8.50E-02	4.11E+13	2.77E+11	1.36E+11	7.40E+10	4.38E+10	2.90E+10	2.15E+10
1.20E-01	3.34E+13	3.94E+11	1.91E+11	9.71E+10	5.20E+10	3.02E+10	1.96E+10
1.70E-01	5.44E+13	1.75E+11	8.40E+10	4.58E+10	2.73E+10	1.81E+10	1.35E+10
3.00E-01	1.10E+14	1.96E+11	9.67E+10	5.21E+10	3.04E+10	1.98E+10	1.45E+10
6.50E-01	2.23E+14	1.41E+12	2.80E+11	1.97E+11	1.71E+11	1.58E+11	1.49E+11
1.13E+00	7.81E+13	2.02E+10	1.00E+10	5.30E+09	2.93E+09	1.74E+09	1.13E+09
1.58E+00	4.08E+13	9.69E+09	4.74E+09	2.34E+09	1.18E+09	6.10E+08	3.32E+08
2.00E+00	1.23E+13	1.71E+10	8.21E+09	3.93E+09	1.89E+09	9.06E+08	4.37E+08
2.40E+00	1.06E+13	3.30E+08	1.73E+08	9.11E+07	4.84E+07	2.59E+07	1.39E+07
2.80E+00	4.23E+12	4.16E+07	2.25E+07	1.22E+07	6.64E+06	3.64E+06	2.00E+06
3.25E+00	2.48E+12	4.96E+06	2.81E+06	1.59E+06	9.03E+05	5.12E+05	2.90E+05
3.75E+00	1.26E+12	2.19E+03	1.24E+03	7.02E+02	3.98E+02	2.26E+02	1.28E+02
4.25E+00	1.40E+12	1.63E-09	1.71E-09	1.77E-09	1.82E-09	1.86E-09	1.89E-09
4.75E+00	4.09E+11	8.17E-10	8.56E-10	8.88E-10	9.13E-10	9.34E-10	9.50E-10
5.50E+00	3.04E+11	6.06E-10	6.35E-10	6.59E-10	6.78E-10	6.93E-10	7.05E-10
0 total	1.04E+15	5.60E+12	2.33E+12	1.33E+12	8.52E+11	6.17E+11	4.97E+11
0 mev/sec	4.40E+14	1.21E+12	3.28E+11	2.05E+11	1.55E+11	1.30E+11	1.16E+11

0 spectrum of energy release rates, mev/watt-sec
basis = single reactor assembly

0

emean		time after discharge					
(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	6.34E+08	4.61E+06	2.25E+06	1.26E+06	7.82E+05	5.43E+05	4.22E+05
3.00E-02	8.32E+08	6.22E+06	3.08E+06	1.70E+06	1.03E+06	7.05E+05	5.40E+05
5.50E-02	8.14E+08	5.88E+06	2.89E+06	1.59E+06	9.64E+05	6.53E+05	4.97E+05
8.50E-02	8.74E+08	5.88E+06	2.89E+06	1.57E+06	9.31E+05	6.16E+05	4.58E+05
1.20E-01	1.00E+09	1.18E+07	5.73E+06	2.91E+06	1.56E+06	9.07E+05	5.87E+05
1.70E-01	2.31E+09	7.43E+06	3.57E+06	1.95E+06	1.16E+06	7.69E+05	5.75E+05
3.00E-01	8.21E+09	1.47E+07	7.25E+06	3.91E+06	2.28E+06	1.48E+06	1.08E+06
6.50E-01	3.62E+10	2.29E+08	4.55E+07	3.20E+07	2.79E+07	2.56E+07	2.43E+07
1.13E+00	2.20E+10	5.69E+06	2.82E+06	1.49E+06	8.25E+05	4.89E+05	3.17E+05
1.58E+00	1.61E+10	3.82E+06	1.87E+06	9.23E+05	4.64E+05	2.40E+05	1.31E+05
2.00E+00	6.13E+09	8.57E+06	4.10E+06	1.97E+06	9.43E+05	4.53E+05	2.19E+05
2.40E+00	6.38E+09	1.98E+05	1.04E+05	5.47E+04	2.90E+04	1.55E+04	8.36E+03

	2.80E+00	2.96E+09	2.92E+04	1.57E+04	8.53E+03	4.65E+03	2.55E+03	1.40E+03
	3.25E+00	2.01E+09	4.03E+03	2.28E+03	1.29E+03	7.34E+02	4.16E+02	2.36E+02
	3.75E+00	1.18E+09	2.05E+00	1.16E+00	6.59E-01	3.73E-01	2.12E-01	1.20E-01
	4.25E+00	1.48E+09	1.73E-12	1.81E-12	1.88E-12	1.93E-12	1.98E-12	2.01E-12
	4.75E+00	4.85E+08	9.70E-13	1.02E-12	1.05E-12	1.08E-12	1.11E-12	1.13E-12
	5.50E+00	4.18E+08	8.33E-13	8.73E-13	9.06E-13	9.32E-13	9.52E-13	9.69E-13
0	total	1.10E+11	3.04E+08	8.20E+07	5.13E+07	3.88E+07	3.25E+07	2.91E+07
0	gamma watts	7.05E+01	1.95E-01	5.26E-02	3.29E-02	2.49E-02	2.08E-02	1.87E-02

1 page 65

0 principal photon sources in group 1, photons/sec

mean energy = .0100 mev. nuclides exceeding 1.0E-03 of total group release rate (2.17E+11) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	2.96E+09	2.81E+09	2.66E+09	2.52E+09	2.39E+09	2.27E+09	2.15E+09
sr 90	1.95E+10	1.91E+10	1.87E+10	1.83E+10	1.80E+10	1.76E+10	1.72E+10
y 90	9.48E+10	9.39E+10	9.20E+10	9.01E+10	8.83E+10	8.65E+10	8.47E+10
rh106	2.33E+11	1.32E+11	7.49E+10	4.24E+10	2.41E+10	1.36E+10	7.73E+09
cs137	1.71E+10	1.68E+10	1.65E+10	1.62E+10	1.59E+10	1.55E+10	1.53E+10
ba137m	8.07E+08	7.88E+08	7.73E+08	7.58E+08	7.43E+08	7.29E+08	7.15E+08
ce144	2.09E+11	9.96E+10	4.75E+10	2.26E+10	1.08E+10	5.15E+09	2.46E+09
pr144	2.77E+12	1.32E+12	6.29E+11	3.00E+11	1.43E+11	6.83E+10	3.26E+10
pm147	1.99E+10	1.68E+10	1.35E+10	1.08E+10	8.67E+09	6.95E+09	5.58E+09
eu155	4.34E+08	3.84E+08	3.39E+08	3.00E+08	2.65E+08	2.34E+08	2.07E+08

0 principal photon sources in group 2, photons/sec

mean energy = .0300 mev. nuclides exceeding 1.0E-03 of total group release rate (9.41E+10) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	8.64E+08	8.19E+08	7.76E+08	7.35E+08	6.97E+08	6.60E+08	6.26E+08
sr 90	5.51E+09	5.40E+09	5.29E+09	5.18E+09	5.08E+09	4.97E+09	4.87E+09
y 90	3.09E+10	3.06E+10	3.00E+10	2.93E+10	2.87E+10	2.82E+10	2.76E+10
rh106	7.78E+10	4.41E+10	2.50E+10	1.42E+10	8.03E+09	4.55E+09	2.58E+09
sb125	4.15E+09	3.40E+09	2.75E+09	2.23E+09	1.80E+09	1.46E+09	1.18E+09
te125m	1.75E+09	1.92E+09	1.57E+09	1.27E+09	1.03E+09	8.32E+08	6.73E+08
cs137	4.77E+09	4.68E+09	4.59E+09	4.50E+09	4.42E+09	4.33E+09	4.25E+09
ba137m	1.39E+10	1.35E+10	1.33E+10	1.30E+10	1.28E+10	1.25E+10	1.23E+10
ce144	4.85E+11	2.31E+11	1.10E+11	5.26E+10	2.51E+10	1.20E+10	5.70E+09
pr144	9.15E+11	4.37E+11	2.08E+11	9.93E+10	4.74E+10	2.26E+10	1.08E+10
pr144m	1.87E+10	8.91E+09	4.25E+09	2.03E+09	9.67E+08	4.61E+08	2.20E+08
pm147	4.37E+09	3.69E+09	2.96E+09	2.37E+09	1.91E+09	1.53E+09	1.23E+09

0 principal photon sources in group 3, photons/sec

mean energy = .0550 mev. nuclides exceeding 1.0E-03 of total group release rate (4.75E+10) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	5.30E+08	5.02E+08	4.76E+08	4.51E+08	4.27E+08	4.05E+08	3.84E+08
sr 90	3.26E+09	3.19E+09	3.13E+09	3.06E+09	3.00E+09	2.94E+09	2.88E+09
y 90	2.13E+10	2.11E+10	2.07E+10	2.03E+10	1.99E+10	1.95E+10	1.91E+10
rh106	5.51E+10	3.12E+10	1.77E+10	1.00E+10	5.69E+09	3.23E+09	1.83E+09
cs137	2.78E+09	2.72E+09	2.67E+09	2.62E+09	2.57E+09	2.52E+09	2.47E+09
ce144	7.01E+10	3.34E+10	1.60E+10	7.61E+09	3.63E+09	1.73E+09	8.25E+08
pr144	6.43E+11	3.06E+11	1.46E+11	6.97E+10	3.32E+10	1.59E+10	7.56E+09
pm147	1.84E+09	1.55E+09	1.24E+09	9.98E+08	8.01E+08	6.42E+08	5.15E+08
eu155	1.27E+09	1.12E+09	9.89E+08	8.74E+08	7.73E+08	6.83E+08	6.04E+08

1 page 66

0 principal photon sources in group 4, photons/sec

mean energy = .0850 mev. nuclides exceeding 1.0E-03 of total group release rate (2.90E+10) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	2.65E+08	2.51E+08	2.38E+08	2.26E+08	2.14E+08	2.03E+08	1.92E+08
sr 90	1.55E+09	1.52E+09	1.49E+09	1.46E+09	1.43E+09	1.40E+09	1.37E+09
y 90	1.24E+10	1.22E+10	1.20E+10	1.17E+10	1.15E+10	1.13E+10	1.10E+10

rh106	3.28E+10	1.86E+10	1.05E+10	5.97E+09	3.38E+09	1.92E+09	1.09E+09
cs137	1.30E+09	1.28E+09	1.25E+09	1.23E+09	1.20E+09	1.18E+09	1.16E+09
ce144	9.90E+10	4.72E+10	2.25E+10	1.07E+10	5.12E+09	2.44E+09	1.17E+09
pr144	3.78E+11	1.80E+11	8.60E+10	4.10E+10	1.96E+10	9.33E+09	4.45E+09
pm147	5.22E+08	4.41E+08	3.54E+08	2.84E+08	2.28E+08	1.83E+08	1.47E+08
eu155	1.92E+09	1.70E+09	1.50E+09	1.33E+09	1.17E+09	1.04E+09	9.17E+08

0 principal photon sources in group 5, photons/sec

mean energy = .1200 mev. nuclides exceeding 1.0E-03 of total group release rate (3.02E+10) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.60E+08	1.52E+08	1.44E+08	1.36E+08	1.29E+08	1.22E+08	1.16E+08
sr 90	8.84E+08	8.66E+08	8.48E+08	8.31E+08	8.14E+08	7.97E+08	7.81E+08
y 90	8.69E+09	8.61E+09	8.43E+09	8.26E+09	8.09E+09	7.93E+09	7.77E+09
rh106	2.37E+10	1.34E+10	7.60E+09	4.31E+09	2.44E+09	1.38E+09	7.85E+08
cs137	7.29E+08	7.15E+08	7.01E+08	6.88E+08	6.75E+08	6.62E+08	6.49E+08
ce144	4.86E+11	2.32E+11	1.10E+11	5.27E+10	2.51E+10	1.20E+10	5.71E+09
pr144	2.71E+11	1.29E+11	6.16E+10	2.94E+10	1.40E+10	6.68E+09	3.18E+09
pm147	1.66E+08	1.40E+08	1.12E+08	9.00E+07	7.22E+07	5.80E+07	4.65E+07
eu155	1.10E+09	9.70E+08	8.57E+08	7.58E+08	6.70E+08	5.92E+08	5.23E+08

0 principal photon sources in group 6, photons/sec

mean energy = .1700 mev. nuclides exceeding 1.0E-03 of total group release rate (1.81E+10) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.27E+08	1.20E+08	1.14E+08	1.08E+08	1.02E+08	9.71E+07	9.20E+07
sr 90	6.30E+08	6.17E+08	6.05E+08	5.93E+08	5.81E+08	5.69E+08	5.57E+08
y 90	8.96E+09	8.87E+09	8.69E+09	8.51E+09	8.34E+09	8.17E+09	8.00E+09
rh106	2.54E+10	1.44E+10	8.15E+09	4.62E+09	2.62E+09	1.48E+09	8.42E+08
sb125	6.25E+08	5.12E+08	4.15E+08	3.36E+08	2.72E+08	2.20E+08	1.78E+08
cs137	5.15E+08	5.05E+08	4.95E+08	4.86E+08	4.76E+08	4.67E+08	4.58E+08
ce144	1.04E+09	4.98E+08	2.38E+08	1.13E+08	5.41E+07	2.58E+07	1.23E+07
pr144	2.86E+11	1.36E+11	6.51E+10	3.10E+10	1.48E+10	7.06E+09	3.37E+09

1 page 67

0 principal photon sources in group 7, photons/sec

mean energy = .3000 mev. nuclides exceeding 1.0E-03 of total group release rate (1.98E+10) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	7.67E+07	7.27E+07	6.89E+07	6.53E+07	6.19E+07	5.86E+07	5.55E+07
sr 90	2.86E+08	2.80E+08	2.74E+08	2.69E+08	2.63E+08	2.58E+08	2.53E+08
y 90	9.95E+09	9.85E+09	9.65E+09	9.45E+09	9.26E+09	9.07E+09	8.89E+09
rh106	3.06E+10	1.73E+10	9.83E+09	5.57E+09	3.16E+09	1.79E+09	1.02E+09
sb125	2.37E+08	1.94E+08	1.57E+08	1.27E+08	1.03E+08	8.33E+07	6.74E+07
cs137	2.60E+08	2.55E+08	2.51E+08	2.46E+08	2.41E+08	2.37E+08	2.32E+08
pr144	3.35E+11	1.60E+11	7.62E+10	3.63E+10	1.73E+10	8.27E+09	3.94E+09

0 principal photon sources in group 8, photons/sec

mean energy = .6500 mev. nuclides exceeding 1.0E-03 of total group release rate (1.58E+11) at 1521,9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	4.21E+09	4.16E+09	4.08E+09	4.00E+09	3.91E+09	3.83E+09	3.76E+09
rh106	9.45E+10	5.36E+10	3.04E+10	1.72E+10	9.75E+09	5.53E+09	3.13E+09
sb125	5.08E+09	4.16E+09	3.37E+09	2.73E+09	2.21E+09	1.79E+09	1.45E+09
ba137m	1.56E+11	1.52E+11	1.49E+11	1.46E+11	1.44E+11	1.41E+11	1.38E+11
pr144	2.29E+11	1.09E+11	5.20E+10	2.48E+10	1.18E+10	5.64E+09	2.69E+09

0 principal photon sources in group 9, photons/sec

mean energy = 1.1250 mev. nuclides exceeding 1.0E-03 of total group release rate (1.74E+09) at 1521,9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	5.48E+08	5.43E+08	5.32E+08	5.21E+08	5.11E+08	5.00E+08	4.90E+08
rh106	8.80E+09	4.99E+09	2.83E+09	1.60E+09	9.09E+08	5.15E+08	2.92E+08
pr144	2.93E+10	1.40E+10	6.65E+09	3.17E+09	1.51E+09	7.22E+08	3.44E+08

0 principal photon sources in group 10, photons/sec

mean energy = 1.5750 mev. nuclides exceeding 1.0E-03 of total group release rate (6.10E+08) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
y 90	7.00E+07	6.93E+07	6.79E+07	6.65E+07	6.52E+07	6.39E+07	6.26E+07
rh106	1.66E+09	9.41E+08	5.33E+08	3.02E+08	1.71E+08	9.71E+07	5.51E+07
pr144	1.82E+10	8.68E+09	4.14E+09	1.97E+09	9.42E+08	4.49E+08	2.14E+08

0 principal photon sources in group 11, photons/sec

mean energy = 2.0000 mev. nuclides exceeding 1.0E-03 of total group release rate (9.06E+08) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
y 90	4.19E+06	4.15E+06	4.06E+06	3.98E+06	3.90E+06	3.82E+06	3.74E+06
rh106	5.39E+08	3.06E+08	1.73E+08	9.82E+07	5.57E+07	3.16E+07	1.79E+07
pr144	3.53E+10	1.68E+10	8.03E+09	3.83E+09	1.83E+09	8.71E+08	4.15E+08

1

0 principal photon sources in group 12, photons/sec

mean energy = 2.4000 mev. nuclides exceeding 1.0E-03 of total group release rate (2.59E+07) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
rh106	3.01E+08	1.71E+08	9.69E+07	5.49E+07	3.11E+07	1.76E+07	1.00E+07
pr144	3.34E+08	1.59E+08	7.59E+07	3.62E+07	1.73E+07	8.23E+06	3.92E+06

0 principal photon sources in group 13, photons/sec

mean energy = 2.8000 mev. nuclides exceeding 1.0E-03 of total group release rate (3.64E+06) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
rh106	5.09E+07	2.88E+07	1.63E+07	9.27E+06	5.25E+06	2.98E+06	1.69E+06
pr144	2.69E+07	1.28E+07	6.11E+06	2.91E+06	1.39E+06	6.63E+05	3.16E+05

0 principal photon sources in group 14, photons/sec

mean energy = 3.2500 mev. nuclides exceeding 1.0E-03 of total group release rate (5.12E+05) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
rh106	8.75E+06	4.96E+06	2.81E+06	1.59E+06	9.03E+05	5.12E+05	2.90E+05

0 principal photon sources in group 15, photons/sec

mean energy = 3.7500 mev. nuclides exceeding 1.0E-03 of total group release rate (2.26E+02) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
rh106	3.86E+03	2.19E+03	1.24E+03	7.02E+02	3.98E+02	2.26E+02	1.28E+02

0 principal photon sources in group 16, photons/sec

mean energy = 4.2500 mev. nuclides exceeding 1.0E-03 of total group release rate (1.86E-09) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
ce142	1.47E-09	1.47E-09	1.47E-09	1.47E-09	1.47E-09	1.47E-09	1.47E-09
sm147	6.24E-11	1.61E-10	2.40E-10	3.03E-10	3.54E-10	3.95E-10	4.27E-10

0 principal photon sources in group 17, photons/sec

mean energy = 4.7500 mev. nuclides exceeding 1.0E-03 of total group release rate (9.34E-10) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
ce142	7.36E-10	7.36E-10	7.36E-10	7.36E-10	7.36E-10	7.36E-10	7.36E-10
sm147	3.13E-11	8.07E-11	1.20E-10	1.52E-10	1.77E-10	1.98E-10	2.14E-10

0 principal photon sources in group 18, photons/sec

mean energy = 5.5000 mev. nuclides exceeding 1.0E-03 of total group release rate (6.93E-10) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
ce142	5.46E-10	5.46E-10	5.46E-10	5.46E-10	5.46E-10	5.46E-10	5.46E-10
sm147	2.32E-11	5.98E-11	8.92E-11	1.13E-10	1.32E-10	1.47E-10	1.59E-10

1

photon spectrum as a function of time for heavy metals and their daughters

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 1.mwd, flux= 2.79E+08 n**2-sec

0 actinide photon release rates, photons/sec

basis = single reactor assembly

emean (mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
			time after discharge				
1.00E-02	1.33E+14	5.50E+11	5.50E+11	5.50E+11	5.50E+11	5.50E+11	5.50E+11
3.00E-02	8.46E+12	4.62E+10	4.62E+10	4.62E+10	4.62E+10	4.62E+10	4.62E+10
5.50E-02	1.09E+13	2.01E+10	2.01E+10	2.01E+10	2.01E+10	2.01E+10	2.01E+10
8.50E-02	5.26E+13	1.51E+11	1.51E+11	1.51E+11	1.51E+11	1.51E+11	1.51E+11
1.20E-01	5.42E+13	2.90E+10	2.90E+10	2.90E+10	2.90E+10	2.90E+10	2.90E+10
1.70E-01	1.72E+12	1.90E+10	1.90E+10	1.90E+10	1.90E+10	1.90E+10	1.90E+10
3.00E-01	2.87E+13	1.30E+11	1.30E+11	1.30E+11	1.30E+11	1.30E+11	1.30E+11
6.50E-01	1.45E+12	6.30E+09	6.30E+09	6.30E+09	6.30E+09	6.30E+09	6.30E+09
1.13E+00	1.86E+12	9.16E+08	9.16E+08	9.16E+08	9.16E+08	9.16E+08	9.16E+08
1.58E+00	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08
2.00E+00	3.65E+07	3.65E+07	3.65E+07	3.65E+07	3.65E+07	3.65E+07	3.65E+07
2.40E+00	2.90E+04	2.91E+04	2.93E+04	2.95E+04	2.97E+04	3.01E+04	3.05E+04
2.80E+00	1.75E+04	1.85E+04	1.98E+04	2.14E+04	2.30E+04	2.46E+04	2.60E+04
3.25E+00	1.02E+04	1.02E+04	1.02E+04	1.02E+04	1.02E+04	1.02E+04	1.02E+04
3.75E+00	5.89E+03	5.89E+03	5.89E+03	5.89E+03	5.89E+03	5.89E+03	5.89E+03
4.25E+00	3.41E+03	3.41E+03	3.41E+03	3.41E+03	3.41E+03	3.41E+03	3.41E+03
4.75E+00	1.97E+03	1.97E+03	1.97E+03	1.97E+03	1.97E+03	1.97E+03	1.97E+03
5.50E+00	1.78E+03	1.78E+03	1.78E+03	1.78E+03	1.78E+03	1.78E+03	1.78E+03
total	2.93E+14	9.52E+11	9.52E+11	9.52E+11	9.52E+11	9.52E+11	9.52E+11
mev/sec	2.51E+13	7.20E+10	7.20E+10	7.20E+10	7.20E+10	7.20E+10	7.20E+10

actinide energy release rates, mev/watt-sec
basis = single reactor assembly

emean (mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
			time after discharge				
1.00E-02	3.33E+08	1.37E+06	1.37E+06	1.37E+06	1.37E+06	1.37E+06	1.37E+06
3.00E-02	6.34E+07	3.46E+05	3.46E+05	3.46E+05	3.46E+05	3.46E+05	3.46E+05
5.50E-02	1.50E+08	2.77E+05	2.77E+05	2.77E+05	2.77E+05	2.77E+05	2.77E+05
8.50E-02	1.12E+09	3.20E+06	3.20E+06	3.20E+06	3.20E+06	3.20E+06	3.20E+06
1.20E-01	1.63E+09	8.69E+05	8.69E+05	8.69E+05	8.69E+05	8.69E+05	8.69E+05
1.70E-01	7.31E+07	8.07E+05	8.07E+05	8.07E+05	8.07E+05	8.07E+05	8.07E+05
3.00E-01	2.15E+09	9.77E+06	9.77E+06	9.77E+06	9.77E+06	9.77E+06	9.77E+06
6.50E-01	2.36E+08	1.02E+06	1.02E+06	1.02E+06	1.02E+06	1.02E+06	1.02E+06
1.13E+00	5.24E+08	2.58E+05	2.58E+05	2.58E+05	2.58E+05	2.58E+05	2.58E+05
1.58E+00	4.20E+04	4.21E+04	4.21E+04	4.21E+04	4.21E+04	4.21E+04	4.21E+04
2.00E+00	1.82E+04	1.82E+04	1.82E+04	1.82E+04	1.82E+04	1.82E+04	1.82E+04
2.40E+00	1.74E+01	1.75E+01	1.76E+01	1.77E+01	1.78E+01	1.80E+01	1.83E+01
2.80E+00	1.23E+01	1.29E+01	1.39E+01	1.50E+01	1.61E+01	1.72E+01	1.82E+01
3.25E+00	8.26E+00	8.26E+00	8.27E+00	8.27E+00	8.27E+00	8.27E+00	8.27E+00
3.75E+00	5.52E+00	5.52E+00	5.52E+00	5.52E+00	5.52E+00	5.52E+00	5.52E+00
4.25E+00	3.62E+00	3.62E+00	3.62E+00	3.62E+00	3.62E+00	3.62E+00	3.62E+00
4.75E+00	2.34E+00	2.34E+00	2.34E+00	2.34E+00	2.34E+00	2.34E+00	2.34E+00
5.50E+00	2.45E+00	2.45E+00	2.45E+00	2.45E+00	2.45E+00	2.45E+00	2.45E+00
total	6.27E+09	1.80E+07	1.80E+07	1.80E+07	1.80E+07	1.80E+07	1.80E+07
gamma watts	4.02E+00	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02

neutron source intensity as a function of time

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pb210	6.26E-16	3.94E-15	1.21E-14	2.73E-14	5.15E-14	8.68E-14	1.35E-13
bi210	1.50E-13	1.00E-12	3.09E-12	6.96E-12	1.31E-11	2.22E-11	3.45E-11

bi211	1.66E-04	6.97E-04	1.44E-03	2.44E-03	3.69E-03	5.18E-03	6.90E-03
bi212	8.84E-06	4.21E-05	9.07E-05	1.46E-04	2.03E-04	2.58E-04	3.09E-04
bi213	2.03E-08	9.90E-08	2.22E-07	3.93E-07	6.13E-07	8.83E-07	1.20E-06
bi214	7.14E-09	2.47E-08	5.23E-08	9.01E-08	1.38E-07	1.96E-07	2.65E-07
po210	5.98E-08	5.89E-07	2.20E-06	5.55E-06	1.13E-05	2.00E-05	3.25E-05
po211	6.59E-07	2.76E-06	5.71E-06	9.67E-06	1.46E-05	2.05E-05	2.73E-05
po212	4.52E-05	2.16E-04	4.65E-04	7.49E-04	1.04E-03	1.32E-03	1.58E-03
po213	2.67E-06	1.31E-05	2.92E-05	5.19E-05	8.09E-05	1.16E-04	1.58E-04
po214	6.36E-05	2.20E-04	4.66E-04	8.02E-04	1.23E-03	1.75E-03	2.36E-03
po215	2.35E-04	9.85E-04	2.04E-03	3.45E-03	5.22E-03	7.32E-03	9.76E-03
po216	3.53E-05	1.68E-04	3.63E-04	5.85E-04	8.12E-04	1.03E-03	1.23E-03
po218	3.02E-05	1.05E-04	2.22E-04	3.82E-04	5.85E-04	8.32E-04	1.12E-03
at217	1.73E-06	8.47E-06	1.90E-05	3.36E-05	5.25E-05	7.55E-05	1.03E-04
rn218	4.99E-15	1.96E-19	7.72E-24	.00E+00	.00E+00	.00E+00	.00E+00
rn219	1.87E-04	7.83E-04	1.62E-03	2.74E-03	4.15E-03	5.82E-03	7.76E-03
rn220	2.80E-05	1.33E-04	2.87E-04	4.63E-04	6.43E-04	8.17E-04	9.78E-04
rn222	2.21E-05	7.65E-05	1.62E-04	2.79E-04	4.27E-04	6.07E-04	8.19E-04
fr221	1.26E-06	6.18E-06	1.38E-05	2.45E-05	3.83E-05	5.51E-05	7.49E-05
fr223	9.02E-11	2.97E-10	6.14E-10	1.04E-09	1.57E-09	2.20E-09	2.93E-09
ra222	3.86E-15	1.52E-19	5.97E-24	2.50E-28	.00E+00	.00E+00	.00E+00
ra223	1.08E-04	4.53E-04	9.39E-04	1.59E-03	2.40E-03	3.37E-03	4.49E-03
ra224	1.98E-05	9.43E-05	2.03E-04	3.27E-04	4.55E-04	5.78E-04	6.91E-04
ra226	1.33E-05	4.47E-05	9.46E-05	1.63E-04	2.50E-04	3.55E-04	4.79E-04
ac225	9.09E-07	4.44E-06	9.94E-06	1.76E-05	2.75E-05	3.96E-05	5.39E-05
ac227	1.02E-06	3.34E-06	6.91E-06	1.17E-05	1.77E-05	2.48E-05	3.30E-05
ac228	1.33E-16	4.33E-16	8.87E-16	1.48E-15	2.20E-15	3.03E-15	3.97E-15
th226	3.48E-15	1.37E-19	5.39E-24	2.26E-28	.00E+00	.00E+00	.00E+00
th227	1.31E-04	5.00E-04	1.04E-03	1.75E-03	2.65E-03	3.72E-03	4.95E-03
th228	1.74E-05	7.94E-05	1.71E-04	2.75E-04	3.83E-04	4.86E-04	5.81E-04
th229	6.62E-07	2.59E-06	5.81E-06	1.03E-05	1.61E-05	2.31E-05	3.15E-05
th230	5.67E-02	1.04E-01	1.51E-01	1.98E-01	2.46E-01	2.93E-01	3.40E-01
th232	2.92E-08	5.36E-08	7.80E-08	1.02E-07	1.27E-07	1.51E-07	1.75E-07
pa231	5.14E-03	9.13E-03	1.31E-02	1.71E-02	2.11E-02	2.51E-02	2.91E-02
u230	2.74E-15	1.08E-19	4.24E-24	1.78E-28	.00E+00	.00E+00	.00E+00
u231	1.30E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	1.40E-04	3.22E-04	4.69E-04	5.88E-04	6.84E-04	7.61E-04	8.22E-04
u233	1.45E-02	2.97E-02	4.50E-02	6.02E-02	7.55E-02	9.07E-02	1.06E-01
u234	6.63E+03	6.63E+03	6.63E+03	6.63E+03	6.63E+03	6.63E+03	6.63E+03
u235	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02
u236	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03
u238	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02
np235	1.15E-08	6.77E-09	3.98E-09	2.33E-09	1.37E-09	8.05E-10	4.72E-10
np237	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03
pu236	3.26E-02	2.69E-02	2.20E-02	1.80E-02	1.48E-02	1.21E-02	9.92E-03
pu237	1.46E-10	1.37E-12	1.28E-14	1.20E-16	1.13E-18	1.05E-20	9.88E-23
pu238	6.52E+02	6.53E+02	6.49E+02	6.45E+02	6.41E+02	6.36E+02	6.32E+02

1 page 71

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pu239	4.99E+01	5.04E+01	5.04E+01	5.04E+01	5.04E+01	5.04E+01	5.04E+01
pu240	9.04E-04	9.04E-04	9.04E-04	9.04E-04	9.04E-04	9.04E-04	9.04E-04
pu241	5.23E-11	5.02E-11	4.82E-11	4.63E-11	4.45E-11	4.27E-11	4.11E-11
pu242	1.66E-16	1.66E-16	1.66E-16	1.66E-16	1.66E-16	1.66E-16	1.66E-16
am239	1.42E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

am240	2.16E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	1.36E-09	5.80E-09	1.00E-08	1.41E-08	1.80E-08	2.18E-08	2.54E-08
am242m	7.95E-18	7.92E-18	7.88E-18	7.85E-18	7.82E-18	7.79E-18	7.76E-18
am243	6.04E-21	6.06E-21	6.06E-21	6.06E-21	6.06E-21	6.06E-21	6.06E-21
cm241	2.51E-26	4.04E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm242	3.17E-12	8.85E-13	2.44E-13	6.87E-14	2.06E-14	7.39E-15	3.77E-15
cm243	4.24E-21	4.16E-21	4.07E-21	3.99E-21	3.91E-21	3.83E-21	3.76E-21
cm244	2.61E-24	2.55E-24	2.47E-24	2.39E-24	2.32E-24	2.25E-24	2.18E-24
0 total	1.27E+04	1.27E+04	1.27E+04	1.27E+04	1.27E+04	1.27E+04	1.27E+04

1 page 72

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
th230	1.45E-06	2.67E-06	3.88E-06	5.09E-06	6.30E-06	7.52E-06	8.73E-06
pa231	6.45E-07	1.14E-06	1.65E-06	2.15E-06	2.65E-06	3.15E-06	3.65E-06
u232	8.58E-09	1.98E-08	2.88E-08	3.61E-08	4.20E-08	4.67E-08	5.05E-08
u234	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01
u235	1.68E+00	1.68E+00	1.68E+00	1.68E+00	1.68E+00	1.68E+00	1.68E+00
u236	1.57E+02	1.57E+02	1.57E+02	1.57E+02	1.57E+02	1.57E+02	1.57E+02
u237	1.22E-09	3.42E-23	1.77E-24	1.70E-24	1.63E-24	1.57E-24	1.50E-24
u238	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05
u239	9.66E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	7.39E-12	7.39E-12	7.39E-12	7.39E-12	7.39E-12	7.39E-12	7.39E-12
np238	2.02E-08	2.32E-30	2.31E-30	2.30E-30	2.29E-30	2.29E-30	2.28E-30
np239	1.98E-05	6.28E-32	6.28E-32	6.28E-32	6.28E-32	6.28E-32	6.28E-32
pu236	2.21E-03	1.82E-03	1.49E-03	1.22E-03	1.00E-03	8.19E-04	6.71E-04
pu238	1.20E+02	1.21E+02	1.20E+02	1.19E+02	1.18E+02	1.18E+02	1.17E+02
pu239	2.67E-02	2.70E-02	2.70E-02	2.70E-02	2.70E-02	2.70E-02	2.70E-02
pu240	6.01E-03	6.01E-03	6.01E-03	6.01E-03	6.01E-03	6.01E-03	6.01E-03
pu241	1.88E-12	1.81E-12	1.74E-12	1.67E-12	1.60E-12	1.54E-12	1.48E-12
pu242	1.29E-13	1.29E-13	1.29E-13	1.29E-13	1.29E-13	1.29E-13	1.29E-13
pu243	1.04E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	5.23E-13	2.23E-12	3.87E-12	5.44E-12	6.94E-12	8.39E-12	9.77E-12
am242m	3.78E-17	3.76E-17	3.75E-17	3.73E-17	3.72E-17	3.70E-17	3.69E-17
am242	2.17E-16	4.09E-20	4.07E-20	4.05E-20	4.04E-20	4.02E-20	4.00E-20
am243	2.78E-23	2.79E-23	2.79E-23	2.79E-23	2.79E-23	2.79E-23	2.79E-23
am244	5.61E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm242	1.58E-11	4.42E-12	1.22E-12	3.43E-13	1.03E-13	3.69E-14	1.88E-14
cm243	9.21E-23	9.03E-23	8.85E-23	8.67E-23	8.49E-23	8.32E-23	8.16E-23
cm244	3.40E-22	3.33E-22	3.22E-22	3.12E-22	3.02E-22	2.93E-22	2.84E-22
cm245	1.80E-34	1.80E-34	1.80E-34	1.80E-34	1.80E-34	1.80E-34	1.80E-34
cm246	2.77E-35	2.77E-35	2.77E-35	2.77E-35	2.77E-35	2.77E-35	2.77E-35
0 total	1.18E+05	1.18E+05	1.18E+05	1.18E+05	1.18E+05	1.18E+05	1.18E+05
0 total	1.30E+05	1.30E+05	1.30E+05	1.30E+05	1.30E+05	1.30E+05	1.30E+05

1 page 73

alpha-n neutron source spectrum as a function of time
(using reaction spectra for uranium dioxide)

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron spectra, neutrons/sec/basis
basis = single reactor assembly

boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d

1	6.43E+00 - 2.00E+01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
2	3.00E+00 - 6.43E+00	2.458E+03	2.458E+03	2.457E+03	2.456E+03	2.456E+03	2.455E+03	2.454E+03
3	1.85E+00 - 3.00E+00	6.963E+03	6.964E+03	6.961E+03	6.959E+03	6.957E+03	6.954E+03	6.952E+03
4	1.40E+00 - 1.85E+00	1.870E+03	1.870E+03	1.870E+03	1.869E+03	1.868E+03	1.868E+03	1.867E+03
5	9.00E-01 - 1.40E+00	1.052E+03	1.052E+03	1.052E+03	1.051E+03	1.051E+03	1.051E+03	1.050E+03
6	4.00E-01 - 9.00E-01	3.056E+02	3.056E+02	3.055E+02	3.054E+02	3.053E+02	3.052E+02	3.051E+02
7	1.00E-01 - 4.00E-01	4.775E+01	4.776E+01	4.774E+01	4.773E+01	4.771E+01	4.770E+01	4.768E+01
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		1.270E+04	1.270E+04	1.269E+04	1.269E+04	1.268E+04	1.268E+04	1.268E+04

1 page 74

spontaneous fission neutron source spectrum as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron spectra, neutrons/sec/basis
basis = single reactor assembly

boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1 6.43E+00 - 2.00E+01	2.215E+03	2.214E+03	2.214E+03	2.214E+03	2.214E+03	2.214E+03	2.214E+03
2 3.00E+00 - 6.43E+00	2.465E+04	2.465E+04	2.465E+04	2.465E+04	2.465E+04	2.465E+04	2.465E+04
3 1.85E+00 - 3.00E+00	2.666E+04	2.666E+04	2.665E+04	2.665E+04	2.665E+04	2.665E+04	2.665E+04
4 1.40E+00 - 1.85E+00	1.538E+04	1.539E+04	1.539E+04	1.539E+04	1.539E+04	1.539E+04	1.539E+04
5 9.00E-01 - 1.40E+00	2.107E+04	2.107E+04	2.107E+04	2.107E+04	2.107E+04	2.107E+04	2.107E+04
6 4.00E-01 - 9.00E-01	2.313E+04	2.313E+04	2.312E+04	2.312E+04	2.312E+04	2.312E+04	2.312E+04
7 1.00E-01 - 4.00E-01	4.530E+03	4.528E+03	4.528E+03	4.528E+03	4.528E+03	4.528E+03	4.528E+03
8 1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9 3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10 5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11 1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12 3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13 1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14 3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15 1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16 1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17 1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18 1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19 8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20 4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21 3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22 2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23 1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00

24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		1.176E+05	1.176E+05	1.176E+05	1.176E+05	1.176E+05	1.176E+05	1.176E+05

1 page 75

total (alpha-n plus spon. fission) neutron source spectrum as a function of time
(using reaction spectra for uranium dioxide)

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	2.215E+03	2.214E+03	2.214E+03	2.214E+03	2.214E+03	2.214E+03	2.214E+03
2	3.00E+00 - 6.43E+00	2.711E+04	2.711E+04	2.711E+04	2.711E+04	2.711E+04	2.711E+04	2.711E+04
3	1.85E+00 - 3.00E+00	3.362E+04	3.362E+04	3.362E+04	3.361E+04	3.361E+04	3.361E+04	3.361E+04
4	1.40E+00 - 1.85E+00	1.725E+04	1.726E+04	1.726E+04	1.726E+04	1.726E+04	1.726E+04	1.726E+04
5	9.00E-01 - 1.40E+00	2.212E+04	2.213E+04	2.213E+04	2.213E+04	2.213E+04	2.213E+04	2.213E+04
6	4.00E-01 - 9.00E-01	2.343E+04	2.343E+04	2.343E+04	2.343E+04	2.343E+04	2.343E+04	2.343E+04
7	1.00E-01 - 4.00E-01	4.578E+03	4.576E+03	4.576E+03	4.575E+03	4.575E+03	4.575E+03	4.575E+03
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		1.303E+05	1.303E+05	1.303E+05	1.303E+05	1.303E+05	1.303E+05	1.303E+05

1
1 * gamma sources determined *
0case applies the following photon data base
master photon library
in binary mode
0 the sources include photons of nuclides for...

light elements
actinides
fission products

1 gamma source spectrum for gamma lines (sas2)
0 1826.25 day time of the requested nuclides
0 energy interval in mev photons / second mev / second
0

1.0000E-02 to	5.0000E-02	3.6132E+11	1.0840E+10
5.0000E-02 to	1.0000E-01	2.2149E+11	1.6612E+10
1.0000E-01 to	2.0000E-01	7.5224E+10	1.1284E+10

	2.0000E-01	to	3.0000E-01	2.4711E+10	6.1779E+09
	3.0000E-01	to	4.0000E-01	1.0664E+11	3.7325E+10
	4.0000E-01	to	6.0000E-01	1.3796E+10	6.8981E+09
	6.0000E-01	to	8.0000E-01	1.3357E+11	9.3496E+10
	8.0000E-01	to	1.0000E+00	1.7698E+09	1.5928E+09
	1.0000E+00	to	1.3300E+00	1.2218E+09	1.4234E+09
	1.3300E+00	to	1.6600E+00	3.8588E+08	5.7690E+08
	1.6600E+00	to	2.0000E+00	1.3192E+08	2.4142E+08
	2.0000E+00	to	2.5000E+00	3.7967E+08	8.5425E+08
	2.5000E+00	to	3.0000E+00	2.4432E+06	6.7187E+06
	3.0000E+00	to	4.0000E+00	2.8191E+05	9.8669E+05
	4.0000E+00	to	5.0000E+00	5.3042E+03	2.3869E+04
	5.0000E+00	to	6.5000E+00	2.1242E+03	1.2214E+04
	6.5000E+00	to	8.0000E+00	4.1589E+02	3.0152E+03
	8.0000E+00	to	1.0000E+01	8.8185E+01	7.9367E+02
0	totals			9.4065E+11	1.8733E+11

0
0 total energy from nuclides with spectrum data = 1.8733E+11
0 total energy from nuclides with no spectrum data = 4.6955E+04
1
0 .results on logical unit no. 71, position 2, for time step 6, subcase 7. (run position 1, case position 2)
title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
0 .terminated logical unit no. 71 with zero flag record.
1 * normal termination of execution *

```
1          primary module access and input record ( scale driver - 95/03/29 - 09:06:37 )
-    module sas2h     will be called
       SAS2H: Far-Field Crit based on B&W 15x15, 3.00wt%, 20gwd/mtu 40% H2O/ 8% UO2
       44group     latticecell
       '
       '  mixtures of tuff infinite slabs:
       arbm-ftuff  2.6344 14 0 0 0 1001 1.055 8016 40.755 11023 0.570 12000 0.354
                                13027 4.434 14000 20.193 19000 1.370 20000 1.439
                                26000 0.494 92235 0.567 92234 0.007 92236 0.136
                                92238 28.593 93237 0.033 1 1.0 538    end

       kr-83      1 0 1-20 538 end
       kr-85      1 0 1-20 538 end
       sr-90      1 0 1-20 538 end
        y-89      1 0 1-20 538 end
       mo-95      1 0 1-20 538 end
       zr-93      1 0 1-20 538 end
       zr-94      1 0 1-20 538 end
       zr-95      1 0 1-20 538 end
       nb-94      1 0 1-20 538 end
       tc-99      1 0 1-20 538 end
       rh-103     1 0 1-20 538 end
       rh-105     1 0 1-20 538 end
       ru-101     1 0 1-20 538 end
       ru-106     1 0 1-20 538 end
       pd-105     1 0 1-20 538 end
       pd-108     1 0 1-20 538 end
       ag-109     1 0 1-20 538 end
       sb-124     1 0 1-20 538 end
       xe-131     1 0 1-20 538 end
       xe-132     1 0 1-20 538 end
       xe-135     1 0 1-20 538 end
       xe-136     1 0 1-20 538 end
       cs-134     1 0 1-20 538 end
       cs-135     1 0 1-20 538 end
       cs-137     1 0 1-20 538 end
       ba-136     1 0 1-20 538 end
       la-139     1 0 1-20 538 end
       pr-141     1 0 1-20 538 end
       pr-143     1 0 1-20 538 end
       ce-144     1 0 1-20 538 end
       nd-143     1 0 1-20 538 end
       nd-145     1 0 1-20 538 end
       pm-147     1 0 1-20 538 end
       pm-148     1 0 1-20 538 end
       nd-147     1 0 1-20 538 end
       sm-147     1 0 1-20 538 end
       sm-149     1 0 1-20 538 end
       sm-150     1 0 1-20 538 end
       sm-151     1 0 1-20 538 end
       sm-152     1 0 1-20 538 end
       gd-155     1 0 1-20 538 end
       eu-153     1 0 1-20 538 end
       eu-154     1 0 1-20 538 end
       eu-155     1 0 1-20 538 end
       arbm-tuff1  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                                13027 6.130 14000 27.919 19000 1.894 20000 1.989
                                26000 0.683 2 1.0 323.    end
       arbm-tuff2  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                                13027 6.130 14000 27.919 19000 1.894 20000 1.989
                                26000 0.683 3 1.0 323.    end
```

```
'
' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
end comp
' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
'
'  fuel-pin-cell geometry:
'
symmslabcell  340.  280. 1 3 281. 2 end
' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
'
'
'  assembly and cycle parameters:
'
npin/assm=1 fuelngth=280. ncycles=1 nlib/cyc=5 volfueltot=1.1494E7
printlevel=6 inplevel=0 end
power=0.004 burn=3.6525e3 down=1.82625e3
   end
```

1

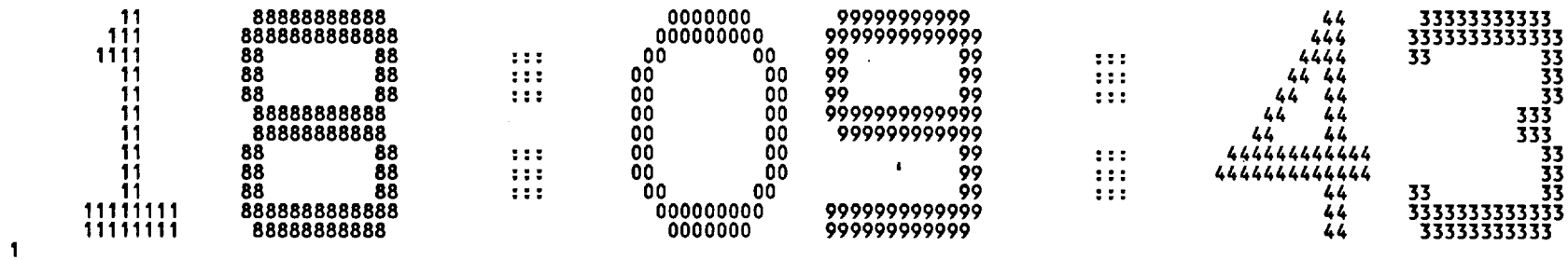
```
  ooooooooooo    rrrrrrrrrrr    iiiiiiiiiii     ggggggggggg    eeeeeeeeeeee   nn          nn   sssssssssss
 ooooooooooooo   rrrrrrrrrrrr   iiiiiiiiiii    gggggggggggg   eeeeeeeeeeeee   nnn         nn  sssssssssssss
 oo          oo  rr         rr       ii        gg           gg  ee             nnnn        nn  ss          ss
 oo          oo  rr         rr       ii        gg              ee             nn nn       nn  ss
 oo          oo  rr         rr       ii        gg              ee             nn  nn      nn  ss
 oo          oo  rrrrrrrrrrrr        ii        gg    ggggggg   eeeeeeeee      nn   nn     nn  sssssssssss
 oo          oo  rrrrrrrrrrr         ii        gg    ggggggg   eeeeeeeee      nn    nn    nn   sssssssssss
 oo          oo  rr       rr         ii        gg          gg  ee             nn     nn   nn             ss
 oo          oo  rr        rr        ii        gg          gg  ee             nn      nn nn             ss
 oo          oo  rr         rr       ii        gg          gg  ee             nn       nnnn  ss         ss
 ooooooooooooo   rr          rr  iiiiiiiiiii    ggggggggggggg  eeeeeeeeeeee   nn         nnn  sssssssssssss
  ooooooooooo    rr          rr  iiiiiiiiiii     gggggggggg   eeeeeeeeeeee   nn          nn   sssssssssss
```

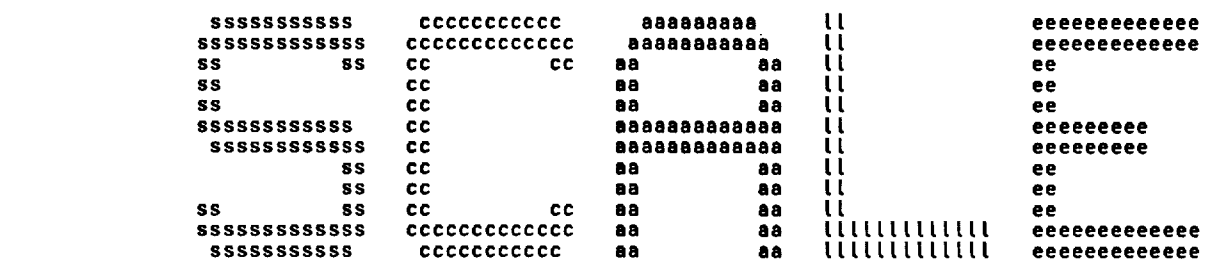
0

```
 ddddddddddd      aaaaaaaaa     vv          vv  iiiiiiiiiii     sssssssssss
 ddddddddddddd    aaaaaaaaaa    vv          vv  iiiiiiiiiii    sssssssssssss
 dd          dd  aa         aa  vv          vv       ii        ss          ss
 dd          dd  aa         aa  vv          vv       ii        ss
 dd          dd  aa         aa  vv          vv       ii        ss
 dd          dd  aaaaaaaaaaaaa  vv          vv       ii        sssssssssss
 dd          dd  aaaaaaaaaaaaa   vv        vv        ii         sssssssssss
 dd          dd  aa         aa    vv      vv         ii                 ss
 dd          dd  aa         aa     vv    vv          ii                 ss
 dd          dd  aa         aa      vv vv           ii        ss       ss
 ddddddddddddd   aa         aa       vvv       iiiiiiiiiii    sssssssssssss
 ddddddddddddd   aa         aa        v        iiiiiiiiiii     sssssssssss
```

0

```
   0000000       88888888888          //   22222222222    88888888888          //   99999999999    666666666666
  000000000     8888888888888        //   2222222222222  8888888888888        //   9999999999999  6666666666666
 00       00    88         88       //   22         22  88         88       //   99         99  66
00         00   88         88      //              22  88         88      //   99         99  66
00         00   88         88     //               22  88         88     //   99         99  66
00         00    88888888888    //             22     88888888888    //     9999999999999  666666666666
00         00    88888888888   //           22       88888888888   //       999999999999  6666666666666
00         00   88         88  //         22         88         88  //                 99  66          66
00         00   88         88 //        22          88         88 //                  99  66          66
 00       00    88         88//       22            88         88//                   99  66          66
  000000000     8888888888888//      2222222222222  8888888888888//     9999999999999  6666666666666
   0000000       88888888888//       2222222222222   88888888888//      999999999999   66666666666
```





```
**********************************************************************************
**********************************************************************************
**********************************************************************************
*****                                                                        *****
*****                  program verification information                   *****
*****                                                                        *****
*****                 code system:    scale  version:    4.3              *****
*****                                                                        *****
**********************************************************************************
**********************************************************************************
*****                                                                        *****
*****                                                                        *****
*****              program:  o0o004                                          *****
*****                                                                        *****
*****         creation date:  03/13/96                                       *****
*****                                                                        *****
*****              library:  /usr1/ornl/Scale/bin                            *****
*****                                                                        *****
*****                                                                        *****
*****            test code:  origens                                         *****
*****                                                                        *****
*****              version:  3.0                                             *****
*****                                                                        *****
*****              jobname:  davis                                           *****
*****                                                                        *****
*****     date of execution:  08/28/96                                       *****
*****                                                                        *****
*****     time of execution:  18:09:43                                       *****
```

```
                        *****                                                                  *****
                        *****                                                                  *****
                        ********************************************************************************
                        ********************************************************************************
                        ********************************************************************************
1
0       -1q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0         dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0             short-lived split test fraction, qxn =    9.1188E-04
0             half-norm of matrix used, axn =    7.0000E+00
0             4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
0        1q array has     20 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        4q array has      1 entries.
0       54q array has     12 entries.
1library information...

         cross-section data taken from position number  1 of library on unit 33.

         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         ********************************************************************************
         *                                                                              *
         *            prelim lwr origen-s binary working library--id = 1143             *
         *         made from modified card-image origen-s libraries of scale 4.2        *
         *      data from the light element, actinide, and fission product libraries    *
         *        decay data, including gamma and total energy, are from endf/b-vi      *
         *                                                                              *
         *      neutron flux spectrum factors and cross sections were produced from     *
         *     the "presas2" case updating all nuclides on the scale "burnup" library   *
         *                                                                              *
         *                  fission product yields are from endf/b-v                    *
         *                                                                              *
         *              photon libraries use an 18-energy-group structure               *
         *             the photon data are from the master photon data base,            *
         *              produced to include bremsstrahlung from uo2 matrix              *
         *                                                                              *
         *        see information above this box (if present) for later updates         *
         *                                                                              *
         ********************************************************************************
         *                                                                              *
```

```
0         ******************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                 8/28/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
                        879    number of fission product nuclides
0                      7993    number of nonzero off-diagonal matrix elements
0         ******************************************************************************
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                light elements        page    1
0                                          nuclide concentrations, grams
                                           basis =single reactor assembly
              initial  1E-18 d
     na 23   1.73E+05  1.73E+05
     al 27   1.35E+06  1.35E+06
   total     1.52E+06  1.52E+06
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page    2
0                                          nuclide concentrations, grams
                                           basis =single reactor assembly
              initial  1E-18 d
      u234   2.12E+03  2.12E+03
      u235   1.72E+05  1.72E+05
      u236   4.12E+04  4.12E+04
      u238   8.66E+06  8.66E+06
     np237   9.99E+03  9.99E+03
   total     8.88E+06  8.88E+06
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page    3
         power=    .00mw, burnup=      3.mwd, flux= 3.00E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial        182.6 d        365.3 d        547.9 d        730.5 d        730.5 d
     productions   1.023181E+06   1.023184E+06   1.023188E+06   1.023192E+06   1.023196E+06   1.023196E+06
     absorptions   8.460839E+05   8.460914E+05   8.460971E+05   8.461029E+05   8.461086E+05   8.461086E+05
     k infinity    1.209313E+00   1.209307E+00   1.209303E+00   1.209300E+00   1.209296E+00   1.209296E+00
0                   initial        182.6 d        365.3 d        547.9 d        730.5 d        730.5 d
     actinide
     absorptions   8.423189E+05   8.423211E+05   8.423233E+05   8.423256E+05   8.423276E+05   8.423276E+05
     non-actinide
     abs. fracs.   4.449964E-03   4.456222E-03   4.460275E-03   4.464388E-03   4.468620E-03   4.468620E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products        page    4
0                                  fraction of total absorption rate
         power=    .00mw, burnup=      3.mwd, flux= 3.00E+08n/cm**2-sec
0                initial   182.6 d   365.3 d   547.9 d   730.5 d   730.5 d

     sm149      .00E+00  3.59E-06  7.24E-06  1.09E-05  1.45E-05  1.45E-05
     xe135      .00E+00  2.28E-06  2.28E-06  2.28E-06  2.28E-06  2.27E-06
     sm151      .00E+00  1.52E-07  3.06E-07  4.58E-07  6.10E-07  6.10E-07
     nd143      .00E+00  6.47E-08  1.38E-07  2.11E-07  2.85E-07  2.85E-07
     gd157      .00E+00  3.73E-08  7.47E-08  1.12E-07  1.49E-07  1.49E-07
     rh103      .00E+00  2.43E-08  5.85E-08  9.31E-08  1.28E-07  1.28E-07
     cd113      .00E+00  3.18E-08  6.36E-08  9.53E-08  1.27E-07  1.27E-07
     pm147      .00E+00  3.12E-08  6.13E-08  8.78E-08  1.11E-07  1.11E-07
     xe131      .00E+00  2.22E-08  4.59E-08  6.97E-08  9.34E-08  9.34E-08
     cs133      .00E+00  1.75E-08  3.59E-08  5.43E-08  7.28E-08  7.28E-08
     tc 99      .00E+00  1.33E-08  2.69E-08  4.04E-08  5.40E-08  5.40E-08
     nd145      .00E+00  1.04E-08  2.08E-08  3.12E-08  4.16E-08  4.16E-08
     eu155      .00E+00  1.14E-08  2.19E-08  3.17E-08  4.08E-08  4.08E-08
```

gd155	.00E+00	1.78E-09	6.93E-09	1.52E-08	2.64E-08	2.64E-08
mo 95	.00E+00	2.64E-09	8.99E-09	1.61E-08	2.34E-08	2.34E-08
sm152	.00E+00	5.54E-09	1.11E-08	1.66E-08	2.22E-08	2.22E-08
kr 83	.00E+00	4.45E-09	8.90E-09	1.34E-08	1.78E-08	1.78E-08
cs135	.00E+00	4.10E-09	8.23E-09	1.24E-08	1.65E-08	1.65E-08
ru101	.00E+00	3.25E-09	6.50E-09	9.74E-09	1.30E-08	1.30E-08
sm147	.00E+00	7.92E-10	3.19E-09	6.98E-09	1.20E-08	1.20E-08
pr141	.00E+00	2.27E-09	5.30E-09	8.34E-09	1.14E-08	1.14E-08
eu153	.00E+00	2.75E-09	5.54E-09	8.32E-09	1.11E-08	1.11E-08
la139	.00E+00	2.48E-09	4.96E-09	7.45E-09	9.93E-09	9.93E-09
rh105	.00E+00	8.28E-09	8.28E-09	8.28E-09	8.28E-09	8.27E-09
pd105	.00E+00	1.05E-09	2.12E-09	3.19E-09	4.25E-09	4.25E-09
zr 93	.00E+00	1.02E-09	2.05E-09	3.08E-09	4.11E-09	4.11E-09
eu151	.00E+00	2.17E-10	8.73E-10	1.96E-09	3.49E-09	3.49E-09
i129	.00E+00	7.29E-10	1.49E-09	2.26E-09	3.03E-09	3.03E-09
pr143	.00E+00	2.66E-09	2.66E-09	2.66E-09	2.66E-09	2.66E-09
mo 97	.00E+00	5.61E-10	1.13E-09	1.69E-09	2.26E-09	2.26E-09
xe133	.00E+00	1.99E-09	1.99E-09	1.99E-09	1.99E-09	1.99E-09
ag109	.00E+00	4.00E-10	8.03E-10	1.20E-09	1.61E-09	1.61E-09
nd144	.00E+00	1.43E-10	5.01E-10	9.97E-10	1.58E-09	1.58E-09
ce141	.00E+00	1.54E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09
pm149	.00E+00	9.62E-10	9.62E-10	9.62E-10	9.62E-10	9.61E-10
nd147	.00E+00	9.44E-10	9.44E-10	9.44E-10	9.44E-10	9.43E-10
zr 91	.00E+00	1.57E-10	4.10E-10	6.74E-10	9.40E-10	9.40E-10
ru102	.00E+00	2.29E-10	4.58E-10	6.87E-10	9.16E-10	9.16E-10
y 89	.00E+00	1.61E-10	4.07E-10	6.61E-10	9.15E-10	9.15E-10
ce142	.00E+00	2.05E-10	4.11E-10	6.16E-10	8.22E-10	8.22E-10
sr 90	.00E+00	2.08E-10	4.13E-10	6.16E-10	8.16E-10	8.16E-10
nd148	.00E+00	1.99E-10	3.99E-10	5.98E-10	7.98E-10	7.98E-10
nd146	.00E+00	1.66E-10	3.32E-10	4.99E-10	6.65E-10	6.65E-10
ba138	.00E+00	1.42E-10	2.83E-10	4.25E-10	5.66E-10	5.66E-10
pd108	.00E+00	1.37E-10	2.75E-10	4.12E-10	5.50E-10	5.50E-10
in115	.00E+00	1.34E-10	2.72E-10	4.10E-10	5.49E-10	5.49E-10
ce140	.00E+00	1.18E-10	2.50E-10	3.83E-10	5.15E-10	5.15E-10
ce144	.00E+00	2.15E-10	3.53E-10	4.42E-10	4.98E-10	4.98E-10
xe132	.00E+00	1.18E-10	2.39E-10	3.60E-10	4.81E-10	4.81E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 5
0 fraction of total absorption rate
power= .00mw, burnup= 3.mwd, flux= 3.00E+08n/cm**2-sec
0

	initial	182.6 d	365.3 d	547.9 d	730.5 d	730.5 d
ru103	.00E+00	3.42E-10	3.56E-10	3.56E-10	3.56E-10	3.56E-10
mo 98	.00E+00	8.46E-11	1.69E-10	2.54E-10	3.38E-10	3.38E-10
mo100	.00E+00	8.09E-11	1.62E-10	2.43E-10	3.24E-10	3.24E-10
pd107	.00E+00	7.96E-11	1.59E-10	2.39E-10	3.19E-10	3.19E-10
xe134	.00E+00	7.85E-11	1.57E-10	2.35E-10	3.14E-10	3.14E-10
zr 92	.00E+00	6.37E-11	1.28E-10	1.91E-10	2.55E-10	2.55E-10
zr 96	.00E+00	5.21E-11	1.04E-10	1.56E-10	2.08E-10	2.08E-10
i127	.00E+00	4.54E-11	9.61E-11	1.48E-10	2.00E-10	2.00E-10
ru104	.00E+00	4.96E-11	9.93E-11	1.49E-10	1.99E-10	1.99E-10
nd150	.00E+00	4.44E-11	8.88E-11	1.33E-10	1.78E-10	1.78E-10
cs137	.00E+00	4.35E-11	8.65E-11	1.29E-10	1.71E-10	1.71E-10
xe136	.00E+00	4.25E-11	8.49E-11	1.27E-10	1.70E-10	1.70E-10
zr 95	.00E+00	1.45E-10	1.65E-10	1.67E-10	1.68E-10	1.68E-10
nb 95	.00E+00	1.12E-10	1.47E-10	1.52E-10	1.53E-10	1.53E-10
y 91	.00E+00	1.25E-10	1.40E-10	1.41E-10	1.42E-10	1.42E-10
br 81	.00E+00	3.23E-11	6.46E-11	9.69E-11	1.29E-10	1.29E-10
zr 94	.00E+00	2.75E-11	5.51E-11	8.27E-11	1.10E-10	1.10E-10
ba137	.00E+00	6.96E-12	2.74E-11	6.12E-11	1.08E-10	1.08E-10
pm151	.00E+00	1.09E-10	1.09E-10	1.09E-10	1.09E-10	1.08E-10

rb 85	.00E+00	2.48E-11	4.98E-11	7.51E-11	1.01E-10	1.01E-10
cd111	.00E+00	1.95E-11	4.02E-11	6.09E-11	8.16E-11	8.16E-11
te130	.00E+00	1.92E-11	3.85E-11	5.77E-11	7.69E-11	7.69E-11
sm154	.00E+00	1.88E-11	3.75E-11	5.63E-11	7.50E-11	7.50E-11
rb 87	.00E+00	1.82E-11	3.65E-11	5.47E-11	7.29E-11	7.29E-11
kr 85	.00E+00	1.81E-11	3.56E-11	5.26E-11	6.90E-11	6.90E-11
se 77	.00E+00	1.26E-11	2.53E-11	3.80E-11	5.07E-11	5.08E-11
ba140	.00E+00	4.72E-11	4.72E-11	4.72E-11	4.72E-11	4.71E-11
sm153	.00E+00	3.79E-11	3.79E-11	3.79E-11	3.79E-11	3.76E-11
kr 84	.00E+00	8.70E-12	1.74E-11	2.61E-11	3.48E-11	3.48E-11
eu156	.00E+00	3.38E-11	3.38E-11	3.38E-11	3.38E-11	3.38E-11
sm150	.00E+00	2.05E-12	7.95E-12	1.77E-11	3.13E-11	3.13E-11
sr 89	.00E+00	2.79E-11	3.02E-11	3.04E-11	3.04E-11	3.04E-11
se 79	.00E+00	6.52E-12	1.30E-11	1.96E-11	2.61E-11	2.61E-11
sb121	.00E+00	6.26E-12	1.26E-11	1.89E-11	2.52E-11	2.52E-11
sb123	.00E+00	4.82E-12	9.84E-12	1.50E-11	2.01E-11	2.01E-11
ru106	.00E+00	7.45E-12	1.27E-11	1.65E-11	1.92E-11	1.92E-11
kr 86	.00E+00	4.73E-12	9.47E-12	1.42E-11	1.89E-11	1.89E-11
ce143	.00E+00	1.74E-11	1.74E-11	1.74E-11	1.74E-11	1.73E-11
te128	.00E+00	4.26E-12	8.53E-12	1.28E-11	1.71E-11	1.71E-11
pd106	.00E+00	1.42E-12	5.11E-12	1.04E-11	1.69E-11	1.69E-11
kr 87	.00E+00	2.26E-11	2.26E-11	2.26E-11	2.26E-11	1.56E-11
la140	.00E+00	1.54E-11	1.54E-11	1.54E-11	1.54E-11	1.54E-11
gd156	.00E+00	2.96E-12	6.33E-12	9.71E-12	1.31E-11	1.31E-11
mo 99	.00E+00	1.32E-11	1.32E-11	1.32E-11	1.32E-11	1.31E-11
se 80	.00E+00	3.05E-12	6.10E-12	9.15E-12	1.22E-11	1.22E-11
dy161	.00E+00	2.55E-12	5.25E-12	7.95E-12	1.06E-11	1.06E-11
tb159	.00E+00	1.81E-12	3.64E-12	5.47E-12	7.29E-12	7.29E-12
te127m	.00E+00	4.91E-12	6.53E-12	7.03E-12	7.19E-12	7.19E-12
cd112	.00E+00	1.72E-12	3.46E-12	5.20E-12	6.94E-12	6.94E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 6
0 fraction of total absorption rate
power= .00mw, burnup= 3.mwd, flux= 3.00E+08n/cm**2-sec

0	initial	182.6 d	365.3 d	547.9 d	730.5 d	730.5 d
li 6	.00E+00	1.73E-12	3.46E-12	5.19E-12	6.92E-12	6.92E-12
i131	.00E+00	6.77E-12	6.77E-12	6.77E-12	6.77E-12	6.76E-12
sb125	.00E+00	1.75E-12	3.32E-12	4.71E-12	5.94E-12	5.94E-12
sn117	.00E+00	1.38E-12	2.75E-12	4.13E-12	5.51E-12	5.51E-12
sn119	.00E+00	1.12E-12	2.25E-12	3.38E-12	4.50E-12	4.50E-12
sn115	.00E+00	1.01E-12	2.04E-12	3.07E-12	4.10E-12	4.10E-12
pm148m	.00E+00	7.65E-13	1.84E-12	2.81E-12	3.66E-12	3.65E-12
sr 88	.00E+00	8.71E-13	1.74E-12	2.61E-12	3.49E-12	3.49E-12
pd110	.00E+00	6.31E-13	1.26E-12	1.89E-12	2.53E-12	2.53E-12
cd114	.00E+00	6.16E-13	1.23E-12	1.85E-12	2.47E-12	2.47E-12
zr 90	.00E+00	1.51E-13	6.08E-13	1.37E-12	2.42E-12	2.42E-12
se 82	.00E+00	5.91E-13	1.18E-12	1.77E-12	2.36E-12	2.36E-12
gd158	.00E+00	5.70E-13	1.14E-12	1.71E-12	2.29E-12	2.29E-12
te125	.00E+00	1.40E-13	5.73E-13	1.27E-12	2.21E-12	2.21E-12
sn126	.00E+00	4.71E-13	9.42E-13	1.41E-12	1.88E-12	1.88E-12
se 78	.00E+00	4.51E-13	9.03E-13	1.35E-12	1.81E-12	1.81E-12
te129m	.00E+00	1.74E-12	1.78E-12	1.78E-12	1.78E-12	1.78E-12
sn124	.00E+00	3.68E-13	7.37E-13	1.11E-12	1.47E-12	1.47E-12
eu154	.00E+00	2.88E-13	6.21E-13	9.97E-13	1.42E-12	1.42E-12
dy162	.00E+00	3.49E-13	6.97E-13	1.05E-12	1.40E-12	1.40E-12
dy164	.00E+00	3.12E-13	6.23E-13	9.36E-13	1.25E-12	1.25E-12
as 75	.00E+00	2.69E-13	5.39E-13	8.08E-13	1.08E-12	1.08E-12
y 90	.00E+00	1.97E-13	3.92E-13	5.85E-13	7.75E-13	7.75E-13
sn118	.00E+00	1.51E-13	3.03E-13	4.54E-13	6.05E-13	6.05E-13
ba136	.00E+00	1.29E-13	2.73E-13	4.17E-13	5.61E-13	5.61E-13

cd116	.00E+00	1.28E-13	2.55E-13	3.83E-13	5.10E-13	5.10E-13
sn122	.00E+00	1.25E-13	2.49E-13	3.74E-13	4.98E-13	4.98E-13
sn120	.00E+00	9.38E-14	1.88E-13	2.81E-13	3.75E-13	3.75E-13
cs134	.00E+00	8.05E-14	1.70E-13	2.67E-13	3.70E-13	3.70E-13
ag111	.00E+00	3.20E-13	3.20E-13	3.20E-13	3.20E-13	3.20E-13
kr 82	.00E+00	7.71E-14	1.55E-13	2.33E-13	3.11E-13	3.11E-13
dy163	.00E+00	7.67E-14	1.53E-13	2.30E-13	3.07E-13	3.07E-13
ru 99	.00E+00	6.90E-14	1.43E-13	2.21E-13	3.02E-13	3.02E-13
ge 73	.00E+00	7.27E-14	1.46E-13	2.18E-13	2.91E-13	2.91E-13
eu157	.00E+00	2.95E-13	2.95E-13	2.95E-13	2.95E-13	2.89E-13
cd115m	.00E+00	2.22E-13	2.35E-13	2.35E-13	2.35E-13	2.35E-13
xe130	.00E+00	4.74E-14	9.51E-14	1.43E-13	1.90E-13	1.90E-13
pm148	.00E+00	4.32E-14	8.57E-14	1.23E-13	1.56E-13	1.55E-13
mo 96	.00E+00	3.39E-14	6.81E-14	1.02E-13	1.37E-13	1.37E-13
ge 76	.00E+00	2.66E-14	5.33E-14	7.99E-14	1.07E-13	1.07E-13
gd160	.00E+00	1.69E-14	3.38E-14	5.06E-14	6.75E-14	6.75E-14
cs136	.00E+00	5.59E-14	5.59E-14	5.59E-14	5.59E-14	5.58E-14
te126	.00E+00	1.24E-14	2.53E-14	3.82E-14	5.12E-14	5.12E-14
in113	.00E+00	2.47E-15	9.79E-15	2.19E-14	3.86E-14	3.86E-14
eu152	.00E+00	1.29E-15	5.50E-15	1.55E-14	3.40E-14	3.40E-14
ru100	.00E+00	6.77E-15	1.41E-14	2.21E-14	3.07E-14	3.07E-14
sn125	.00E+00	2.94E-14	2.94E-14	2.94E-14	2.94E-14	2.93E-14
ru105	.00E+00	3.00E-14	3.00E-14	3.00E-14	3.00E-14	2.77E-14
ho165	.00E+00	5.26E-15	1.05E-14	1.58E-14	2.11E-14	2.11E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 7
0 fraction of total absorption rate
power= .00mw, burnup= 3.mwd, flux= 3.00E+08n/cm**2-sec
0

	initial	182.6 d	365.3 d	547.9 d	730.5 d	730.5 d
sr 87	.00E+00	3.04E-15	6.08E-15	9.12E-15	1.22E-14	1.22E-14
rb 88	.00E+00	1.27E-14	1.27E-14	1.27E-14	1.27E-14	1.15E-14
te124	.00E+00	1.86E-15	4.78E-15	7.83E-15	1.09E-14	1.09E-14
sn123	.00E+00	6.46E-15	8.88E-15	9.79E-15	1.01E-14	1.01E-14
te132	.00E+00	9.49E-15	9.49E-15	9.49E-15	9.49E-15	9.44E-15
i135	.00E+00	1.00E-14	1.00E-14	1.00E-14	1.00E-14	9.31E-15
nb 94	.00E+00	1.75E-15	3.51E-15	5.26E-15	7.01E-15	7.01E-15
sm148	.00E+00	3.49E-16	1.60E-15	3.74E-15	6.71E-15	6.71E-15
ge 74	.00E+00	1.47E-15	2.93E-15	4.40E-15	5.86E-15	5.86E-15
ba135	.00E+00	4.99E-16	1.33E-15	2.49E-15	3.98E-15	3.98E-15
ge 72	.00E+00	9.64E-16	1.95E-15	2.93E-15	3.91E-15	3.91E-15
gd154	.00E+00	1.88E-16	7.86E-16	1.85E-15	3.45E-15	3.45E-15
sr 86	.00E+00	7.33E-16	1.59E-15	2.45E-15	3.31E-15	3.31E-15
nd142	.00E+00	1.98E-16	7.89E-16	1.80E-15	3.23E-15	3.23E-15
sb126	.00E+00	2.99E-15	2.99E-15	2.99E-15	2.99E-15	2.98E-15
te134	.00E+00	5.77E-15	5.77E-15	5.77E-15	5.77E-15	2.87E-15
se 76	.00E+00	5.64E-16	1.13E-15	1.70E-15	2.27E-15	2.27E-15
ba134	.00E+00	1.20E-16	4.95E-16	1.15E-15	2.11E-15	2.11E-15
sb124	.00E+00	1.84E-15	2.07E-15	2.10E-15	2.10E-15	2.10E-15
in117m	.00E+00	2.07E-15	2.07E-15	2.07E-15	2.07E-15	2.03E-15
pd104	.00E+00	8.36E-17	4.28E-16	1.06E-15	1.97E-15	1.97E-15
gd152	.00E+00	9.86E-17	3.46E-16	8.94E-16	1.89E-15	1.89E-15
i130	.00E+00	7.11E-16	7.12E-16	7.12E-16	7.13E-16	6.88E-16
cd110	.00E+00	6.76E-17	1.95E-16	3.74E-16	5.98E-16	5.98E-16
in117	.00E+00	6.07E-16	6.07E-16	6.07E-16	6.07E-16	5.96E-16
xe128	.00E+00	1.37E-16	2.75E-16	4.15E-16	5.56E-16	5.56E-16
er166	.00E+00	1.32E-16	2.68E-16	4.05E-16	5.42E-16	5.42E-16
dy160	.00E+00	6.00E-17	1.65E-16	2.81E-16	3.99E-16	3.99E-16
tb160	.00E+00	2.46E-16	2.93E-16	3.06E-16	3.12E-16	3.12E-16
rb 86	.00E+00	2.39E-16	2.40E-16	2.40E-16	2.40E-16	2.40E-16
br 79	.00E+00	1.59E-17	5.87E-17	1.28E-16	2.25E-16	2.25E-16

dy165	.00E+00	2.08E-16	2.09E-16	2.09E-16	2.09E-16	1.74E-16
kr 80	.00E+00	4.11E-17	8.23E-17	1.24E-16	1.65E-16	1.65E-16
xe129	.00E+00	7.46E-18	3.00E-17	6.77E-17	1.21E-16	1.21E-16
ag107	.00E+00	7.08E-18	2.83E-17	6.37E-17	1.13E-16	1.13E-16
cd118	.00E+00	1.19E-16	1.19E-16	1.19E-16	1.19E-16	6.67E-17
ge 75	.00E+00	8.51E-17	8.51E-17	8.51E-17	8.51E-17	6.16E-17
te122	.00E+00	5.41E-18	1.12E-17	1.72E-17	2.35E-17	2.35E-17
nb 93	.00E+00	1.96E-18	5.07E-18	1.04E-17	1.91E-17	1.91E-17
be 9	.00E+00	3.42E-18	6.84E-18	1.03E-17	1.37E-17	1.37E-17
pr142	.00E+00	3.17E-18	6.63E-18	1.01E-17	1.36E-17	1.32E-17
sn116	.00E+00	1.82E-18	4.23E-18	7.25E-18	1.09E-17	1.09E-17
te123	.00E+00	1.55E-18	4.03E-18	6.83E-18	9.73E-18	9.74E-18
in119m	.00E+00	2.97E-17	2.97E-17	2.97E-17	2.97E-17	6.93E-18
li 7	.00E+00	1.33E-18	2.66E-18	4.00E-18	5.33E-18	5.33E-18
er167	.00E+00	5.36E-19	1.07E-18	1.62E-18	2.17E-18	2.17E-18
cd109	.00E+00	4.32E-20	7.65E-20	1.03E-19	1.23E-19	1.23E-19
cd108	.00E+00	2.66E-20	5.32E-20	8.32E-20	1.10E-19	1.10E-19
cs134m	.00E+00	2.33E-20	4.99E-20	7.65E-20	1.03E-19	8.65E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 8

0 fraction of total absorption rate

power= .00mw, burnup= 3.mwd, flux= 3.00E+08n/cm**2-sec

	initial	182.6 d	365.3 d	547.9 d	730.5 d	730.5 d
in119	.00E+00	2.32E-18	2.32E-18	2.32E-18	2.32E-18	2.66E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 9

power= 4.000E-03mw, burnup=2.9220E+00mwd, flux= 3.00E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	182.6 d	365.3 d	547.9 d	730.5 d	730.5 d
h 1	.00E+00	4.40E-08	8.81E-08	1.32E-07	1.76E-07	1.76E-07
h 2	.00E+00	1.31E-10	2.61E-10	3.92E-10	5.22E-10	5.22E-10
h 3	.00E+00	9.44E-13	1.86E-12	2.76E-12	3.62E-12	3.62E-12
h 4	.00E+00	3.82E-36	7.53E-36	1.11E-35	1.47E-35	.00E+00
he 3	.00E+00	1.33E-14	5.28E-14	1.18E-13	2.08E-13	2.08E-13
he 4	.00E+00	7.28E-09	1.46E-08	2.18E-08	2.91E-08	2.91E-08
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	.00E+00	8.74E-10	1.75E-09	2.62E-09	3.50E-09	3.50E-09
ne 21	.00E+00	1.58E-17	6.33E-17	1.43E-16	2.54E-16	2.54E-16
ne 22	.00E+00	3.64E-13	1.40E-12	3.01E-12	5.14E-12	5.14E-12
ne 23	.00E+00	7.28E-15	7.28E-15	7.28E-15	7.28E-15	7.28E-30
na 22	.00E+00	5.35E-12	1.00E-11	1.41E-11	1.77E-11	1.77E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	.00E+00	3.64E-08	3.64E-08	3.64E-08	3.64E-08	3.52E-08
na 24m	.00E+00	5.99E-15	5.99E-15	5.99E-15	5.99E-15	5.99E-30
na 25	.00E+00	2.88E-29	5.78E-29	8.68E-29	1.16E-28	2.08E-41
mg 24	.00E+00	7.55E-06	1.51E-05	2.27E-05	3.03E-05	3.03E-05
mg 25	.00E+00	9.59E-13	1.92E-12	2.89E-12	3.86E-12	3.86E-12
mg 26	.00E+00	1.31E-10	2.61E-10	3.92E-10	5.22E-10	5.22E-10
mg 27	.00E+00	2.18E-12	2.18E-12	2.18E-12	2.18E-12	9.98E-14
mg 28	.00E+00	4.41E-24	4.41E-24	4.41E-24	4.41E-24	4.31E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	.00E+00	2.70E-10	2.70E-10	2.70E-10	2.70E-10	6.00E-16
al 29	.00E+00	3.80E-30	1.52E-29	3.42E-29	6.08E-29	7.17E-31
al 30	.00E+00	3.64E-44	2.76E-43	9.39E-43	2.23E-42	.00E+00
si 28	.00E+00	2.20E-05	4.40E-05	6.59E-05	8.79E-05	8.79E-05
si 29	.00E+00	1.41E-14	5.64E-14	1.27E-13	2.26E-13	2.26E-13
si 30	.00E+00	9.70E-24	7.76E-23	2.62E-22	6.21E-22	6.21E-22
si 31	.00E+00	6.95E-36	5.56E-35	1.88E-34	4.45E-34	3.69E-34
si 32	.00E+00	5.61E-45	9.81E-44	4.97E-43	1.57E-42	1.57E-42

totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		3.00E+08	3.00E+08	3.00E+08	3.00E+08	3.00E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 10

power= 4.000E-03mw, burnup=2.9220E+00mwd, flux= 3.00E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	182.6 d	365.3 d	547.9 d	730.5 d	730.5 d
he 4	.00E+00	2.56E-05	5.15E-05	7.79E-05	1.05E-04	1.05E-04
ra222	.00E+00	1.97E-30	8.37E-30	1.88E-29	3.27E-29	3.30E-29
ra223	.00E+00	2.03E-15	9.33E-15	2.20E-14	3.98E-14	3.98E-14
ra224	.00E+00	8.13E-17	5.62E-16	1.72E-15	3.75E-15	3.75E-15
ra225	.00E+00	2.54E-17	1.24E-16	2.99E-16	5.50E-16	5.50E-16
ra226	.00E+00	2.94E-11	1.17E-10	2.64E-10	4.70E-10	4.70E-10
ra228	.00E+00	3.12E-17	1.22E-16	2.70E-16	4.71E-16	4.71E-16
th226	.00E+00	9.63E-29	4.09E-28	9.16E-28	1.60E-27	1.60E-27
th227	.00E+00	3.26E-15	1.50E-14	3.54E-14	6.42E-14	6.42E-14
th228	.00E+00	1.55E-14	1.07E-13	3.28E-13	7.15E-13	7.15E-13
th229	.00E+00	4.93E-12	2.41E-11	5.80E-11	1.07E-10	1.07E-10
th230	.00E+00	1.28E-05	2.55E-05	3.83E-05	5.11E-05	5.11E-05
th231	.00E+00	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09
th232	.00E+00	2.58E-06	5.16E-06	7.74E-06	1.03E-05	1.03E-05
th233	.00E+00	2.39E-17	4.78E-17	7.17E-17	9.57E-17	2.59E-17
th234	.00E+00	5.34E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	.00E+00	3.57E-07	7.16E-07	1.08E-06	1.44E-06	1.44E-06
pa232	.00E+00	6.13E-15	1.23E-14	1.85E-14	2.47E-14	2.43E-14
pa233	.00E+00	1.44E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	.00E+00	1.80E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	.00E+00	8.05E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	9.34E-26	3.96E-25	8.88E-25	1.55E-24	1.55E-24
u231	.00E+00	4.28E-21	9.70E-21	1.51E-20	2.06E-20	2.05E-20
u232	.00E+00	9.25E-12	3.39E-11	7.21E-11	1.22E-10	1.22E-10
u233	.00E+00	5.38E-06	1.22E-05	1.90E-05	2.59E-05	2.59E-05
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02
u237	.00E+00	3.24E-06	3.24E-06	3.24E-06	3.24E-06	3.23E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	.00E+00	3.29E-07	3.29E-07	3.29E-07	3.29E-07	9.48E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	2.48E-12	4.29E-12	5.60E-12	6.55E-12	6.55E-12
np236m	.00E+00	2.16E-12	2.16E-12	2.16E-12	2.16E-12	2.11E-12
np236	.00E+00	1.02E-10	2.05E-10	3.07E-10	4.10E-10	4.10E-10
np237	4.22E+01	4.22E+01	4.22E+01	4.22E+01	4.22E+01	4.22E+01
np238	.00E+00	1.58E-06	1.58E-06	1.58E-06	1.58E-06	1.56E-06
np239	.00E+00	4.75E-05	4.75E-05	4.75E-05	4.75E-05	4.73E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	.00E+00	9.74E-15	9.74E-15	9.74E-15	9.74E-15	6.08E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	.00E+00	1.31E-10	2.48E-10	3.52E-10	4.44E-10	4.44E-10
pu237	.00E+00	6.41E-16	1.60E-15	2.57E-15	3.54E-15	3.54E-15
pu238	.00E+00	9.27E-05	1.87E-04	2.80E-04	3.73E-04	3.73E-04
pu239	.00E+00	2.55E-03	5.15E-03	7.75E-03	1.03E-02	1.04E-02
pu240	.00E+00	6.28E-09	2.54E-08	5.72E-08	1.02E-07	1.02E-07
pu241	.00E+00	2.14E-14	1.71E-13	5.77E-13	1.36E-12	1.36E-12
pu242	.00E+00	2.09E-20	3.35E-19	1.70E-18	5.36E-18	5.36E-18

1

```
      power= 4.000E-03mw, burnup=2.9220E+00mwd, flux= 3.00E+08n/cm**2-sec
0                                          nuclide concentrations, gram atoms
                                           basis = single reactor assembly
             charge   182.6 d   365.3 d   547.9 d   730.5 d   730.5 d
     pu243    .00E+00  4.59E-29  7.36E-28  3.73E-27  1.18E-26  1.07E-26
     pu244    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               3.00E+08  3.00E+08  3.00E+08  3.00E+08  3.00E-07
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

         cross-section data taken from position number  2 of library on unit 33.

         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         ********************************************************************************
         *                                                                              *
         *            prelim lwr origen-s binary working library--id = 1143             *
         *          made from modified card-image origen-s libraries of scale 4.2       *
         *       data from the light element, actinide, and fission product libraries   *
         *         decay data, including gamma and total energy, are from endf/b-vi     *
         *                                                                              *
         *       neutron flux spectrum factors and cross sections were produced from    *
         *      the "presas2" case updating all nuclides on the scale "burnup" library  *
         *                                                                              *
         *                    fission product yields are from endf/b-v                  *
         *                                                                              *
         *               photon libraries use an 18-energy-group structure              *
         *              the photon data are from the master photon data base,           *
         *               produced to include bremsstrahlung from uo2 matrix             *
         *                                                                              *
         *         see information above this box (if present) for later updates        *
         *                                                                              *
         ********************************************************************************
         *                                                                              *
0        ********************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                 8/28/1996    date library was produced
0                      1697    total number of nuclides in library
0                       689    number of light-element nuclides
```

```
                      129    number of actinide nuclides
                      879    number of fission product nuclides
0                    7993    number of nonzero off-diagonal matrix elements
0      ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                  page   12
        power=    .00mw, burnup=      6.mwd, flux= 2.81E+08n/cm**2-sec
0                                    basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                  initial        913.2 d       1095.8 d       1278.4 d       1461.0 d       1461.1 d
     productions  1.090712E+06  1.090715E+06  1.090719E+06  1.090723E+06  1.090727E+06  1.090727E+06
     absorptions  8.934652E+05  8.934711E+05  8.934772E+05  8.934830E+05  8.934893E+05  8.934893E+05
     k infinity   1.220765E+00  1.220762E+00  1.220758E+00  1.220754E+00  1.220750E+00  1.220750E+00
0                  initial        913.2 d       1095.8 d       1278.4 d       1461.0 d       1461.1 d
     actinide
     absorptions  8.900642E+05  8.900665E+05  8.900688E+05  8.900710E+05  8.900733E+05  8.900733E+05
     non-actinide
     abs. fracs.  3.806531E-03  3.810465E-03  3.814757E-03  3.818750E-03  3.823161E-03  3.823161E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products  page   13
0                          fraction of total absorption rate
        power=    .00mw, burnup=      6.mwd, flux= 2.81E+08n/cm**2-sec
0              initial   913.2 d   1095.8 d   1278.4 d   1461.0 d   1461.1 d

     sm149     1.47E-05   1.84E-05   2.21E-05   2.58E-05   2.95E-05   2.95E-05
     xe135     2.31E-06   2.31E-06   2.31E-06   2.31E-06   2.31E-06   2.29E-06
     sm151     6.18E-07   7.72E-07   9.25E-07   1.08E-06   1.23E-06   1.23E-06
     nd143     2.88E-07   3.62E-07   4.36E-07   5.10E-07   5.85E-07   5.85E-07
     gd157     1.51E-07   1.89E-07   2.27E-07   2.64E-07   3.02E-07   3.02E-07
     rh103     1.27E-07   1.62E-07   1.96E-07   2.31E-07   2.65E-07   2.65E-07
     cd113     1.29E-07   1.61E-07   1.93E-07   2.25E-07   2.57E-07   2.57E-07
     xe131     9.27E-08   1.16E-07   1.40E-07   1.63E-07   1.87E-07   1.87E-07
     pm147     1.10E-07   1.30E-07   1.48E-07   1.63E-07   1.77E-07   1.77E-07
     cs133     7.22E-08   9.04E-08   1.09E-07   1.27E-07   1.45E-07   1.45E-07
     tc 99     5.35E-08   6.69E-08   8.04E-08   9.38E-08   1.07E-07   1.07E-07
     gd155     2.68E-08   4.10E-08   5.76E-08   7.67E-08   9.79E-08   9.79E-08
     nd145     4.16E-08   5.20E-08   6.24E-08   7.28E-08   8.32E-08   8.32E-08
     eu155     4.07E-08   4.92E-08   5.70E-08   6.42E-08   7.09E-08   7.09E-08
     mo 95     2.32E-08   3.04E-08   3.77E-08   4.49E-08   5.21E-08   5.21E-08
     sm152     2.20E-08   2.75E-08   3.30E-08   3.85E-08   4.40E-08   4.40E-08
     sm147     1.19E-08   1.80E-08   2.49E-08   3.28E-08   4.13E-08   4.13E-08
     kr 83     1.80E-08   2.25E-08   2.70E-08   3.15E-08   3.60E-08   3.60E-08
     cs135     1.64E-08   2.05E-08   2.46E-08   2.87E-08   3.28E-08   3.28E-08
     ru101     1.28E-08   1.60E-08   1.92E-08   2.24E-08   2.56E-08   2.56E-08
     pr141     1.15E-08   1.45E-08   1.76E-08   2.06E-08   2.37E-08   2.37E-08
     eu153     1.11E-08   1.39E-08   1.67E-08   1.94E-08   2.22E-08   2.22E-08
     la139     1.00E-08   1.25E-08   1.50E-08   1.75E-08   2.00E-08   2.00E-08
     eu151     3.53E-09   5.51E-09   7.93E-09   1.08E-08   1.41E-08   1.41E-08
     pd105     4.24E-09   5.30E-09   6.36E-09   7.42E-09   8.48E-09   8.48E-09
     rh105     8.35E-09   8.33E-09   8.33E-09   8.33E-09   8.33E-09   8.32E-09
     zr 93     4.07E-09   5.09E-09   6.11E-09   7.13E-09   8.15E-09   8.15E-09
      i129     3.06E-09   3.84E-09   4.61E-09   5.39E-09   6.16E-09   6.16E-09
     mo 97     2.27E-09   2.83E-09   3.40E-09   3.97E-09   4.54E-09   4.54E-09
     nd144     1.60E-09   2.25E-09   2.93E-09   3.64E-09   4.36E-09   4.36E-09
     ag109     1.59E-09   1.99E-09   2.39E-09   2.78E-09   3.18E-09   3.18E-09
     pr143     2.67E-09   2.67E-09   2.67E-09   2.67E-09   2.67E-09   2.67E-09
     zr 91     9.46E-10   1.21E-09   1.48E-09   1.75E-09   2.02E-09   2.02E-09
     xe133     2.01E-09   2.01E-09   2.01E-09   2.01E-09   2.01E-09   2.01E-09
      y 89     9.23E-10   1.18E-09   1.44E-09   1.69E-09   1.95E-09   1.95E-09
     ru102     9.24E-10   1.15E-09   1.39E-09   1.62E-09   1.85E-09   1.85E-09
     ce142     8.31E-10   1.04E-09   1.25E-09   1.46E-09   1.66E-09   1.66E-09
     sr 90     8.24E-10   1.02E-09   1.22E-09   1.42E-09   1.61E-09   1.61E-09
```

nd148	8.01E-10	1.00E-09	1.20E-09	1.40E-09	1.60E-09	1.60E-09
ce141	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09
nd146	6.71E-10	8.39E-10	1.01E-09	1.17E-09	1.34E-09	1.34E-09
ba138	5.73E-10	7.16E-10	8.60E-10	1.00E-09	1.15E-09	1.15E-09
in115	5.49E-10	6.88E-10	8.26E-10	9.64E-10	1.10E-09	1.10E-09
pd108	5.43E-10	6.78E-10	8.13E-10	9.48E-10	1.08E-09	1.08E-09
ce140	5.22E-10	6.56E-10	7.90E-10	9.24E-10	1.06E-09	1.06E-09
pm149	9.74E-10	9.75E-10	9.74E-10	9.74E-10	9.74E-10	9.71E-10
xe132	4.80E-10	6.00E-10	7.21E-10	8.42E-10	9.63E-10	9.63E-10
nd147	9.35E-10	9.36E-10	9.36E-10	9.36E-10	9.36E-10	9.34E-10
mo 98	3.34E-10	4.18E-10	5.02E-10	5.85E-10	6.69E-10	6.69E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 14
0 fraction of total absorption rate
power= .00mw, burnup= 6.mwd, flux= 2.81E+08n/cm**2-sec

0	initial	913.2 d	1095.8 d	1278.4 d	1461.0 d	1461.1 d
mo100	3.23E-10	4.03E-10	4.84E-10	5.65E-10	6.45E-10	6.45E-10
pd107	3.20E-10	4.00E-10	4.80E-10	5.59E-10	6.39E-10	6.39E-10
xe134	3.17E-10	3.96E-10	4.75E-10	5.54E-10	6.34E-10	6.34E-10
ce144	5.00E-10	5.37E-10	5.61E-10	5.76E-10	5.85E-10	5.85E-10
zr 92	2.57E-10	3.22E-10	3.86E-10	4.51E-10	5.15E-10	5.15E-10
ba137	1.09E-10	1.70E-10	2.44E-10	3.30E-10	4.30E-10	4.30E-10
i127	1.99E-10	2.52E-10	3.04E-10	3.56E-10	4.08E-10	4.08E-10
zr 96	2.04E-10	2.55E-10	3.06E-10	3.57E-10	4.08E-10	4.08E-10
ru104	1.98E-10	2.48E-10	2.97E-10	3.47E-10	3.96E-10	3.96E-10
ru103	3.57E-10	3.57E-10	3.57E-10	3.57E-10	3.57E-10	3.57E-10
nd150	1.78E-10	2.22E-10	2.66E-10	3.11E-10	3.55E-10	3.55E-10
xe136	1.71E-10	2.14E-10	2.57E-10	3.00E-10	3.43E-10	3.43E-10
cs137	1.71E-10	2.12E-10	2.53E-10	2.94E-10	3.34E-10	3.34E-10
br 81	1.29E-10	1.61E-10	1.93E-10	2.26E-10	2.58E-10	2.58E-10
zr 94	1.09E-10	1.37E-10	1.64E-10	1.91E-10	2.19E-10	2.19E-10
rb 85	1.01E-10	1.26E-10	1.52E-10	1.78E-10	2.04E-10	2.04E-10
zr 95	1.66E-10	1.66E-10	1.66E-10	1.66E-10	1.66E-10	1.66E-10
cd111	8.24E-11	1.03E-10	1.24E-10	1.45E-10	1.66E-10	1.66E-10
te130	7.78E-11	9.72E-11	1.17E-10	1.36E-10	1.56E-10	1.56E-10
nb 95	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10
sm154	7.55E-11	9.44E-11	1.13E-10	1.32E-10	1.51E-10	1.51E-10
rb 87	7.28E-11	9.10E-11	1.09E-10	1.27E-10	1.46E-10	1.46E-10
y 91	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10
kr 85	6.96E-11	8.56E-11	1.01E-10	1.16E-10	1.31E-10	1.31E-10
sm150	3.14E-11	4.90E-11	7.04E-11	9.57E-11	1.25E-10	1.25E-10
pm151	1.09E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.07E-10
se 77	5.14E-11	6.43E-11	7.72E-11	9.01E-11	1.03E-10	1.03E-10
kr 84	3.44E-11	4.31E-11	5.17E-11	6.03E-11	6.89E-11	6.89E-11
se 79	2.64E-11	3.30E-11	3.96E-11	4.62E-11	5.28E-11	5.28E-11
sb121	2.51E-11	3.14E-11	3.76E-11	4.39E-11	5.02E-11	5.02E-11
pd106	1.67E-11	2.40E-11	3.17E-11	3.99E-11	4.84E-11	4.84E-11
ba140	4.73E-11	4.74E-11	4.74E-11	4.74E-11	4.74E-11	4.73E-11
sb123	2.00E-11	2.51E-11	3.02E-11	3.54E-11	4.05E-11	4.05E-11
kr 86	1.91E-11	2.39E-11	2.87E-11	3.35E-11	3.82E-11	3.82E-11
sm153	3.79E-11	3.81E-11	3.81E-11	3.81E-11	3.81E-11	3.74E-11
te128	1.71E-11	2.13E-11	2.56E-11	2.99E-11	3.41E-11	3.41E-11
eu156	3.41E-11	3.40E-11	3.40E-11	3.40E-11	3.40E-11	3.40E-11
sr 89	3.07E-11	3.07E-11	3.07E-11	3.07E-11	3.07E-11	3.07E-11
gd156	1.29E-11	1.62E-11	1.95E-11	2.28E-11	2.62E-11	2.62E-11
se 80	1.23E-11	1.54E-11	1.85E-11	2.16E-11	2.47E-11	2.47E-11
ru106	1.90E-11	2.08E-11	2.21E-11	2.31E-11	2.37E-11	2.37E-11
dy161	1.08E-11	1.35E-11	1.62E-11	1.89E-11	2.16E-11	2.16E-11
ce143	1.74E-11	1.75E-11	1.75E-11	1.75E-11	1.75E-11	1.71E-11
la140	1.54E-11	1.54E-11	1.54E-11	1.54E-11	1.54E-11	1.54E-11

tb159	7.29E-12	9.10E-12	1.09E-11	1.27E-11	1.46E-11	1.46E-11
li 6	7.01E-12	8.76E-12	1.05E-11	1.23E-11	1.40E-11	1.40E-11
cd112	6.98E-12	8.72E-12	1.05E-11	1.22E-11	1.40E-11	1.40E-11
mo 99	1.31E-11	1.32E-11	1.32E-11	1.32E-11	1.32E-11	1.30E-11
sn117	5.54E-12	6.93E-12	8.31E-12	9.69E-12	1.11E-11	1.11E-11

0 fraction of total absorption rate

power= .00mw, burnup= 6.mwd, flux= 2.81E+08n/cm**2-sec

	initial	913.2 d	1095.8 d	1278.4 d	1461.0 d	1461.1 d
kr 87	1.58E-11	2.30E-11	2.30E-11	2.30E-11	2.30E-11	1.08E-11
zr 90	2.44E-12	3.80E-12	5.45E-12	7.40E-12	9.63E-12	9.63E-12
sb125	5.92E-12	7.00E-12	7.94E-12	8.78E-12	9.51E-12	9.51E-12
sn119	4.55E-12	5.69E-12	6.83E-12	7.97E-12	9.11E-12	9.11E-12
sn115	4.15E-12	5.20E-12	6.24E-12	7.28E-12	8.32E-12	8.32E-12
te125	2.21E-12	3.36E-12	4.69E-12	6.19E-12	7.82E-12	7.82E-12
te127m	7.25E-12	7.30E-12	7.32E-12	7.32E-12	7.33E-12	7.33E-12
sr 88	3.51E-12	4.39E-12	5.27E-12	6.15E-12	7.03E-12	7.03E-12
i131	6.77E-12	6.78E-12	6.78E-12	6.78E-12	6.78E-12	6.77E-12
pm148m	3.70E-12	4.38E-12	5.02E-12	5.59E-12	6.08E-12	6.08E-12
pd110	2.51E-12	3.13E-12	3.76E-12	4.38E-12	5.01E-12	5.01E-12
cd114	2.44E-12	3.04E-12	3.65E-12	4.26E-12	4.87E-12	4.87E-12
se 82	2.38E-12	2.98E-12	3.58E-12	4.17E-12	4.77E-12	4.77E-12
gd158	2.28E-12	2.85E-12	3.42E-12	4.00E-12	4.57E-12	4.57E-12
sn126	1.91E-12	2.38E-12	2.86E-12	3.34E-12	3.81E-12	3.81E-12
se 78	1.81E-12	2.26E-12	2.71E-12	3.17E-12	3.62E-12	3.62E-12
eu154	1.43E-12	1.89E-12	2.39E-12	2.92E-12	3.49E-12	3.49E-12
sn124	1.46E-12	1.82E-12	2.19E-12	2.55E-12	2.91E-12	2.91E-12
dy162	1.40E-12	1.75E-12	2.09E-12	2.44E-12	2.78E-12	2.78E-12
dy164	1.26E-12	1.58E-12	1.89E-12	2.21E-12	2.52E-12	2.52E-12
as 75	1.08E-12	1.35E-12	1.62E-12	1.89E-12	2.16E-12	2.16E-12
te129m	1.79E-12	1.79E-12	1.79E-12	1.79E-12	1.79E-12	1.79E-12
y 90	7.84E-13	9.74E-13	1.16E-12	1.35E-12	1.53E-12	1.53E-12
sn118	5.96E-13	7.45E-13	8.94E-13	1.04E-12	1.19E-12	1.19E-12
ba136	5.59E-13	7.03E-13	8.47E-13	9.91E-13	1.14E-12	1.14E-12
cd116	5.05E-13	6.32E-13	7.58E-13	8.84E-13	1.01E-12	1.01E-12
sn122	5.02E-13	6.27E-13	7.52E-13	8.77E-13	1.00E-12	1.00E-12
cs134	3.72E-13	4.80E-13	5.92E-13	7.08E-13	8.28E-13	8.27E-13
sn120	3.76E-13	4.70E-13	5.63E-13	6.57E-13	7.51E-13	7.51E-13
ru 99	3.01E-13	3.85E-13	4.72E-13	5.64E-13	6.58E-13	6.58E-13
kr 82	3.14E-13	3.92E-13	4.71E-13	5.50E-13	6.29E-13	6.29E-13
dy163	3.08E-13	3.85E-13	4.61E-13	5.38E-13	6.14E-13	6.14E-13
ge 73	2.93E-13	3.67E-13	4.40E-13	5.14E-13	5.87E-13	5.87E-13
xe130	1.93E-13	2.41E-13	2.90E-13	3.38E-13	3.87E-13	3.87E-13
ag111	3.17E-13	3.17E-13	3.17E-13	3.17E-13	3.17E-13	3.16E-13
eu157	2.91E-13	2.96E-13	2.96E-13	2.96E-13	2.96E-13	2.80E-13
mo 96	1.36E-13	1.71E-13	2.05E-13	2.40E-13	2.75E-13	2.75E-13
eu152	3.44E-14	6.45E-14	1.09E-13	1.70E-13	2.50E-13	2.50E-13
pm148	1.53E-13	1.79E-13	2.03E-13	2.25E-13	2.43E-13	2.42E-13
cd115m	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.36E-13
ge 76	1.07E-13	1.34E-13	1.60E-13	1.87E-13	2.14E-13	2.14E-13
in113	3.85E-14	5.97E-14	8.53E-14	1.15E-13	1.49E-13	1.49E-13
gd160	6.76E-14	8.44E-14	1.01E-13	1.18E-13	1.35E-13	1.35E-13
te126	5.13E-14	6.43E-14	7.74E-14	9.04E-14	1.03E-13	1.03E-13
ru100	3.10E-14	4.03E-14	5.02E-14	6.06E-14	7.17E-14	7.17E-14
cs136	5.55E-14	5.57E-14	5.57E-14	5.57E-14	5.57E-14	5.55E-14
ho165	2.12E-14	2.64E-14	3.17E-14	3.69E-14	4.22E-14	4.22E-14
sn125	2.92E-14	2.93E-14	2.93E-14	2.93E-14	2.93E-14	2.91E-14
sm148	6.73E-15	1.04E-14	1.48E-14	1.99E-14	2.56E-14	2.56E-14

0 fraction of total absorption rate

power= .00mw, burnup=	initial	913.2 d	1095.8 d	1278.4 d	1461.0 d	1461.1 d
			6.mwd, flux= 2.81E+08n/cm**2-sec			
ru105	2.75E-14	2.97E-14	2.97E-14	2.97E-14	2.97E-14	2.46E-14
sr 87	1.22E-14	1.53E-14	1.84E-14	2.14E-14	2.45E-14	2.45E-14
te124	1.10E-14	1.41E-14	1.72E-14	2.03E-14	2.35E-14	2.35E-14
gd154	3.48E-15	5.67E-15	8.50E-15	1.20E-14	1.63E-14	1.63E-14
nb 94	6.97E-15	8.72E-15	1.05E-14	1.22E-14	1.40E-14	1.40E-14
gd152	1.92E-15	3.55E-15	5.96E-15	9.31E-15	1.38E-14	1.38E-14
nd142	3.27E-15	5.14E-15	7.43E-15	1.02E-14	1.33E-14	1.33E-14
ba135	3.98E-15	5.80E-15	7.95E-15	1.04E-14	1.32E-14	1.32E-14
ge 74	5.92E-15	7.41E-15	8.89E-15	1.04E-14	1.19E-14	1.19E-14
sn123	9.97E-15	1.01E-14	1.01E-14	1.02E-14	1.02E-14	1.02E-14
rb 88	1.17E-14	1.29E-14	1.29E-14	1.29E-14	1.29E-14	9.98E-15
te132	9.51E-15	9.56E-15	9.56E-15	9.56E-15	9.56E-15	9.45E-15
ba134	2.11E-15	3.39E-15	4.99E-15	6.94E-15	9.23E-15	9.24E-15
i135	9.42E-15	1.01E-14	1.01E-14	1.01E-14	1.01E-14	8.75E-15
pd104	1.95E-15	3.12E-15	4.58E-15	6.31E-15	8.32E-15	8.32E-15
ge 72	3.96E-15	4.95E-15	5.95E-15	6.95E-15	7.94E-15	7.94E-15
sr 86	3.34E-15	4.21E-15	5.08E-15	5.96E-15	6.83E-15	6.83E-15
se 76	2.30E-15	2.88E-15	3.45E-15	4.03E-15	4.61E-15	4.61E-15
sb126	3.00E-15	3.01E-15	3.01E-15	3.01E-15	3.01E-15	3.00E-15
sb124	2.10E-15	2.10E-15	2.10E-15	2.10E-15	2.10E-15	2.10E-15
in117m	2.05E-15	2.09E-15	2.09E-15	2.09E-15	2.09E-15	1.94E-15
cd110	6.03E-16	8.68E-16	1.17E-15	1.51E-15	1.89E-15	1.89E-15
te134	2.91E-15	5.85E-15	5.85E-15	5.85E-15	5.85E-15	1.45E-15
xe128	5.61E-16	7.05E-16	8.51E-16	9.98E-16	1.15E-15	1.15E-15
er166	5.47E-16	6.86E-16	8.24E-16	9.64E-16	1.10E-15	1.10E-15
dy160	3.97E-16	5.17E-16	6.39E-16	7.64E-16	8.90E-16	8.90E-16
br 79	2.26E-16	3.50E-16	5.01E-16	6.78E-16	8.83E-16	8.83E-16
i130	6.90E-16	7.17E-16	7.18E-16	7.19E-16	7.19E-16	6.67E-16
in117	6.04E-16	6.14E-16	6.14E-16	6.14E-16	6.14E-16	5.74E-16
xe129	1.21E-16	1.89E-16	2.73E-16	3.72E-16	4.86E-16	4.86E-16
ag107	1.14E-16	1.79E-16	2.57E-16	3.50E-16	4.57E-16	4.57E-16
tb160	3.15E-16	3.21E-16	3.26E-16	3.31E-16	3.37E-16	3.36E-16
kr 80	1.66E-16	2.08E-16	2.49E-16	2.91E-16	3.32E-16	3.32E-16
rb 86	2.41E-16	2.42E-16	2.42E-16	2.42E-16	2.43E-16	2.42E-16
dy165	1.76E-16	2.10E-16	2.10E-16	2.10E-16	2.10E-16	1.42E-16
nb 93	1.92E-17	3.24E-17	5.10E-17	7.61E-17	1.09E-16	1.09E-16
te122	2.34E-17	2.99E-17	3.66E-17	4.36E-17	5.09E-17	5.09E-17
ge 75	6.24E-17	8.64E-17	8.64E-17	8.64E-17	8.64E-17	4.39E-17
cd118	6.76E-17	1.20E-16	1.20E-16	1.20E-16	1.20E-16	3.77E-17
sn116	1.07E-17	1.48E-17	1.96E-17	2.49E-17	3.08E-17	3.08E-17
be 9	1.34E-17	1.68E-17	2.01E-17	2.35E-17	2.69E-17	2.69E-17
pr142	1.33E-17	1.71E-17	2.06E-17	2.40E-17	2.75E-17	2.62E-17
te123	9.75E-18	1.27E-17	1.57E-17	1.87E-17	2.16E-17	2.16E-17
li 7	5.40E-18	6.75E-18	8.10E-18	9.45E-18	1.08E-17	1.08E-17
er167	2.19E-18	2.74E-18	3.30E-18	3.86E-18	4.43E-18	4.43E-18
in119m	7.02E-18	3.01E-17	3.01E-17	3.01E-17	3.01E-17	1.38E-18
cd108	1.11E-19	1.38E-19	1.64E-19	1.91E-19	2.22E-19	2.22E-19
cd109	1.24E-19	1.41E-19	1.51E-19	1.61E-19	1.68E-19	1.68E-19
cs134m	8.73E-20	1.28E-19	1.51E-19	1.78E-19	2.05E-19	1.44E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 17

0 fraction of total absorption rate

power= .00mw, burnup=	initial	913.2 d	1095.8 d	1278.4 d	1461.0 d	1461.1 d
			6.mwd, flux= 2.81E+08n/cm**2-sec			
in119	2.69E-20	2.35E-18	2.35E-18	2.35E-18	2.35E-18	6.71E-21
sn114	.00E+00	3.36E-21	3.36E-21	3.36E-21	3.36E-21	3.36E-21

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 18
power= 4.000E-03mw, burnup=5.8440E+00mwd, flux= 2.81E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	913.2 d	1095.8 d	1278.4 d	1461.0 d	1461.1 d
h 1	1.76E-07	2.19E-07	2.62E-07	3.05E-07	3.48E-07	3.48E-07
h 2	5.22E-10	6.50E-10	7.77E-10	9.04E-10	1.03E-09	1.03E-09
h 3	3.62E-12	4.44E-12	5.24E-12	6.02E-12	6.77E-12	6.77E-12
h 4	.00E+00	1.80E-35	2.13E-35	2.44E-35	2.75E-35	.00E+00
he 3	2.08E-13	3.21E-13	4.57E-13	6.15E-13	7.95E-13	7.95E-13
he 4	2.91E-08	3.62E-08	4.33E-08	5.04E-08	5.75E-08	5.75E-08
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	3.50E-09	4.35E-09	5.20E-09	6.05E-09	6.91E-09	6.91E-09
ne 21	2.54E-16	3.89E-16	5.51E-16	7.39E-16	9.52E-16	9.52E-16
ne 22	5.14E-12	7.70E-12	1.06E-11	1.39E-11	1.75E-11	1.75E-11
ne 23	7.28E-30	7.10E-15	7.10E-15	7.10E-15	7.10E-15	7.10E-30
na 22	1.77E-11	2.07E-11	2.33E-11	2.56E-11	2.77E-11	2.77E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.52E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08	2.87E-08
na 24m	5.99E-30	5.05E-15	5.05E-15	5.05E-15	5.05E-15	5.05E-30
na 25	2.08E-41	1.40E-28	1.67E-28	1.95E-28	2.23E-28	2.41E-43
mg 24	3.03E-05	3.67E-05	4.31E-05	4.95E-05	5.59E-05	5.59E-05
mg 25	3.86E-12	4.80E-12	5.75E-12	6.71E-12	7.66E-12	7.66E-12
mg 26	5.22E-10	6.50E-10	7.77E-10	9.04E-10	1.03E-09	1.03E-09
mg 27	9.98E-14	2.12E-12	2.12E-12	2.12E-12	2.12E-12	4.42E-15
mg 28	4.31E-24	4.32E-24	4.32E-24	4.32E-24	4.32E-24	4.12E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	6.00E-16	2.28E-10	2.28E-10	2.28E-10	2.28E-10	1.08E-21
al 29	7.17E-31	9.14E-29	1.30E-28	1.75E-28	2.27E-28	3.11E-32
al 30	.00E+00	4.23E-42	7.28E-42	1.15E-41	1.70E-41	.00E+00
si 28	8.79E-05	1.06E-04	1.25E-04	1.44E-04	1.62E-04	1.62E-04
si 29	2.26E-13	3.51E-13	5.00E-13	6.73E-13	8.69E-13	8.69E-13
si 30	6.21E-22	1.21E-21	2.09E-21	3.30E-21	4.90E-21	4.90E-21
si 31	3.69E-34	8.72E-34	1.50E-33	2.37E-33	3.51E-33	2.42E-33
si 32	1.57E-42	3.85E-42	7.99E-42	1.48E-41	2.51E-41	2.51E-41
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.81E+08	2.81E+08	2.81E+08	2.81E+08	2.81E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 19
power= 4.000E-03mw, burnup=5.8440E+00mwd, flux= 2.81E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	913.2 d	1095.8 d	1278.4 d	1461.0 d	1461.1 d
he 4	1.05E-04	1.32E-04	1.59E-04	1.87E-04	2.16E-04	2.16E-04
ra222	3.30E-29	4.82E-29	6.72E-29	8.86E-29	1.12E-28	1.12E-28
ra223	3.98E-14	6.29E-14	9.09E-14	1.24E-13	1.62E-13	1.62E-13
ra224	3.75E-15	6.78E-15	1.09E-14	1.60E-14	2.23E-14	2.23E-14
ra225	5.50E-16	8.77E-16	1.28E-15	1.76E-15	2.32E-15	2.32E-15
ra226	4.70E-10	7.34E-10	1.06E-09	1.44E-09	1.88E-09	1.88E-09
ra228	4.71E-16	7.22E-16	1.02E-15	1.36E-15	1.75E-15	1.75E-15
ac225	3.71E-16	5.93E-16	8.66E-16	1.19E-15	1.57E-15	1.57E-15
ac227	2.97E-11	4.62E-11	6.63E-11	8.97E-11	1.17E-10	1.17E-10
ac228	5.75E-20	8.81E-20	1.24E-19	1.66E-19	2.13E-19	2.13E-19
th226	1.60E-27	2.35E-27	3.28E-27	4.32E-27	5.46E-27	5.46E-27
th227	6.42E-14	1.01E-13	1.47E-13	2.00E-13	2.61E-13	2.61E-13
th228	7.15E-13	1.29E-12	2.07E-12	3.05E-12	4.25E-12	4.25E-12
th229	1.07E-10	1.71E-10	2.49E-10	3.43E-10	4.51E-10	4.51E-10
th230	5.11E-05	6.39E-05	7.66E-05	8.94E-05	1.02E-04	1.02E-04
th231	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09

th232	1.03E-05	1.29E-05	1.55E-05	1.81E-05	2.07E-05	2.07E-05
th233	2.59E-17	1.19E-16	1.43E-16	1.66E-16	1.90E-16	1.38E-17
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	1.44E-06	1.80E-06	2.16E-06	2.51E-06	2.87E-06	2.87E-06
pa232	2.43E-14	3.09E-14	3.71E-14	4.32E-14	4.94E-14	4.79E-14
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.55E-24	2.28E-24	3.18E-24	4.19E-24	5.29E-24	5.28E-24
u231	2.05E-20	2.52E-20	3.04E-20	3.57E-20	4.10E-20	4.06E-20
u232	1.22E-10	1.83E-10	2.53E-10	3.31E-10	4.16E-10	4.16E-10
u233	2.59E-05	3.27E-05	3.95E-05	4.63E-05	5.32E-05	5.32E-05
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02
u237	3.23E-06	3.15E-06	3.15E-06	3.15E-06	3.15E-06	3.13E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	9.48E-08	3.22E-07	3.22E-07	3.22E-07	3.22E-07	2.67E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	6.55E-12	7.16E-12	7.61E-12	7.93E-12	8.16E-12	8.16E-12
np236m	2.11E-12	2.09E-12	2.09E-12	2.09E-12	2.09E-12	2.00E-12
np236	4.10E-10	5.09E-10	6.08E-10	7.07E-10	8.06E-10	8.06E-10
np237	4.22E+01	4.22E+01	4.22E+01	4.22E+01	4.22E+01	4.22E+01
np238	1.56E-06	1.56E-06	1.56E-06	1.56E-06	1.56E-06	1.53E-06
np239	4.73E-05	4.65E-05	4.65E-05	4.65E-05	4.65E-05	4.60E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	6.08E-15	9.48E-15	9.48E-15	9.48E-15	9.48E-15	3.69E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	4.44E-10	5.22E-10	5.90E-10	6.52E-10	7.06E-10	7.06E-10
pu237	3.54E-15	4.36E-15	5.28E-15	6.20E-15	7.11E-15	7.11E-15
pu238	3.73E-04	4.65E-04	5.56E-04	6.48E-04	7.38E-04	7.38E-04
pu239	1.04E-02	1.29E-02	1.54E-02	1.80E-02	2.05E-02	2.05E-02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 20
power= 4.000E-03mw, burnup=5.8440E+00mwd, flux= 2.81E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	913.2 d	1095.8 d	1278.4 d	1461.0 d	1461.1 d
pu240	1.02E-07	1.59E-07	2.29E-07	3.11E-07	4.05E-07	4.05E-07
pu241	1.36E-12	2.62E-12	4.47E-12	7.04E-12	1.04E-11	1.04E-11
pu242	5.36E-18	1.30E-17	2.67E-17	4.92E-17	8.34E-17	8.34E-17
pu243	1.07E-26	2.78E-26	5.72E-26	1.05E-25	1.78E-25	1.47E-25
pu244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.81E+08	2.81E+08	2.81E+08	2.81E+08	2.81E-07

0 1q array has 20 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 4q array has 1 entries.
0 54q array has 12 entries.
1library information...

cross-section data taken from position number 3 of library on unit 33.

pass 1

```
        pass   0
        *scale-system control module sas2 library*
        used a time-dependent neutron spectrum, for each of the above passes
          pass 0 applies start-up fuel densiities
          pass n applies mid time densities of nth library interval
        first library updated was...
        pass   1
        pass   0
        *scale-system control module sas2 library*
        used a time-dependent neutron spectrum, for each of the above passes
          pass 0 applies start-up fuel densiities
          pass n applies mid time densities of nth library interval
        first library updated was...
        ********************************************************************************
        *                                                                              *
        *            prelim lwr origen-s binary working library--id = 1143             *
        *          made from modified card-image origen-s libraries of scale 4.2       *
        *       data from the light element, actinide, and fission product libraries   *
        *         decay data, including gamma and total energy, are from endf/b-vi     *
        *                                                                              *
        *       neutron flux spectrum factors and cross sections were produced from    *
        *      the "presas2" case updating all nuclides on the scale "burnup" library  *
        *                                                                              *
        *                    fission product yields are from endf/b-v                  *
        *                                                                              *
        *              photon libraries use an 18-energy-group structure               *
        *             the photon data are from the master photon data base,            *
        *              produced to include bremsstrahlung from uo2 matrix              *
        *                                                                              *
        *         see information above this box (if present) for later updates        *
        *                                                                              *
        ********************************************************************************
        *                                                                              *
        ********************************************************************************
0
0                .other identification and sizes of library.
0                 data set name:  ft33f001
0               8/28/1996    date library was produced
0                    1697    total number of nuclides in library
                      689    number of light-element nuclides
                      129    number of actinide nuclides
                      879    number of fission product nuclides
0                    7993    number of nonzero off-diagonal matrix elements
0        ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   21
         power=    .00mw, burnup=      9.mwd, flux= 2.74E+08n/cm**2-sec
0                                    basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial       1643.7 d       1826.3 d       2009.0 d       2191.6 d       2191.7 d
     productions   1.122459E+06   1.122463E+06   1.122467E+06   1.122471E+06   1.122474E+06   1.122474E+06
     absorptions   9.158321E+05   9.158383E+05   9.158444E+05   9.158505E+05   9.158566E+05   9.158566E+05
     k infinity    1.225616E+00   1.225612E+00   1.225608E+00   1.225605E+00   1.225601E+00   1.225601E+00
0                    initial       1643.7 d       1826.3 d       2009.0 d       2191.6 d       2191.7 d
     actinide
     absorptions   9.125684E+05   9.125708E+05   9.125731E+05   9.125754E+05   9.125776E+05   9.125776E+05
     non-actinide
     abs. fracs.   3.563583E-03   3.567815E-03   3.571987E-03   3.576040E-03   3.580332E-03   3.580332E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products   page   22
0                                fraction of total absorption rate
         power=    .00mw, burnup=      9.mwd, flux= 2.74E+08n/cm**2-sec
0              initial  1643.7 d  1826.3 d  2009.0 d  2191.6 d  2191.7 d
```

sm149	2.96E-05	3.33E-05	3.70E-05	4.07E-05	4.44E-05	4.44E-05
xe135	2.31E-06	2.33E-06	2.33E-06	2.33E-06	2.33E-06	2.29E-06
sm151	1.24E-06	1.39E-06	1.54E-06	1.69E-06	1.84E-06	1.84E-06
nd143	5.87E-07	6.62E-07	7.36E-07	8.11E-07	8.86E-07	8.86E-07
gd157	3.03E-07	3.41E-07	3.79E-07	4.16E-07	4.54E-07	4.54E-07
rh103	2.65E-07	3.00E-07	3.34E-07	3.68E-07	4.03E-07	4.03E-07
cd113	2.59E-07	2.91E-07	3.23E-07	3.55E-07	3.88E-07	3.88E-07
xe131	1.86E-07	2.10E-07	2.33E-07	2.57E-07	2.80E-07	2.80E-07
cs133	1.45E-07	1.63E-07	1.81E-07	1.99E-07	2.18E-07	2.18E-07
pm147	1.76E-07	1.88E-07	1.98E-07	2.07E-07	2.15E-07	2.15E-07
gd155	9.85E-08	1.22E-07	1.47E-07	1.74E-07	2.03E-07	2.03E-07
tc 99	1.07E-07	1.20E-07	1.34E-07	1.47E-07	1.60E-07	1.60E-07
nd145	8.31E-08	9.35E-08	1.04E-07	1.14E-07	1.25E-07	1.25E-07
eu155	7.09E-08	7.71E-08	8.29E-08	8.83E-08	9.33E-08	9.33E-08
mo 95	5.20E-08	5.92E-08	6.64E-08	7.36E-08	8.08E-08	8.08E-08
sm147	4.11E-08	5.02E-08	5.99E-08	7.01E-08	8.06E-08	8.06E-08
sm152	4.38E-08	4.93E-08	5.48E-08	6.02E-08	6.57E-08	6.57E-08
kr 83	3.61E-08	4.06E-08	4.52E-08	4.97E-08	5.42E-08	5.42E-08
cs135	3.28E-08	3.69E-08	4.10E-08	4.51E-08	4.92E-08	4.92E-08
ru101	2.54E-08	2.86E-08	3.17E-08	3.49E-08	3.81E-08	3.81E-08
pr141	2.38E-08	2.68E-08	2.99E-08	3.30E-08	3.61E-08	3.61E-08
eu153	2.22E-08	2.50E-08	2.78E-08	3.06E-08	3.33E-08	3.33E-08
eu151	1.41E-08	1.79E-08	2.20E-08	2.66E-08	3.17E-08	3.17E-08
la139	2.01E-08	2.26E-08	2.51E-08	2.76E-08	3.01E-08	3.01E-08
pd105	8.46E-09	9.52E-09	1.06E-08	1.16E-08	1.27E-08	1.27E-08
zr 93	8.12E-09	9.14E-09	1.02E-08	1.12E-08	1.22E-08	1.22E-08
i129	6.19E-09	6.97E-09	7.75E-09	8.53E-09	9.31E-09	9.31E-09
rh105	8.35E-09	8.36E-09	8.36E-09	8.36E-09	8.36E-09	8.32E-09
nd144	4.38E-09	5.12E-09	5.86E-09	6.61E-09	7.36E-09	7.36E-09
mo 97	4.55E-09	5.12E-09	5.68E-09	6.25E-09	6.82E-09	6.82E-09
ag109	3.17E-09	3.56E-09	3.96E-09	4.35E-09	4.75E-09	4.75E-09
zr 91	2.02E-09	2.29E-09	2.56E-09	2.83E-09	3.10E-09	3.10E-09
y 89	1.96E-09	2.21E-09	2.47E-09	2.73E-09	2.99E-09	2.99E-09
ru102	1.85E-09	2.09E-09	2.32E-09	2.55E-09	2.78E-09	2.78E-09
pr143	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09
ce142	1.67E-09	1.88E-09	2.09E-09	2.30E-09	2.51E-09	2.51E-09
nd148	1.61E-09	1.81E-09	2.01E-09	2.21E-09	2.41E-09	2.41E-09
sr 90	1.62E-09	1.81E-09	2.00E-09	2.18E-09	2.37E-09	2.37E-09
xe133	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.02E-09
nd146	1.35E-09	1.52E-09	1.68E-09	1.85E-09	2.02E-09	2.02E-09
ba138	1.15E-09	1.30E-09	1.44E-09	1.58E-09	1.73E-09	1.73E-09
in115	1.10E-09	1.24E-09	1.38E-09	1.52E-09	1.66E-09	1.66E-09
pd108	1.08E-09	1.21E-09	1.35E-09	1.48E-09	1.61E-09	1.61E-09
ce140	1.06E-09	1.20E-09	1.33E-09	1.47E-09	1.60E-09	1.60E-09
ce141	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09
xe132	9.62E-10	1.08E-09	1.20E-09	1.32E-09	1.44E-09	1.44E-09
mo 98	6.65E-10	7.49E-10	8.32E-10	9.15E-10	9.98E-10	9.98E-10
pm149	9.76E-10	9.80E-10	9.80E-10	9.80E-10	9.80E-10	9.73E-10
mo100	6.44E-10	7.25E-10	8.05E-10	8.86E-10	9.67E-10	9.67E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 23
0 fraction of total absorption rate
power= .00mw, burnup= 9.mwd, flux= 2.74E+08n/cm**2-sec
0

	initial	1643.7 d	1826.3 d	2009.0 d	2191.6 d	2191.7 d
pd107	6.41E-10	7.20E-10	8.00E-10	8.79E-10	9.59E-10	9.59E-10
ba137	4.32E-10	5.44E-10	6.69E-10	8.07E-10	9.56E-10	9.56E-10
xe134	6.36E-10	7.16E-10	7.95E-10	8.75E-10	9.54E-10	9.54E-10
nd147	9.30E-10	9.33E-10	9.33E-10	9.33E-10	9.33E-10	9.29E-10
zr 92	5.17E-10	5.81E-10	6.46E-10	7.11E-10	7.75E-10	7.75E-10

i127	4.08E-10	4.60E-10	5.12E-10	5.64E-10	6.16E-10	6.16E-10
zr 96	4.04E-10	4.55E-10	5.05E-10	5.56E-10	6.07E-10	6.07E-10
ce144	5.86E-10	5.93E-10	5.97E-10	5.99E-10	6.01E-10	6.01E-10
ru104	3.96E-10	4.46E-10	4.95E-10	5.45E-10	5.94E-10	5.94E-10
nd150	3.55E-10	4.00E-10	4.44E-10	4.88E-10	5.33E-10	5.33E-10
xe136	3.44E-10	3.87E-10	4.30E-10	4.73E-10	5.16E-10	5.16E-10
cs137	3.33E-10	3.73E-10	4.12E-10	4.51E-10	4.89E-10	4.89E-10
br 81	2.58E-10	2.90E-10	3.22E-10	3.54E-10	3.87E-10	3.87E-10
ru103	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.57E-10
zr 94	2.18E-10	2.45E-10	2.73E-10	3.00E-10	3.27E-10	3.27E-10
rb 85	2.04E-10	2.31E-10	2.57E-10	2.84E-10	3.11E-10	3.11E-10
sm150	1.25E-10	1.58E-10	1.95E-10	2.36E-10	2.81E-10	2.81E-10
cd111	1.67E-10	1.88E-10	2.08E-10	2.29E-10	2.50E-10	2.50E-10
te130	1.56E-10	1.76E-10	1.95E-10	2.15E-10	2.35E-10	2.35E-10
sm154	1.51E-10	1.70E-10	1.89E-10	2.08E-10	2.27E-10	2.27E-10
rb 87	1.46E-10	1.64E-10	1.82E-10	2.00E-10	2.18E-10	2.18E-10
kr 85	1.31E-10	1.45E-10	1.59E-10	1.72E-10	1.85E-10	1.85E-10
zr 95	1.65E-10	1.66E-10	1.66E-10	1.66E-10	1.66E-10	1.65E-10
se 77	1.03E-10	1.16E-10	1.29E-10	1.42E-10	1.55E-10	1.55E-10
nb 95	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10
y 91	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10
pm151	1.07E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.06E-10
kr 84	6.86E-11	7.72E-11	8.58E-11	9.43E-11	1.03E-10	1.03E-10
pd106	4.82E-11	5.69E-11	6.57E-11	7.46E-11	8.35E-11	8.35E-11
se 79	5.31E-11	5.98E-11	6.64E-11	7.31E-11	7.97E-11	7.97E-11
sb121	5.01E-11	5.63E-11	6.26E-11	6.88E-11	7.51E-11	7.51E-11
sb123	4.04E-11	4.55E-11	5.06E-11	5.57E-11	6.08E-11	6.08E-11
kr 86	3.84E-11	4.32E-11	4.80E-11	5.28E-11	5.76E-11	5.76E-11
te128	3.41E-11	3.84E-11	4.27E-11	4.69E-11	5.12E-11	5.12E-11
ba140	4.74E-11	4.75E-11	4.75E-11	4.75E-11	4.75E-11	4.73E-11
gd156	2.60E-11	2.93E-11	3.26E-11	3.59E-11	3.92E-11	3.92E-11
sm153	3.75E-11	3.82E-11	3.82E-11	3.82E-11	3.82E-11	3.72E-11
se 80	2.48E-11	2.79E-11	3.10E-11	3.41E-11	3.71E-11	3.71E-11
eu156	3.42E-11	3.41E-11	3.42E-11	3.42E-11	3.42E-11	3.42E-11
dy161	2.17E-11	2.44E-11	2.71E-11	2.98E-11	3.25E-11	3.25E-11
sr 89	3.09E-11	3.09E-11	3.09E-11	3.09E-11	3.09E-11	3.09E-11
ru106	2.36E-11	2.41E-11	2.44E-11	2.46E-11	2.48E-11	2.48E-11
tb159	1.45E-11	1.64E-11	1.82E-11	2.00E-11	2.18E-11	2.18E-11
zr 90	9.65E-12	1.22E-11	1.50E-11	1.80E-11	2.14E-11	2.14E-11
li 6	1.41E-11	1.59E-11	1.76E-11	1.94E-11	2.11E-11	2.11E-11
cd112	1.40E-11	1.57E-11	1.75E-11	1.92E-11	2.10E-11	2.10E-11
ce143	1.72E-11	1.76E-11	1.76E-11	1.76E-11	1.76E-11	1.70E-11
sn117	1.11E-11	1.25E-11	1.39E-11	1.53E-11	1.66E-11	1.66E-11
te125	7.82E-12	9.58E-12	1.15E-11	1.34E-11	1.55E-11	1.55E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 24
0 fraction of total absorption rate
power= .00mw, burnup= 9.mwd, flux= 2.74E+08n/cm**2-sec

0	initial	1643.7 d	1826.3 d	2009.0 d	2191.6 d	2191.7 d
la140	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11
sn119	9.15E-12	1.03E-11	1.14E-11	1.26E-11	1.37E-11	1.37E-11
mo 99	1.30E-11	1.32E-11	1.32E-11	1.32E-11	1.32E-11	1.29E-11
sn115	8.37E-12	9.41E-12	1.05E-11	1.15E-11	1.26E-11	1.26E-11
sb125	9.50E-12	1.01E-11	1.07E-11	1.12E-11	1.17E-11	1.17E-11
sr 88	7.05E-12	7.94E-12	8.82E-12	9.70E-12	1.06E-11	1.06E-11
kr 87	1.09E-11	2.31E-11	2.31E-11	2.31E-11	2.31E-11	8.20E-12
pm148m	6.11E-12	6.50E-12	6.88E-12	7.21E-12	7.51E-12	7.50E-12
pd110	4.99E-12	5.61E-12	6.23E-12	6.86E-12	7.48E-12	7.48E-12
te127m	7.35E-12	7.35E-12	7.35E-12	7.35E-12	7.35E-12	7.35E-12
cd114	4.85E-12	5.45E-12	6.06E-12	6.66E-12	7.27E-12	7.27E-12

se 82	4.79E-12	5.39E-12	5.99E-12	6.58E-12	7.18E-12	7.18E-12
gd158	4.56E-12	5.14E-12	5.71E-12	6.29E-12	6.87E-12	6.87E-12
i131	6.77E-12	6.78E-12	6.78E-12	6.78E-12	6.78E-12	6.76E-12
eu154	3.51E-12	4.11E-12	4.75E-12	5.42E-12	6.12E-12	6.12E-12
sn126	3.83E-12	4.31E-12	4.79E-12	5.27E-12	5.75E-12	5.75E-12
se 78	3.62E-12	4.08E-12	4.53E-12	4.98E-12	5.44E-12	5.44E-12
sn124	2.90E-12	3.26E-12	3.63E-12	3.99E-12	4.35E-12	4.35E-12
dy162	2.79E-12	3.13E-12	3.48E-12	3.82E-12	4.17E-12	4.17E-12
dy164	2.53E-12	2.85E-12	3.16E-12	3.48E-12	3.79E-12	3.79E-12
as 75	2.16E-12	2.43E-12	2.70E-12	2.97E-12	3.24E-12	3.24E-12
y 90	1.54E-12	1.72E-12	1.90E-12	2.08E-12	2.25E-12	2.25E-12
te129m	1.79E-12	1.79E-12	1.79E-12	1.79E-12	1.79E-12	1.79E-12
sn118	1.18E-12	1.33E-12	1.48E-12	1.63E-12	1.77E-12	1.77E-12
ba136	1.13E-12	1.28E-12	1.42E-12	1.57E-12	1.71E-12	1.71E-12
cd116	1.01E-12	1.13E-12	1.26E-12	1.38E-12	1.51E-12	1.51E-12
sn122	1.01E-12	1.13E-12	1.26E-12	1.38E-12	1.51E-12	1.51E-12
cs134	8.30E-13	9.51E-13	1.07E-12	1.20E-12	1.33E-12	1.33E-12
sn120	7.52E-13	8.45E-13	9.39E-13	1.03E-12	1.13E-12	1.13E-12
ru 99	6.57E-13	7.55E-13	8.56E-13	9.61E-13	1.07E-12	1.07E-12
kr 82	6.31E-13	7.10E-13	7.90E-13	8.69E-13	9.48E-13	9.48E-13
dy163	6.15E-13	6.91E-13	7.68E-13	8.44E-13	9.21E-13	9.21E-13
ge 73	5.89E-13	6.63E-13	7.37E-13	8.10E-13	8.84E-13	8.84E-13
eu152	2.51E-13	3.53E-13	4.79E-13	6.31E-13	8.12E-13	8.12E-13
xe130	3.89E-13	4.38E-13	4.87E-13	5.36E-13	5.85E-13	5.85E-13
mo 96	2.74E-13	3.09E-13	3.44E-13	3.79E-13	4.14E-13	4.14E-13
in113	1.49E-13	1.87E-13	2.29E-13	2.75E-13	3.25E-13	3.25E-13
ge 76	2.14E-13	2.41E-13	2.68E-13	2.94E-13	3.21E-13	3.21E-13
ag111	3.15E-13	3.16E-13	3.16E-13	3.16E-13	3.16E-13	3.14E-13
pm148	2.40E-13	2.56E-13	2.71E-13	2.83E-13	2.94E-13	2.91E-13
eu157	2.81E-13	2.97E-13	2.97E-13	2.97E-13	2.97E-13	2.74E-13
cd115m	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.37E-13
gd160	1.35E-13	1.52E-13	1.68E-13	1.85E-13	2.02E-13	2.02E-13
te126	1.04E-13	1.17E-13	1.30E-13	1.43E-13	1.56E-13	1.56E-13
ru100	7.20E-14	8.37E-14	9.60E-14	1.09E-13	1.22E-13	1.22E-13
ho165	4.23E-14	4.75E-14	5.28E-14	5.80E-14	6.33E-14	6.33E-14
cs136	5.54E-14	5.56E-14	5.56E-14	5.56E-14	5.56E-14	5.54E-14
sm148	2.56E-14	3.19E-14	3.87E-14	4.61E-14	5.40E-14	5.40E-14
gd152	1.38E-14	1.96E-14	2.68E-14	3.56E-14	4.61E-14	4.61E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 25
0 fraction of total absorption rate
power= .00mw, burnup= 9.mwd, flux= 2.74E+08n/cm**2-sec

0	initial	1643.7 d	1826.3 d	2009.0 d	2191.6 d	2191.7 d
gd154	1.63E-14	2.14E-14	2.72E-14	3.39E-14	4.16E-14	4.16E-14
sr 87	2.46E-14	2.77E-14	3.07E-14	3.38E-14	3.69E-14	3.69E-14
te124	2.36E-14	2.67E-14	2.98E-14	3.30E-14	3.61E-14	3.61E-14
nd142	1.34E-14	1.69E-14	2.10E-14	2.54E-14	3.02E-14	3.02E-14
sn125	2.91E-14	2.92E-14	2.92E-14	2.92E-14	2.92E-14	2.90E-14
ba135	1.32E-14	1.64E-14	1.99E-14	2.37E-14	2.78E-14	2.78E-14
ru105	2.45E-14	2.95E-14	2.95E-14	2.95E-14	2.95E-14	2.25E-14
ba134	9.24E-15	1.19E-14	1.49E-14	1.83E-14	2.21E-14	2.21E-14
nb 94	1.39E-14	1.57E-14	1.74E-14	1.92E-14	2.09E-14	2.09E-14
pd104	8.28E-15	1.05E-14	1.31E-14	1.59E-14	1.90E-14	1.90E-14
ge 74	1.19E-14	1.34E-14	1.49E-14	1.64E-14	1.79E-14	1.79E-14
ge 72	7.98E-15	8.98E-15	9.98E-15	1.10E-14	1.20E-14	1.20E-14
sr 86	6.86E-15	7.74E-15	8.61E-15	9.49E-15	1.04E-14	1.04E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.48E-15	9.59E-15	9.59E-15	9.59E-15	9.59E-15	9.44E-15
rb 88	1.00E-14	1.30E-14	1.30E-14	1.30E-14	1.30E-14	8.88E-15
i135	8.79E-15	1.02E-14	1.02E-14	1.02E-14	1.02E-14	8.33E-15

se 76	4.63E-15	5.21E-15	5.80E-15	6.38E-15	6.96E-15	6.96E-15
cd110	1.90E-15	2.32E-15	2.77E-15	3.26E-15	3.78E-15	3.78E-15
sb126	3.01E-15	3.02E-15	3.02E-15	3.02E-15	3.02E-15	3.01E-15
sb124	2.10E-15	2.11E-15	2.11E-15	2.11E-15	2.11E-15	2.10E-15
br 79	8.84E-16	1.12E-15	1.38E-15	1.66E-15	1.98E-15	1.98E-15
in117m	1.95E-15	2.10E-15	2.10E-15	2.10E-15	2.10E-15	1.85E-15
xe128	1.15E-15	1.30E-15	1.45E-15	1.61E-15	1.76E-15	1.76E-15
er166	1.11E-15	1.25E-15	1.39E-15	1.53E-15	1.67E-15	1.67E-15
dy160	8.88E-16	1.02E-15	1.15E-15	1.28E-15	1.41E-15	1.41E-15
xe129	4.87E-16	6.17E-16	7.62E-16	9.22E-16	1.10E-15	1.10E-15
ag107	4.58E-16	5.80E-16	7.16E-16	8.66E-16	1.03E-15	1.03E-15
te134	1.46E-15	5.89E-15	5.89E-15	5.89E-15	5.89E-15	8.72E-16
i130	6.68E-16	7.21E-16	7.22E-16	7.23E-16	7.23E-16	6.52E-16
in117	5.78E-16	6.17E-16	6.17E-16	6.17E-16	6.17E-16	5.49E-16
kr 80	3.34E-16	3.75E-16	4.17E-16	4.59E-16	5.01E-16	5.01E-16
tb160	3.38E-16	3.43E-16	3.48E-16	3.54E-16	3.59E-16	3.59E-16
nb 93	1.09E-16	1.50E-16	2.01E-16	2.62E-16	3.34E-16	3.34E-16
rb 86	2.43E-16	2.44E-16	2.44E-16	2.44E-16	2.44E-16	2.43E-16
dy165	1.43E-16	2.11E-16	2.11E-16	2.11E-16	2.11E-16	1.23E-16
te122	5.08E-17	5.82E-17	6.59E-17	7.39E-17	8.21E-17	8.21E-17
sn116	3.06E-17	3.70E-17	4.40E-17	5.16E-17	5.97E-17	5.97E-17
be 9	2.67E-17	3.00E-17	3.33E-17	3.67E-17	4.00E-17	4.00E-17
pr142	2.62E-17	3.10E-17	3.45E-17	3.80E-17	4.15E-17	3.87E-17
ge 75	4.41E-17	8.69E-17	8.69E-17	8.69E-17	8.69E-17	3.41E-17
te123	2.17E-17	2.46E-17	2.76E-17	3.06E-17	3.36E-17	3.36E-17
cd118	3.79E-17	1.21E-16	1.21E-16	1.21E-16	1.21E-16	2.48E-17
li 7	1.09E-17	1.22E-17	1.36E-17	1.49E-17	1.63E-17	1.63E-17
er167	4.44E-18	5.02E-18	5.59E-18	6.17E-18	6.75E-18	6.75E-18
in119m	1.39E-18	3.02E-17	3.02E-17	3.02E-17	3.02E-17	4.21E-19
cd108	2.22E-19	2.49E-19	2.76E-19	3.07E-19	3.34E-19	3.34E-19
cs134m	1.45E-19	2.29E-19	2.53E-19	2.80E-19	3.07E-19	1.92E-19
cd109	1.68E-19	1.75E-19	1.79E-19	1.82E-19	1.85E-19	1.85E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 26

0 fraction of total absorption rate

power= .00mw, burnup= 9.mwd, flux= 2.74E+08n/cm**2-sec

0

	initial	1643.7 d	1826.3 d	2009.0 d	2191.6 d	2191.7 d
sn114	3.37E-21	3.37E-21	3.37E-21	6.74E-21	6.74E-21	6.74E-21

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 27

power= 4.000E-03mw, burnup=8.7659E+00mwd, flux= 2.74E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	1643.7 d	1826.3 d	2009.0 d	2191.6 d	2191.7 d
h 1	3.48E-07	3.91E-07	4.33E-07	4.76E-07	5.18E-07	5.18E-07
h 2	1.03E-09	1.16E-09	1.28E-09	1.41E-09	1.54E-09	1.54E-09
h 3	6.77E-12	7.50E-12	8.20E-12	8.89E-12	9.56E-12	9.56E-12
h 4	.00E+00	3.05E-35	3.34E-35	3.62E-35	3.89E-35	.00E+00
he 3	7.95E-13	9.96E-13	1.22E-12	1.46E-12	1.72E-12	1.72E-12
he 4	5.75E-08	6.45E-08	7.16E-08	7.86E-08	8.57E-08	8.57E-08
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	6.91E-09	7.75E-09	8.60E-09	9.44E-09	1.03E-08	1.03E-08
ne 21	9.52E-16	1.19E-15	1.45E-15	1.73E-15	2.04E-15	2.04E-15
ne 22	1.75E-11	2.13E-11	2.53E-11	2.95E-11	3.38E-11	3.38E-11
ne 23	7.10E-30	7.04E-15	7.04E-15	7.04E-15	7.04E-15	7.04E-30
na 22	2.77E-11	2.94E-11	3.09E-11	3.22E-11	3.33E-11	3.33E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.87E-08	2.85E-08	2.85E-08	2.85E-08	2.85E-08	2.60E-08
na 24m	5.05E-30	4.68E-15	4.68E-15	4.68E-15	4.68E-15	4.68E-30
na 25	2.41E-43	2.47E-28	2.74E-28	3.02E-28	3.29E-28	3.62E-43

mg 24	5.59E-05	6.19E-05	6.78E-05	7.37E-05	7.97E-05	7.97E-05
mg 25	7.66E-12	8.61E-12	9.56E-12	1.05E-11	1.15E-11	1.15E-11
mg 26	1.03E-09	1.16E-09	1.28E-09	1.41E-09	1.54E-09	1.54E-09
mg 27	4.42E-15	2.10E-12	2.10E-12	2.10E-12	2.10E-12	4.55E-16
mg 28	4.12E-24	4.29E-24	4.29E-24	4.29E-24	4.29E-24	4.03E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	1.08E-21	2.11E-10	2.11E-10	2.11E-10	2.11E-10	2.88E-25
al 29	3.11E-32	2.80E-28	3.42E-28	4.10E-28	4.84E-28	2.53E-33
al 30	.00E+00	2.38E-41	3.24E-41	4.28E-41	5.52E-41	.00E+00
si 28	1.62E-04	1.79E-04	1.96E-04	2.14E-04	2.31E-04	2.31E-04
si 29	8.69E-13	1.09E-12	1.33E-12	1.60E-12	1.88E-12	1.88E-12
si 30	4.90E-21	6.92E-21	9.43E-21	1.25E-20	1.61E-20	1.61E-20
si 31	2.42E-33	4.98E-33	6.78E-33	8.96E-33	1.16E-32	6.95E-33
si 32	2.51E-41	4.00E-41	6.07E-41	8.85E-41	1.25E-40	1.25E-40
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.74E+08	2.74E+08	2.74E+08	2.74E+08	2.74E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 28
power= 4.000E-03mw, burnup=8.7659E+00mwd, flux= 2.74E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	1643.7 d	1826.3 d	2009.0 d	2191.6 d	2191.7 d
he 4	2.16E-04	2.45E-04	2.74E-04	3.03E-04	3.33E-04	3.33E-04
ra222	1.12E-28	1.35E-28	1.61E-28	1.89E-28	2.18E-28	2.18E-28
ra223	1.62E-13	2.05E-13	2.52E-13	3.05E-13	3.62E-13	3.62E-13
ra224	2.23E-14	2.96E-14	3.80E-14	4.73E-14	5.76E-14	5.76E-14
ra225	2.32E-15	2.95E-15	3.66E-15	4.45E-15	5.31E-15	5.31E-15
ra226	1.88E-09	2.38E-09	2.93E-09	3.55E-09	4.22E-09	4.22E-09
ra228	1.75E-15	2.17E-15	2.63E-15	3.13E-15	3.65E-15	3.65E-15
ac225	1.57E-15	2.00E-15	2.47E-15	3.01E-15	3.59E-15	3.59E-15
ac227	1.17E-10	1.47E-10	1.80E-10	2.17E-10	2.57E-10	2.57E-10
ac228	2.13E-19	2.65E-19	3.21E-19	3.81E-19	4.46E-19	4.46E-19
th226	5.46E-27	6.59E-27	7.87E-27	9.22E-27	1.06E-26	1.06E-26
th227	2.61E-13	3.30E-13	4.07E-13	4.91E-13	5.83E-13	5.83E-13
th228	4.25E-12	5.64E-12	7.23E-12	9.00E-12	1.10E-11	1.10E-11
th229	4.51E-10	5.74E-10	7.12E-10	8.65E-10	1.03E-09	1.03E-09
th230	1.02E-04	1.15E-04	1.28E-04	1.41E-04	1.53E-04	1.53E-04
th231	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09
th232	2.07E-05	2.32E-05	2.58E-05	2.84E-05	3.10E-05	3.10E-05
th233	1.38E-17	2.13E-16	2.37E-16	2.61E-16	2.84E-16	7.92E-18
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	2.87E-06	3.23E-06	3.59E-06	3.95E-06	4.31E-06	4.31E-06
pa232	4.79E-14	5.56E-14	6.18E-14	6.80E-14	7.42E-14	7.11E-14
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	5.28E-24	6.39E-24	7.63E-24	8.93E-24	1.03E-23	1.03E-23
u231	4.06E-20	4.56E-20	5.08E-20	5.60E-20	6.12E-20	6.04E-20
u232	4.16E-10	5.07E-10	6.03E-10	7.04E-10	8.09E-10	8.09E-10
u233	5.32E-05	6.00E-05	6.68E-05	7.36E-05	8.05E-05	8.05E-05
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02
u237	3.13E-06	3.11E-06	3.11E-06	3.11E-06	3.11E-06	3.09E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	2.67E-08	3.19E-07	3.19E-07	3.19E-07	3.19E-07	1.06E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.16E-12	8.30E-12	8.40E-12	8.47E-12	8.53E-12	8.53E-12

```
      np236m  2.00E-12  2.06E-12  2.06E-12  2.06E-12  2.06E-12  1.94E-12
      np236   8.06E-10  9.04E-10  1.00E-09  1.10E-09  1.20E-09  1.20E-09
      np237   4.22E+01  4.22E+01  4.22E+01  4.22E+01  4.21E+01  4.21E+01
      np238   1.53E-06  1.56E-06  1.56E-06  1.56E-06  1.56E-06  1.52E-06
      np239   4.60E-05  4.61E-05  4.61E-05  4.61E-05  4.61E-05  4.53E-05
      np240m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      np240   3.69E-15  9.37E-15  9.37E-15  9.37E-15  9.37E-15  2.58E-15
      np241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      pu236   7.06E-10  7.52E-10  7.93E-10  8.30E-10  8.62E-10  8.62E-10
      pu237   7.11E-15  7.92E-15  8.80E-15  9.69E-15  1.06E-14  1.06E-14
      pu238   7.38E-04  8.28E-04  9.18E-04  1.01E-03  1.10E-03  1.10E-03
      pu239   2.05E-02  2.31E-02  2.56E-02  2.81E-02  3.06E-02  3.06E-02
1
      sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page   29
        power= 4.000E-03mw, burnup=8.7659E+00mwd, flux= 2.74E+08n/cm**2-sec
0                                                nuclide concentrations, gram atoms
                                                 basis = single reactor assembly
               charge  1643.7 d  1826.3 d  2009.0 d  2191.6 d  2191.7 d
      pu240   4.05E-07  5.12E-07  6.31E-07  7.63E-07  9.06E-07  9.06E-07
      pu241   1.04E-11  1.47E-11  2.00E-11  2.63E-11  3.39E-11  3.39E-11
      pu242   8.34E-17  1.33E-16  2.01E-16  2.93E-16  4.12E-16  4.12E-16
      pu243   1.47E-25  2.81E-25  4.25E-25  6.19E-25  8.71E-25  6.66E-25
      pu244    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      pu245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
    totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0     flux                2.74E+08  2.74E+08  2.74E+08  2.74E+08  2.74E-07
0         1q array has      20 entries.
0         3q array has       1 entries.
0         3q array has       1 entries.
0         3q array has       1 entries.
0         4q array has       1 entries.
0        54q array has      12 entries.
1library information...

          cross-section data taken from position number  4 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *              prelim lwr origen-s binary working library--id = 1143           *
          *          made from modified card-image origen-s libraries of scale 4.2       *
          *        data from the light element, actinide, and fission product libraries  *
          *          decay data, including gamma and total energy, are from endf/b-vi    *
          *                                                                              *
          *        neutron flux spectrum factors and cross sections were produced from   *
          *       the "presas2" case updating all nuclides on the scale "burnup" library *
```

```
         *                                                                          *
         *                 fission product yields are from endf/b-v                 *
         *                                                                          *
         *              photon libraries use an 18-energy-group structure           *
         *             the photon data are from the master photon data base,        *
         *              produced to include bremsstrahlung from uo2 matrix          *
         *                                                                          *
         *        see information above this box (if present) for later updates    *
         *                                                                          *
         ****************************************************************************
         *                                                                          *
0        ****************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/28/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ****************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   30
        power=    .00mw, burnup=     12.mwd, flux= 2.71E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial       2374.3 d       2556.9 d       2739.5 d       2922.2 d       2922.2 d
     productions   1.134728E+06   1.134732E+06   1.134735E+06   1.134739E+06   1.134743E+06   1.134743E+06
     absorptions   9.244198E+05   9.244260E+05   9.244325E+05   9.244386E+05   9.244447E+05   9.244446E+05
     k infinity    1.227502E+00   1.227498E+00   1.227494E+00   1.227490E+00   1.227486E+00   1.227486E+00
0                   initial       2374.3 d       2556.9 d       2739.5 d       2922.2 d       2922.2 d
     actinide
     absorptions   9.212016E+05   9.212040E+05   9.212063E+05   9.212086E+05   9.212108E+05   9.212108E+05
     non-actinide
     abs. fracs.   3.481328E-03   3.485382E-03   3.489971E-03   3.493965E-03   3.498256E-03   3.498197E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products    page   31
0                                  fraction of total absorption rate
        power=    .00mw, burnup=     12.mwd, flux= 2.71E+08n/cm**2-sec
0                initial  2374.3 d  2556.9 d  2739.5 d  2922.2 d  2922.2 d

     sm149     4.45E-05  4.82E-05  5.19E-05  5.56E-05  5.93E-05  5.93E-05
     sm151     1.84E-06  1.99E-06  2.14E-06  2.29E-06  2.44E-06  2.44E-06
     xe135     2.30E-06  2.33E-06  2.33E-06  2.33E-06  2.33E-06  2.30E-06
     nd143     8.87E-07  9.62E-07  1.04E-06  1.11E-06  1.19E-06  1.19E-06
     gd157     4.55E-07  4.92E-07  5.30E-07  5.67E-07  6.05E-07  6.05E-07
     rh103     4.03E-07  4.37E-07  4.72E-07  5.06E-07  5.40E-07  5.40E-07
     cd113     3.88E-07  4.21E-07  4.53E-07  4.85E-07  5.17E-07  5.17E-07
     xe131     2.80E-07  3.03E-07  3.27E-07  3.50E-07  3.74E-07  3.74E-07
     gd155     2.03E-07  2.33E-07  2.65E-07  2.98E-07  3.32E-07  3.32E-07
     cs133     2.17E-07  2.35E-07  2.54E-07  2.72E-07  2.90E-07  2.90E-07
     pm147     2.15E-07  2.22E-07  2.28E-07  2.34E-07  2.38E-07  2.38E-07
     tc 99     1.60E-07  1.73E-07  1.87E-07  2.00E-07  2.13E-07  2.13E-07
     nd145     1.25E-07  1.35E-07  1.45E-07  1.56E-07  1.66E-07  1.66E-07
     sm147     8.05E-08  9.15E-08  1.03E-07  1.14E-07  1.26E-07  1.26E-07
     eu155     9.32E-08  9.79E-08  1.02E-07  1.06E-07  1.10E-07  1.10E-07
     mo 95     8.07E-08  8.79E-08  9.51E-08  1.02E-07  1.10E-07  1.10E-07
     sm152     6.56E-08  7.11E-08  7.66E-08  8.20E-08  8.75E-08  8.75E-08
     kr 83     5.43E-08  5.88E-08  6.33E-08  6.79E-08  7.24E-08  7.24E-08
     cs135     4.91E-08  5.32E-08  5.73E-08  6.14E-08  6.55E-08  6.55E-08
     eu151     3.17E-08  3.72E-08  4.31E-08  4.94E-08  5.61E-08  5.61E-08
     ru101     3.80E-08  4.12E-08  4.43E-08  4.75E-08  5.07E-08  5.07E-08
```

pr141	3.61E-08	3.92E-08	4.22E-08	4.53E-08	4.84E-08	4.84E-08
eu153	3.33E-08	3.61E-08	3.89E-08	4.17E-08	4.45E-08	4.45E-08
la139	3.02E-08	3.27E-08	3.52E-08	3.77E-08	4.02E-08	4.02E-08
pd105	1.27E-08	1.37E-08	1.48E-08	1.59E-08	1.69E-08	1.69E-08
zr 93	1.22E-08	1.32E-08	1.42E-08	1.52E-08	1.62E-08	1.62E-08
i129	9.33E-09	1.01E-08	1.09E-08	1.17E-08	1.24E-08	1.25E-08
nd144	7.37E-09	8.13E-09	8.88E-09	9.64E-09	1.04E-08	1.04E-08
mo 97	6.83E-09	7.40E-09	7.97E-09	8.54E-09	9.11E-09	9.11E-09
rh105	8.33E-09	8.37E-09	8.37E-09	8.37E-09	8.37E-09	8.33E-09
ag109	4.74E-09	5.13E-09	5.53E-09	5.92E-09	6.31E-09	6.31E-09
zr 91	3.10E-09	3.37E-09	3.64E-09	3.91E-09	4.17E-09	4.17E-09
y 89	2.99E-09	3.25E-09	3.51E-09	3.77E-09	4.03E-09	4.03E-09
ru102	2.78E-09	3.02E-09	3.25E-09	3.48E-09	3.71E-09	3.71E-09
ce142	2.51E-09	2.72E-09	2.93E-09	3.14E-09	3.35E-09	3.35E-09
nd148	2.41E-09	2.61E-09	2.81E-09	3.01E-09	3.21E-09	3.21E-09
sr 90	2.37E-09	2.55E-09	2.73E-09	2.91E-09	3.09E-09	3.09E-09
nd146	2.02E-09	2.19E-09	2.36E-09	2.53E-09	2.70E-09	2.70E-09
pr143	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09
ba138	1.73E-09	1.88E-09	2.02E-09	2.16E-09	2.31E-09	2.31E-09
in115	1.66E-09	1.79E-09	1.93E-09	2.07E-09	2.21E-09	2.21E-09
ce140	1.61E-09	1.74E-09	1.88E-09	2.01E-09	2.15E-09	2.15E-09
pd108	1.61E-09	1.74E-09	1.88E-09	2.01E-09	2.14E-09	2.14E-09
xe133	2.03E-09	2.03E-09	2.03E-09	2.03E-09	2.03E-09	2.03E-09
xe132	1.44E-09	1.56E-09	1.69E-09	1.81E-09	1.93E-09	1.93E-09
ba137	9.58E-10	1.12E-09	1.29E-09	1.48E-09	1.68E-09	1.68E-09
ce141	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09
mo 98	9.96E-10	1.08E-09	1.16E-09	1.25E-09	1.33E-09	1.33E-09
mo100	9.66E-10	1.05E-09	1.13E-09	1.21E-09	1.29E-09	1.29E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 32
0 fraction of total absorption rate
power= .00mw, burnup= 12.mwd, flux= 2.71E+08n/cm**2-sec

0	initial	2374.3 d	2556.9 d	2739.5 d	2922.2 d	2922.2 d
pd107	9.60E-10	1.04E-09	1.12E-09	1.20E-09	1.28E-09	1.28E-09
xe134	9.56E-10	1.04E-09	1.12E-09	1.19E-09	1.27E-09	1.27E-09
zr 92	7.76E-10	8.41E-10	9.06E-10	9.71E-10	1.04E-09	1.04E-09
pm149	9.75E-10	9.82E-10	9.82E-10	9.82E-10	9.82E-10	9.75E-10
nd147	9.27E-10	9.31E-10	9.31E-10	9.31E-10	9.31E-10	9.27E-10
i127	6.16E-10	6.68E-10	7.20E-10	7.72E-10	8.25E-10	8.25E-10
zr 96	6.04E-10	6.55E-10	7.05E-10	7.56E-10	8.06E-10	8.06E-10
ru104	5.94E-10	6.43E-10	6.93E-10	7.42E-10	7.92E-10	7.92E-10
nd150	5.33E-10	5.77E-10	6.22E-10	6.66E-10	7.10E-10	7.10E-10
xe136	5.17E-10	5.60E-10	6.03E-10	6.46E-10	6.89E-10	6.89E-10
cs137	4.89E-10	5.27E-10	5.64E-10	6.01E-10	6.37E-10	6.37E-10
ce144	6.01E-10	6.02E-10	6.03E-10	6.04E-10	6.04E-10	6.04E-10
br 81	3.86E-10	4.19E-10	4.51E-10	4.83E-10	5.15E-10	5.15E-10
sm150	2.81E-10	3.30E-10	3.82E-10	4.38E-10	4.99E-10	4.99E-10
zr 94	3.27E-10	3.54E-10	3.81E-10	4.09E-10	4.36E-10	4.36E-10
rb 85	3.11E-10	3.38E-10	3.65E-10	3.92E-10	4.20E-10	4.20E-10
ru103	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10
cd111	2.51E-10	2.72E-10	2.93E-10	3.14E-10	3.35E-10	3.35E-10
te130	2.35E-10	2.55E-10	2.74E-10	2.94E-10	3.13E-10	3.13E-10
sm154	2.27E-10	2.46E-10	2.65E-10	2.84E-10	3.03E-10	3.03E-10
rb 87	2.18E-10	2.37E-10	2.55E-10	2.73E-10	2.91E-10	2.91E-10
kr 85	1.86E-10	1.98E-10	2.10E-10	2.22E-10	2.33E-10	2.33E-10
se 77	1.56E-10	1.69E-10	1.82E-10	1.95E-10	2.08E-10	2.08E-10
zr 95	1.65E-10	1.65E-10	1.65E-10	1.65E-10	1.65E-10	1.65E-10
nb 95	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10
y 91	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10
kr 84	1.03E-10	1.11E-10	1.20E-10	1.28E-10	1.37E-10	1.37E-10

pd106	8.34E-11	9.24E-11	1.01E-10	1.11E-10	1.20E-10	1.20E-10
se 79	7.99E-11	8.65E-11	9.32E-11	9.98E-11	1.07E-10	1.07E-10
pm151	1.06E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10	1.06E-10
sb121	7.50E-11	8.13E-11	8.75E-11	9.38E-11	1.00E-10	1.00E-10
sb123	6.08E-11	6.59E-11	7.10E-11	7.61E-11	8.12E-11	8.12E-11
kr 86	5.77E-11	6.25E-11	6.73E-11	7.21E-11	7.70E-11	7.70E-11
te128	5.12E-11	5.55E-11	5.97E-11	6.40E-11	6.83E-11	6.83E-11
gd156	3.91E-11	4.24E-11	4.56E-11	4.89E-11	5.22E-11	5.22E-11
se 80	3.72E-11	4.03E-11	4.34E-11	4.65E-11	4.96E-11	4.96E-11
ba140	4.74E-11	4.76E-11	4.76E-11	4.76E-11	4.76E-11	4.74E-11
dy161	3.26E-11	3.53E-11	3.80E-11	4.07E-11	4.34E-11	4.34E-11
zr 90	2.14E-11	2.50E-11	2.89E-11	3.31E-11	3.75E-11	3.75E-11
sm153	3.73E-11	3.82E-11	3.82E-11	3.82E-11	3.82E-11	3.72E-11
eu156	3.42E-11	3.42E-11	3.42E-11	3.42E-11	3.42E-11	3.42E-11
sr 89	3.09E-11	3.10E-11	3.10E-11	3.10E-11	3.10E-11	3.09E-11
tb159	2.18E-11	2.36E-11	2.54E-11	2.72E-11	2.90E-11	2.90E-11
li 6	2.12E-11	2.30E-11	2.47E-11	2.65E-11	2.83E-11	2.83E-11
cd112	2.10E-11	2.27E-11	2.45E-11	2.62E-11	2.80E-11	2.80E-11
ru106	2.48E-11	2.49E-11	2.49E-11	2.50E-11	2.50E-11	2.50E-11
te125	1.55E-11	1.76E-11	1.98E-11	2.21E-11	2.44E-11	2.44E-11
sn117	1.67E-11	1.80E-11	1.94E-11	2.08E-11	2.22E-11	2.22E-11
sn119	1.37E-11	1.49E-11	1.60E-11	1.72E-11	1.83E-11	1.83E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 33
0 fraction of total absorption rate
power= .00mw, burnup= 12.mwd, flux= 2.71E+08n/cm**2-sec
0

	initial	2374.3 d	2556.9 d	2739.5 d	2922.2 d	2922.2 d
ce143	1.70E-11	1.76E-11	1.76E-11	1.76E-11	1.76E-11	1.70E-11
sn115	1.26E-11	1.36E-11	1.47E-11	1.57E-11	1.68E-11	1.68E-11
la140	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11
sr 88	1.06E-11	1.15E-11	1.24E-11	1.32E-11	1.41E-11	1.41E-11
sb125	1.17E-11	1.20E-11	1.24E-11	1.27E-11	1.30E-11	1.29E-11
mo 99	1.29E-11	1.32E-11	1.32E-11	1.32E-11	1.32E-11	1.29E-11
pd110	7.47E-12	8.09E-12	8.71E-12	9.33E-12	9.95E-12	9.95E-12
cd114	7.26E-12	7.86E-12	8.47E-12	9.07E-12	9.68E-12	9.68E-12
se 82	7.19E-12	7.79E-12	8.39E-12	8.99E-12	9.59E-12	9.59E-12
eu154	6.12E-12	6.85E-12	7.61E-12	8.39E-12	9.19E-12	9.19E-12
gd158	6.86E-12	7.44E-12	8.02E-12	8.60E-12	9.18E-12	9.18E-12
pm148m	7.51E-12	7.75E-12	7.98E-12	8.17E-12	8.35E-12	8.34E-12
kr 87	8.22E-12	2.32E-11	2.32E-11	2.32E-11	2.32E-11	8.22E-12
sn126	5.76E-12	6.25E-12	6.73E-12	7.21E-12	7.69E-12	7.69E-12
te127m	7.36E-12	7.36E-12	7.36E-12	7.36E-12	7.36E-12	7.36E-12
se 78	5.44E-12	5.89E-12	6.34E-12	6.80E-12	7.25E-12	7.25E-12
i131	6.77E-12	6.79E-12	6.79E-12	6.79E-12	6.79E-12	6.77E-12
sn124	4.34E-12	4.70E-12	5.07E-12	5.43E-12	5.79E-12	5.79E-12
dy162	4.17E-12	4.51E-12	4.86E-12	5.20E-12	5.55E-12	5.55E-12
dy164	3.80E-12	4.12E-12	4.43E-12	4.75E-12	5.07E-12	5.07E-12
as 75	3.24E-12	3.51E-12	3.78E-12	4.05E-12	4.32E-12	4.32E-12
y 90	2.26E-12	2.43E-12	2.60E-12	2.77E-12	2.94E-12	2.94E-12
sn118	1.77E-12	1.92E-12	2.06E-12	2.21E-12	2.36E-12	2.36E-12
ba136	1.71E-12	1.85E-12	2.00E-12	2.14E-12	2.29E-12	2.29E-12
sn122	1.51E-12	1.64E-12	1.76E-12	1.89E-12	2.01E-12	2.01E-12
cd116	1.51E-12	1.63E-12	1.76E-12	1.88E-12	2.01E-12	2.01E-12
eu152	8.13E-13	1.03E-12	1.27E-12	1.55E-12	1.87E-12	1.87E-12
cs134	1.33E-12	1.46E-12	1.58E-12	1.71E-12	1.84E-12	1.84E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
ru 99	1.07E-12	1.18E-12	1.30E-12	1.41E-12	1.54E-12	1.54E-12
sn120	1.13E-12	1.22E-12	1.31E-12	1.41E-12	1.50E-12	1.50E-12
kr 82	9.49E-13	1.03E-12	1.11E-12	1.19E-12	1.27E-12	1.27E-12
dy163	9.21E-13	9.98E-13	1.07E-12	1.15E-12	1.23E-12	1.23E-12

ge 73	8.85E-13	9.59E-13	1.03E-12	1.11E-12	1.18E-12	1.18E-12
xe130	5.86E-13	6.35E-13	6.84E-13	7.33E-13	7.83E-13	7.83E-13
in113	3.25E-13	3.78E-13	4.35E-13	4.96E-13	5.60E-13	5.60E-13
mo 96	4.14E-13	4.49E-13	4.84E-13	5.19E-13	5.55E-13	5.55E-13
ge 76	3.21E-13	3.48E-13	3.75E-13	4.02E-13	4.28E-13	4.28E-13
pm148	2.90E-13	3.02E-13	3.10E-13	3.18E-13	3.24E-13	3.21E-13
ag111	3.14E-13	3.15E-13	3.15E-13	3.15E-13	3.15E-13	3.14E-13
eu157	2.75E-13	2.97E-13	2.97E-13	2.97E-13	2.97E-13	2.74E-13
gd160	2.02E-13	2.19E-13	2.35E-13	2.52E-13	2.69E-13	2.69E-13
cd115m	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.37E-13
te126	1.56E-13	1.69E-13	1.82E-13	1.95E-13	2.09E-13	2.09E-13
ru100	1.23E-13	1.37E-13	1.51E-13	1.67E-13	1.83E-13	1.83E-13
gd152	4.62E-14	5.88E-14	7.35E-14	9.05E-14	1.10E-13	1.10E-13
sm148	5.41E-14	6.25E-14	7.14E-14	8.07E-14	9.05E-14	9.05E-14
ho165	6.33E-14	6.86E-14	7.39E-14	7.91E-14	8.44E-14	8.44E-14
gd154	4.16E-14	5.02E-14	5.98E-14	7.04E-14	8.20E-14	8.20E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 34
0 fraction of total absorption rate
power= .00mw, burnup= 12.mwd, flux= 2.71E+08n/cm**2-sec
0

	initial	2374.3 d	2556.9 d	2739.5 d	2922.2 d	2922.2 d
cs136	5.53E-14	5.56E-14	5.56E-14	5.56E-14	5.56E-14	5.54E-14
nd142	3.03E-14	3.56E-14	4.13E-14	4.75E-14	5.40E-14	5.40E-14
sr 87	3.69E-14	4.00E-14	4.31E-14	4.62E-14	4.93E-14	4.93E-14
te124	3.61E-14	3.93E-14	4.24E-14	4.56E-14	4.87E-14	4.87E-14
ba135	2.78E-14	3.23E-14	3.71E-14	4.22E-14	4.76E-14	4.76E-14
ba134	2.21E-14	2.62E-14	3.08E-14	3.57E-14	4.10E-14	4.10E-14
pd104	1.90E-14	2.23E-14	2.60E-14	2.99E-14	3.41E-14	3.41E-14
sn125	2.90E-14	2.92E-14	2.92E-14	2.92E-14	2.92E-14	2.90E-14
nb 94	2.09E-14	2.26E-14	2.44E-14	2.61E-14	2.78E-14	2.78E-14
ge 74	1.79E-14	1.94E-14	2.09E-14	2.24E-14	2.39E-14	2.39E-14
ru105	2.25E-14	2.94E-14	2.94E-14	2.94E-14	2.94E-14	2.25E-14
ge 72	1.20E-14	1.30E-14	1.40E-14	1.50E-14	1.60E-14	1.60E-14
sr 86	1.04E-14	1.13E-14	1.22E-14	1.30E-14	1.39E-14	1.39E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.45E-15	9.60E-15	9.60E-15	9.60E-15	9.60E-15	9.45E-15
se 76	6.97E-15	7.56E-15	8.14E-15	8.73E-15	9.31E-15	9.31E-15
rb 88	8.90E-15	1.30E-14	1.30E-14	1.30E-14	1.30E-14	8.90E-15
i135	8.34E-15	1.02E-14	1.02E-14	1.02E-14	1.02E-14	8.35E-15
cd110	3.79E-15	4.35E-15	4.95E-15	5.58E-15	6.25E-15	6.25E-15
br 79	1.98E-15	2.32E-15	2.68E-15	3.08E-15	3.50E-15	3.50E-15
sb126	3.01E-15	3.03E-15	3.03E-15	3.03E-15	3.03E-15	3.02E-15
xe128	1.76E-15	1.92E-15	2.08E-15	2.24E-15	2.40E-15	2.40E-15
er166	1.67E-15	1.81E-15	1.95E-15	2.10E-15	2.24E-15	2.24E-15
sb124	2.10E-15	2.11E-15	2.11E-15	2.11E-15	2.11E-15	2.11E-15
dy160	1.41E-15	1.54E-15	1.68E-15	1.82E-15	1.96E-15	1.96E-15
xe129	1.10E-15	1.29E-15	1.50E-15	1.72E-15	1.95E-15	1.95E-15
in117m	1.85E-15	2.11E-15	2.11E-15	2.11E-15	2.11E-15	1.85E-15
ag107	1.03E-15	1.21E-15	1.40E-15	1.61E-15	1.83E-15	1.83E-15
te134	8.74E-16	5.90E-15	5.90E-15	5.90E-15	5.90E-15	8.74E-16
nb 93	3.34E-16	4.19E-16	5.17E-16	6.29E-16	7.55E-16	7.55E-16
kr 80	5.01E-16	5.43E-16	5.85E-16	6.27E-16	6.69E-16	6.69E-16
i130	6.52E-16	7.25E-16	7.25E-16	7.26E-16	7.26E-16	6.54E-16
in117	5.50E-16	6.19E-16	6.19E-16	6.19E-16	6.19E-16	5.50E-16
tb160	3.59E-16	3.65E-16	3.70E-16	3.75E-16	3.80E-16	3.80E-16
rb 86	2.44E-16	2.45E-16	2.45E-16	2.45E-16	2.45E-16	2.45E-16
dy165	1.23E-16	2.12E-16	2.12E-16	2.12E-16	2.12E-16	1.23E-16
te122	8.20E-17	9.05E-17	9.91E-17	1.08E-16	1.17E-16	1.17E-16
sn116	5.96E-17	6.83E-17	7.76E-17	8.75E-17	9.79E-17	9.79E-17
be 9	3.99E-17	4.32E-17	4.65E-17	4.98E-17	5.32E-17	5.32E-17

pr142	3.87E-17	4.50E-17	4.85E-17	5.20E-17	5.55E-17	5.17E-17
te123	3.36E-17	3.66E-17	3.96E-17	4.26E-17	4.56E-17	4.56E-17
ge 75	3.41E-17	8.71E-17	8.71E-17	8.71E-17	8.71E-17	3.41E-17
cd118	2.48E-17	1.21E-16	1.21E-16	1.21E-16	1.21E-16	2.48E-17
li 7	1.63E-17	1.77E-17	1.90E-17	2.04E-17	2.18E-17	2.18E-17
er167	6.76E-18	7.35E-18	7.94E-18	8.53E-18	9.13E-18	9.13E-18
cd108	3.34E-19	3.61E-19	3.91E-19	4.18E-19	4.49E-19	4.49E-19
in119m	4.22E-19	3.03E-17	3.03E-17	3.03E-17	3.03E-17	4.22E-19
cs134m	1.92E-19	3.31E-19	3.58E-19	3.81E-19	4.08E-19	2.56E-19
cd109	1.86E-19	1.89E-19	1.92E-19	1.92E-19	1.96E-19	1.96E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 35
0 fraction of total absorption rate
power= .00mw, burnup= 12.mwd, flux= 2.71E+08n/cm**2-sec

	initial	2374.3 d	2556.9 d	2739.5 d	2922.2 d	2922.2 d
sn114	6.75E-21	6.75E-21	6.75E-21	6.75E-21	1.01E-20	1.01E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 36
power= 4.000E-03mw, burnup=1.1688E+01mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	2374.3 d	2556.9 d	2739.5 d	2922.2 d	2922.2 d
h 1	5.18E-07	5.61E-07	6.03E-07	6.46E-07	6.89E-07	6.89E-07
h 2	1.54E-09	1.66E-09	1.79E-09	1.92E-09	2.04E-09	2.04E-09
h 3	9.56E-12	1.02E-11	1.08E-11	1.14E-11	1.20E-11	1.20E-11
h 4	.00E+00	4.15E-35	4.41E-35	4.66E-35	4.90E-35	.00E+00
he 3	1.72E-12	1.99E-12	2.29E-12	2.60E-12	2.93E-12	2.93E-12
he 4	8.57E-08	9.27E-08	9.97E-08	1.07E-07	1.14E-07	1.14E-07
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.03E-08	1.11E-08	1.20E-08	1.28E-08	1.37E-08	1.37E-08
ne 21	2.04E-15	2.36E-15	2.71E-15	3.09E-15	3.48E-15	3.48E-15
ne 22	3.38E-11	3.84E-11	4.30E-11	4.77E-11	5.26E-11	5.26E-11
ne 23	7.04E-30	7.03E-15	7.03E-15	7.03E-15	7.03E-15	7.03E-30
na 22	3.33E-11	3.43E-11	3.52E-11	3.60E-11	3.66E-11	3.66E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.60E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.53E-08
na 24m	4.68E-30	4.55E-15	4.55E-15	4.55E-15	4.55E-15	4.55E-30
na 25	3.62E-43	3.55E-28	3.82E-28	4.10E-28	4.37E-28	4.82E-43
mg 24	7.97E-05	8.54E-05	9.12E-05	9.70E-05	1.03E-04	1.03E-04
mg 25	1.15E-11	1.24E-11	1.34E-11	1.44E-11	1.53E-11	1.53E-11
mg 26	1.54E-09	1.66E-09	1.79E-09	1.92E-09	2.04E-09	2.04E-09
mg 27	4.55E-16	2.10E-12	2.10E-12	2.10E-12	2.10E-12	4.54E-16
mg 28	4.03E-24	4.29E-24	4.29E-24	4.29E-24	4.29E-24	4.03E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.88E-25	2.05E-10	2.05E-10	2.05E-10	2.05E-10	2.80E-25
al 29	2.53E-33	5.60E-28	6.44E-28	7.34E-28	8.29E-28	4.34E-33
al 30	.00E+00	6.93E-41	8.60E-41	1.05E-40	1.27E-40	.00E+00
si 28	2.31E-04	2.48E-04	2.64E-04	2.81E-04	2.98E-04	2.98E-04
si 29	1.88E-12	2.19E-12	2.52E-12	2.87E-12	3.25E-12	3.25E-12
si 30	1.61E-20	2.03E-20	2.52E-20	3.08E-20	3.71E-20	3.71E-20
si 31	6.95E-33	1.46E-32	1.81E-32	2.21E-32	2.67E-32	1.61E-32
si 32	1.25E-40	1.71E-40	2.28E-40	2.99E-40	3.85E-40	3.85E-40
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.71E+08	2.71E+08	2.71E+08	2.71E+08	2.71E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 37
power= 4.000E-03mw, burnup=1.1688E+01mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	2374.3 d	2556.9 d	2739.5 d	2922.2 d	2922.2 d

he 4	3.33E-04	3.64E-04	3.94E-04	4.25E-04	4.57E-04	4.57E-04
pb206	1.19E-13	1.67E-13	2.28E-13	3.05E-13	4.00E-13	4.00E-13
pb207	1.73E-11	2.20E-11	2.74E-11	3.37E-11	4.08E-11	4.08E-11
pb208	7.06E-12	9.23E-12	1.18E-11	1.48E-11	1.82E-11	1.82E-11
pb209	4.90E-17	5.72E-17	6.65E-17	7.65E-17	8.72E-17	8.78E-17
pb210	3.48E-12	4.41E-12	5.49E-12	6.73E-12	8.14E-12	8.14E-12
pb211	7.93E-16	9.28E-16	1.07E-15	1.23E-15	1.39E-15	1.39E-15
pb212	6.97E-15	8.32E-15	9.76E-15	1.13E-14	1.29E-14	1.29E-14
pb214	1.30E-16	1.58E-16	1.83E-16	2.10E-16	2.39E-16	2.32E-16
ra222	2.18E-28	2.46E-28	2.77E-28	3.08E-28	3.40E-28	3.40E-28
ra223	3.62E-13	4.23E-13	4.89E-13	5.59E-13	6.34E-13	6.34E-13
ra224	5.76E-14	6.87E-14	8.06E-14	9.33E-14	1.07E-13	1.07E-13
ra225	5.31E-15	6.25E-15	7.27E-15	8.36E-15	9.53E-15	9.53E-15
ra226	4.22E-09	4.96E-09	5.75E-09	6.60E-09	7.51E-09	7.51E-09
ra228	3.65E-15	4.21E-15	4.80E-15	5.42E-15	6.06E-15	6.06E-15
ac225	3.59E-15	4.22E-15	4.91E-15	5.65E-15	6.44E-15	6.44E-15
ac227	2.57E-10	3.00E-10	3.46E-10	3.96E-10	4.48E-10	4.48E-10
ac228	4.46E-19	5.14E-19	5.86E-19	6.61E-19	7.39E-19	7.39E-19
th226	1.06E-26	1.20E-26	1.35E-26	1.50E-26	1.66E-26	1.66E-26
th227	5.83E-13	6.82E-13	7.88E-13	9.01E-13	1.02E-12	1.02E-12
th228	1.10E-11	1.31E-11	1.53E-11	1.77E-11	2.03E-11	2.03E-11
th229	1.03E-09	1.22E-09	1.41E-09	1.62E-09	1.85E-09	1.85E-09
th230	1.53E-04	1.66E-04	1.79E-04	1.92E-04	2.04E-04	2.04E-04
th231	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09
th232	3.10E-05	3.36E-05	3.61E-05	3.87E-05	4.13E-05	4.13E-05
th233	7.92E-18	3.08E-16	3.31E-16	3.55E-16	3.79E-16	1.05E-17
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	4.31E-06	4.67E-06	5.03E-06	5.39E-06	5.75E-06	5.75E-06
pa232	7.11E-14	8.03E-14	8.65E-14	9.27E-14	9.89E-14	9.48E-14
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.03E-23	1.16E-23	1.31E-23	1.46E-23	1.61E-23	1.60E-23
u231	6.04E-20	6.60E-20	7.12E-20	7.64E-20	8.16E-20	8.05E-20
u232	8.09E-10	9.18E-10	1.03E-09	1.15E-09	1.26E-09	1.26E-09
u233	8.05E-05	8.73E-05	9.41E-05	1.01E-04	1.08E-04	1.08E-04
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02
u237	3.09E-06	3.10E-06	3.10E-06	3.10E-06	3.10E-06	3.07E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.06E-08	3.18E-07	3.18E-07	3.18E-07	3.18E-07	1.06E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.53E-12	8.55E-12	8.57E-12	8.58E-12	8.59E-12	8.59E-12
np236m	1.94E-12	2.05E-12	2.05E-12	2.05E-12	2.05E-12	1.93E-12
np236	1.20E-09	1.29E-09	1.39E-09	1.49E-09	1.59E-09	1.59E-09
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.52E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.51E-06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 38
power= 4.000E-03mw, burnup=1.1688E+01mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	2374.3 d	2556.9 d	2739.5 d	2922.2 d	2922.2 d
np239	4.53E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.51E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.58E-15	9.33E-15	9.33E-15	9.33E-15	9.33E-15	2.57E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

```
     pu236   8.62E-10  8.90E-10  9.15E-10  9.37E-10  9.57E-10  9.57E-10
     pu237   1.06E-14  1.14E-14  1.23E-14  1.31E-14  1.40E-14  1.40E-14
     pu238   1.10E-03  1.18E-03  1.27E-03  1.36E-03  1.45E-03  1.45E-03
     pu239   3.06E-02  3.31E-02  3.56E-02  3.82E-02  4.07E-02  4.07E-02
     pu240   9.06E-07  1.06E-06  1.23E-06  1.41E-06  1.60E-06  1.60E-06
     pu241   3.39E-11  4.28E-11  5.30E-11  6.47E-11  7.79E-11  7.79E-11
     pu242   4.12E-16  5.64E-16  7.55E-16  9.90E-16  1.27E-15  1.27E-15
     pu243   6.66E-25  1.19E-24  1.59E-24  2.08E-24  2.68E-24  2.05E-24
     pu244    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.71E+08  2.71E+08  2.71E+08  2.71E+08  2.71E-07
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number  1 of library on unit 15.

          pass   5
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *          made from modified card-image origen-s libraries of scale 4.2       *
          *      data from the light element, actinide, and fission product libraries    *
          *        decay data, including gamma and total energy, are from endf/b-vi      *
          *                                                                              *
          *      neutron flux spectrum factors and cross sections were produced from     *
          *     the "presas2" case updating all nuclides on the scale "burnup" library   *
          *                                                                              *
          *                  fission product yields are from endf/b-v                    *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *        see information above this box (if present) for later updates         *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                   .other identification and sizes of library.
```

```
0                    data set name:  ft15f001
0                 8/28/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
                        879    number of fission product nuclides
0                      7993    number of nonzero off-diagonal matrix elements
0        ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   39
        power=    .00mw, burnup=     15.mwd, flux= 2.70E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial       3104.9 d       3287.5 d       3470.1 d       3652.7 d
     productions   1.138387E+06   1.138390E+06   1.138394E+06   1.138398E+06   1.138402E+06
     absorptions   9.269936E+05   9.269998E+05   9.270060E+05   9.270122E+05   9.270183E+05
     k infinity    1.228041E+00   1.228037E+00   1.228033E+00   1.228029E+00   1.228025E+00
0                    initial       3104.9 d       3287.5 d       3470.1 d       3652.7 d
     actinide
     absorptions   9.237744E+05   9.237767E+05   9.237790E+05   9.237813E+05   9.237836E+05
     non-actinide
     abs. fracs.   3.472745E-03   3.476918E-03   3.481090E-03   3.485322E-03   3.489256E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              fission products        page   40
0                                   fraction of total absorption rate
        power=    .00mw, burnup=     15.mwd, flux= 2.70E+08n/cm**2-sec
0                 initial  3104.9 d  3287.5 d  3470.1 d  3652.7 d

     sm149     5.94E-05  6.31E-05  6.67E-05  7.04E-05  7.41E-05
     sm151     2.44E-06  2.59E-06  2.73E-06  2.88E-06  3.03E-06
     xe135     2.30E-06  2.34E-06  2.34E-06  2.34E-06  2.34E-06
     nd143     1.19E-06  1.26E-06  1.34E-06  1.41E-06  1.49E-06
     gd157     6.05E-07  6.42E-07  6.80E-07  7.17E-07  7.54E-07
     rh103     5.40E-07  5.75E-07  6.09E-07  6.44E-07  6.78E-07
     cd113     5.18E-07  5.50E-07  5.82E-07  6.14E-07  6.47E-07
     gd155     3.32E-07  3.68E-07  4.04E-07  4.41E-07  4.80E-07
     xe131     3.74E-07  3.97E-07  4.20E-07  4.44E-07  4.67E-07
     cs133     2.90E-07  3.08E-07  3.26E-07  3.44E-07  3.63E-07
     tc 99     2.13E-07  2.27E-07  2.40E-07  2.53E-07  2.67E-07
     pm147     2.38E-07  2.42E-07  2.46E-07  2.49E-07  2.52E-07
     nd145     1.66E-07  1.77E-07  1.87E-07  1.97E-07  2.08E-07
     sm147     1.26E-07  1.38E-07  1.50E-07  1.63E-07  1.75E-07
     mo 95     1.09E-07  1.17E-07  1.24E-07  1.31E-07  1.38E-07
     eu155     1.10E-07  1.13E-07  1.16E-07  1.19E-07  1.22E-07
     sm152     8.75E-08  9.29E-08  9.84E-08  1.04E-07  1.09E-07
     kr 83     7.24E-08  7.69E-08  8.15E-08  8.60E-08  9.05E-08
     eu151     5.61E-08  6.33E-08  7.09E-08  7.89E-08  8.73E-08
     cs135     6.55E-08  6.96E-08  7.37E-08  7.78E-08  8.19E-08
     ru101     5.06E-08  5.38E-08  5.70E-08  6.01E-08  6.33E-08
     pr141     4.84E-08  5.15E-08  5.45E-08  5.76E-08  6.07E-08
     eu153     4.45E-08  4.72E-08  5.00E-08  5.28E-08  5.56E-08
     la139     4.02E-08  4.27E-08  4.53E-08  4.78E-08  5.03E-08
     pd105     1.69E-08  1.80E-08  1.90E-08  2.01E-08  2.11E-08
     zr 93     1.62E-08  1.72E-08  1.82E-08  1.93E-08  2.03E-08
      i129     1.25E-08  1.32E-08  1.40E-08  1.48E-08  1.56E-08
     nd144     1.04E-08  1.12E-08  1.19E-08  1.27E-08  1.34E-08
     mo 97     9.11E-09  9.68E-09  1.02E-08  1.08E-08  1.14E-08
     rh105     8.34E-09  8.37E-09  8.37E-09  8.37E-09  8.37E-09
     ag109     6.31E-09  6.71E-09  7.10E-09  7.49E-09  7.89E-09
     zr 91     4.18E-09  4.44E-09  4.71E-09  4.98E-09  5.25E-09
      y 89     4.03E-09  4.29E-09  4.54E-09  4.80E-09  5.06E-09
     ru102     3.71E-09  3.95E-09  4.18E-09  4.41E-09  4.64E-09
```

ce142	3.35E-09	3.56E-09	3.77E-09	3.98E-09	4.19E-09
nd148	3.21E-09	3.41E-09	3.62E-09	3.82E-09	4.02E-09
sr 90	3.09E-09	3.26E-09	3.43E-09	3.60E-09	3.77E-09
nd146	2.70E-09	2.87E-09	3.04E-09	3.21E-09	3.38E-09
ba138	2.31E-09	2.45E-09	2.60E-09	2.74E-09	2.89E-09
in115	2.21E-09	2.35E-09	2.49E-09	2.62E-09	2.76E-09
ce140	2.15E-09	2.28E-09	2.42E-09	2.55E-09	2.69E-09
pr143	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09
pd108	2.14E-09	2.28E-09	2.41E-09	2.54E-09	2.68E-09
ba137	1.68E-09	1.89E-09	2.11E-09	2.34E-09	2.58E-09
xe132	1.93E-09	2.05E-09	2.17E-09	2.29E-09	2.41E-09
xe133	2.03E-09	2.03E-09	2.03E-09	2.03E-09	2.03E-09
mo 98	1.33E-09	1.41E-09	1.49E-09	1.58E-09	1.66E-09
mo100	1.29E-09	1.37E-09	1.45E-09	1.53E-09	1.61E-09
ce141	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 41
0 fraction of total absorption rate
power= .00mw, burnup= 15.mwd, flux= 2.70E+08n/cm**2-sec
0 initial 3104.9 d 3287.5 d 3470.1 d 3652.7 d

pd107	1.28E-09	1.36E-09	1.44E-09	1.52E-09	1.60E-09
xe134	1.28E-09	1.35E-09	1.43E-09	1.51E-09	1.59E-09
zr 92	1.04E-09	1.10E-09	1.17E-09	1.23E-09	1.29E-09
i127	8.24E-10	8.76E-10	9.29E-10	9.81E-10	1.03E-09
zr 96	8.05E-10	8.56E-10	9.06E-10	9.56E-10	1.01E-09
ru104	7.92E-10	8.41E-10	8.91E-10	9.40E-10	9.90E-10
pm149	9.75E-10	9.82E-10	9.82E-10	9.82E-10	9.82E-10
nd147	9.27E-10	9.31E-10	9.31E-10	9.31E-10	9.31E-10
nd150	7.10E-10	7.55E-10	7.99E-10	8.44E-10	8.88E-10
xe136	6.89E-10	7.32E-10	7.75E-10	8.18E-10	8.62E-10
cs137	6.37E-10	6.73E-10	7.09E-10	7.44E-10	7.79E-10
sm150	4.99E-10	5.63E-10	6.31E-10	7.03E-10	7.78E-10
br 81	5.15E-10	5.47E-10	5.80E-10	6.12E-10	6.44E-10
ce144	6.04E-10	6.04E-10	6.04E-10	6.04E-10	6.04E-10
zr 94	4.36E-10	4.63E-10	4.90E-10	5.17E-10	5.45E-10
rb 85	4.20E-10	4.47E-10	4.75E-10	5.03E-10	5.31E-10
cd111	3.35E-10	3.56E-10	3.77E-10	3.98E-10	4.19E-10
te130	3.13E-10	3.33E-10	3.53E-10	3.72E-10	3.92E-10
sm154	3.03E-10	3.22E-10	3.41E-10	3.60E-10	3.79E-10
rb 87	2.91E-10	3.09E-10	3.28E-10	3.46E-10	3.64E-10
ru103	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10
kr 85	2.33E-10	2.44E-10	2.55E-10	2.65E-10	2.75E-10
se 77	2.08E-10	2.21E-10	2.34E-10	2.47E-10	2.60E-10
kr 84	1.37E-10	1.46E-10	1.54E-10	1.63E-10	1.71E-10
zr 95	1.65E-10	1.65E-10	1.65E-10	1.65E-10	1.65E-10
pd106	1.20E-10	1.29E-10	1.38E-10	1.47E-10	1.56E-10
nb 95	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10
y 91	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10
se 79	1.07E-10	1.13E-10	1.20E-10	1.27E-10	1.33E-10
sb121	1.00E-10	1.06E-10	1.12E-10	1.19E-10	1.25E-10
pm151	1.06E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10
sb123	8.12E-11	8.63E-11	9.14E-11	9.65E-11	1.02E-10
kr 86	7.70E-11	8.18E-11	8.66E-11	9.14E-11	9.62E-11
te128	6.83E-11	7.25E-11	7.68E-11	8.11E-11	8.53E-11
gd156	5.22E-11	5.55E-11	5.88E-11	6.21E-11	6.54E-11
se 80	4.96E-11	5.28E-11	5.59E-11	5.90E-11	6.21E-11
zr 90	3.75E-11	4.22E-11	4.71E-11	5.23E-11	5.77E-11
dy161	4.34E-11	4.61E-11	4.88E-11	5.16E-11	5.43E-11
ba140	4.74E-11	4.76E-11	4.76E-11	4.76E-11	4.76E-11
sm153	3.73E-11	3.83E-11	3.83E-11	3.83E-11	3.83E-11

tb159	2.90E-11	3.08E-11	3.27E-11	3.45E-11	3.63E-11
li 6	2.83E-11	3.00E-11	3.18E-11	3.36E-11	3.53E-11
cd112	2.80E-11	2.98E-11	3.15E-11	3.32E-11	3.50E-11
eu156	3.42E-11	3.42E-11	3.42E-11	3.42E-11	3.42E-11
te125	2.44E-11	2.67E-11	2.91E-11	3.16E-11	3.40E-11
sr 89	3.10E-11	3.10E-11	3.10E-11	3.10E-11	3.10E-11
sn117	2.22E-11	2.36E-11	2.50E-11	2.64E-11	2.78E-11
ru106	2.50E-11	2.51E-11	2.51E-11	2.51E-11	2.51E-11
kr 87	8.22E-12	2.32E-11	2.32E-11	2.32E-11	2.32E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 42

0 fraction of total absorption rate

power= .00mw, burnup= 15.mwd, flux= 2.70E+08n/cm**2-sec

0	initial	3104.9 d	3287.5 d	3470.1 d	3652.7 d
sn119	1.83E-11	1.95E-11	2.06E-11	2.18E-11	2.29E-11
sn115	1.68E-11	1.78E-11	1.89E-11	1.99E-11	2.10E-11
sr 88	1.41E-11	1.50E-11	1.59E-11	1.68E-11	1.77E-11
ce143	1.70E-11	1.76E-11	1.76E-11	1.76E-11	1.76E-11
la140	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11
sb125	1.29E-11	1.32E-11	1.34E-11	1.36E-11	1.37E-11
mo 99	1.29E-11	1.32E-11	1.32E-11	1.32E-11	1.32E-11
eu154	9.20E-12	1.00E-11	1.09E-11	1.18E-11	1.27E-11
pd110	9.95E-12	1.06E-11	1.12E-11	1.18E-11	1.24E-11
cd114	9.68E-12	1.03E-11	1.09E-11	1.15E-11	1.21E-11
se 82	9.60E-12	1.02E-11	1.08E-11	1.14E-11	1.20E-11
gd158	9.18E-12	9.77E-12	1.04E-11	1.09E-11	1.15E-11
sn126	7.69E-12	8.17E-12	8.65E-12	9.14E-12	9.62E-12
se 78	7.25E-12	7.70E-12	8.16E-12	8.61E-12	9.06E-12
pm148m	8.34E-12	8.49E-12	8.63E-12	8.74E-12	8.84E-12
te127m	7.37E-12	7.36E-12	7.37E-12	7.37E-12	7.37E-12
sn124	5.79E-12	6.15E-12	6.51E-12	6.87E-12	7.23E-12
dy162	5.55E-12	5.90E-12	6.24E-12	6.59E-12	6.93E-12
i131	6.77E-12	6.79E-12	6.79E-12	6.79E-12	6.79E-12
dy164	5.07E-12	5.39E-12	5.70E-12	6.02E-12	6.34E-12
as 75	4.32E-12	4.59E-12	4.86E-12	5.13E-12	5.40E-12
y 90	2.94E-12	3.10E-12	3.27E-12	3.43E-12	3.59E-12
eu152	1.87E-12	2.22E-12	2.62E-12	3.06E-12	3.54E-12
sn118	2.36E-12	2.50E-12	2.65E-12	2.80E-12	2.95E-12
ba136	2.29E-12	2.43E-12	2.57E-12	2.72E-12	2.86E-12
sn122	2.01E-12	2.14E-12	2.26E-12	2.39E-12	2.52E-12
cd116	2.01E-12	2.13E-12	2.26E-12	2.38E-12	2.51E-12
cs134	1.85E-12	1.98E-12	2.11E-12	2.24E-12	2.37E-12
ru 99	1.54E-12	1.66E-12	1.79E-12	1.92E-12	2.06E-12
sn120	1.50E-12	1.60E-12	1.69E-12	1.78E-12	1.88E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
kr 82	1.27E-12	1.35E-12	1.43E-12	1.51E-12	1.59E-12
dy163	1.23E-12	1.30E-12	1.38E-12	1.46E-12	1.53E-12
ge 73	1.18E-12	1.25E-12	1.33E-12	1.40E-12	1.48E-12
xe130	7.83E-13	8.33E-13	8.82E-13	9.32E-13	9.81E-13
in113	5.60E-13	6.27E-13	6.98E-13	7.71E-13	8.48E-13
mo 96	5.55E-13	5.90E-13	6.26E-13	6.62E-13	6.97E-13
ge 76	4.29E-13	4.55E-13	4.82E-13	5.09E-13	5.36E-13
pm148	3.21E-13	3.29E-13	3.34E-13	3.38E-13	3.42E-13
gd160	2.69E-13	2.86E-13	3.02E-13	3.19E-13	3.36E-13
ag111	3.14E-13	3.15E-13	3.15E-13	3.15E-13	3.15E-13
eu157	2.75E-13	2.97E-13	2.97E-13	2.97E-13	2.97E-13
te126	2.09E-13	2.22E-13	2.35E-13	2.48E-13	2.61E-13
ru100	1.83E-13	1.99E-13	2.16E-13	2.34E-13	2.52E-13
cd115m	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.37E-13
gd152	1.10E-13	1.32E-13	1.57E-13	1.85E-13	2.16E-13

gd154	8.21E-14	9.48E-14	1.09E-13	1.24E-13	1.40E-13
sm148	9.06E-14	1.01E-13	1.12E-13	1.23E-13	1.34E-13
ho165	8.44E-14	8.97E-14	9.50E-14	1.00E-13	1.06E-13

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 43
0 fraction of total absorption rate
power= .00mw, burnup= 15.mwd, flux= 2.70E+08n/cm**2-sec

0	initial	3104.9 d	3287.5 d	3470.1 d	3652.7 d
nd142	5.41E-14	6.11E-14	6.85E-14	7.64E-14	8.46E-14
ba135	4.76E-14	5.34E-14	5.95E-14	6.60E-14	7.28E-14
ba134	4.10E-14	4.67E-14	5.28E-14	5.93E-14	6.62E-14
sr 87	4.93E-14	5.24E-14	5.54E-14	5.85E-14	6.16E-14
te124	4.87E-14	5.19E-14	5.50E-14	5.81E-14	6.13E-14
cs136	5.54E-14	5.56E-14	5.56E-14	5.57E-14	5.57E-14
pd104	3.41E-14	3.85E-14	4.32E-14	4.82E-14	5.35E-14
nb 94	2.78E-14	2.96E-14	3.13E-14	3.31E-14	3.48E-14
ge 74	2.39E-14	2.54E-14	2.69E-14	2.84E-14	2.99E-14
ru105	2.25E-14	2.94E-14	2.94E-14	2.94E-14	2.94E-14
sn125	2.90E-14	2.92E-14	2.92E-14	2.92E-14	2.92E-14
ge 72	1.60E-14	1.70E-14	1.80E-14	1.90E-14	2.00E-14
sr 86	1.39E-14	1.48E-14	1.57E-14	1.66E-14	1.75E-14
rb 88	8.90E-15	1.30E-14	1.30E-14	1.30E-14	1.30E-14
se 76	9.32E-15	9.90E-15	1.05E-14	1.11E-14	1.17E-14
i135	8.35E-15	1.02E-14	1.02E-14	1.02E-14	1.02E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.45E-15	9.61E-15	9.61E-15	9.61E-15	9.61E-15
cd110	6.25E-15	6.96E-15	7.70E-15	8.47E-15	9.29E-15
te134	8.74E-16	5.90E-15	5.90E-15	5.90E-15	5.90E-15
br 79	3.50E-15	3.95E-15	4.43E-15	4.93E-15	5.46E-15
xe128	2.40E-15	2.56E-15	2.73E-15	2.89E-15	3.06E-15
xe129	1.95E-15	2.21E-15	2.47E-15	2.76E-15	3.05E-15
sb126	3.02E-15	3.03E-15	3.03E-15	3.03E-15	3.03E-15
ag107	1.83E-15	2.07E-15	2.32E-15	2.58E-15	2.86E-15
er166	2.24E-15	2.38E-15	2.52E-15	2.67E-15	2.81E-15
dy160	1.96E-15	2.11E-15	2.25E-15	2.40E-15	2.55E-15
sb124	2.11E-15	2.11E-15	2.11E-15	2.11E-15	2.11E-15
in117m	1.85E-15	2.11E-15	2.11E-15	2.11E-15	2.11E-15
nb 93	7.56E-16	8.98E-16	1.06E-15	1.23E-15	1.43E-15
kr 80	6.69E-16	7.11E-16	7.53E-16	7.95E-16	8.37E-16
i130	6.55E-16	7.27E-16	7.28E-16	7.29E-16	7.29E-16
in117	5.50E-16	6.19E-16	6.19E-16	6.19E-16	6.19E-16
tb160	3.80E-16	3.85E-16	3.90E-16	3.96E-16	4.01E-16
rb 86	2.45E-16	2.46E-16	2.46E-16	2.46E-16	2.46E-16
dy165	1.23E-16	2.12E-16	2.12E-16	2.13E-16	2.13E-16
te122	1.17E-16	1.27E-16	1.36E-16	1.46E-16	1.56E-16
sn116	9.79E-17	1.09E-16	1.20E-16	1.33E-16	1.45E-16
cd118	2.48E-17	1.21E-16	1.21E-16	1.21E-16	1.21E-16
ge 75	3.42E-17	8.72E-17	8.72E-17	8.72E-17	8.72E-17
pr142	5.17E-17	5.90E-17	6.24E-17	6.59E-17	6.94E-17
be 9	5.31E-17	5.64E-17	5.98E-17	6.31E-17	6.64E-17
te123	4.56E-17	4.86E-17	5.16E-17	5.46E-17	5.76E-17
in119m	4.22E-19	3.03E-17	3.03E-17	3.03E-17	3.03E-17
li 7	2.18E-17	2.31E-17	2.45E-17	2.59E-17	2.72E-17
er167	9.13E-18	9.74E-18	1.03E-17	1.09E-17	1.16E-17
in119	1.62E-21	2.37E-18	2.37E-18	2.37E-18	2.37E-18
cd108	4.48E-19	4.77E-19	5.06E-19	5.35E-19	5.63E-19
cs134m	2.58E-19	4.33E-19	4.58E-19	4.84E-19	5.09E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 44
0 fraction of total absorption rate
power= .00mw, burnup= 15.mwd, flux= 2.70E+08n/cm**2-sec

	initial	3104.9 d	3287.5 d	3470.1 d	3652.7 d
cd109	1.95E-19	1.96E-19	1.98E-19	1.99E-19	2.00E-19
sn114	8.58E-21	9.40E-21	1.03E-20	1.12E-20	1.22E-20
ag110	2.03E-23	9.36E-21	9.88E-21	1.04E-20	1.09E-20
in120	.00E+00	3.98E-22	3.98E-22	3.98E-22	3.98E-22
in120m	.00E+00	4.28E-23	4.28E-23	4.28E-23	4.29E-23

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 45
power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec

nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	3104.9 d	3287.5 d	3470.1 d	3652.7 d
h 1	6.89E-07	7.31E-07	7.74E-07	8.16E-07	8.59E-07
h 2	2.04E-09	2.17E-09	2.29E-09	2.42E-09	2.55E-09
h 3	1.20E-11	1.26E-11	1.32E-11	1.37E-11	1.43E-11
h 4	.00E+00	5.14E-35	5.37E-35	5.59E-35	5.81E-35
he 3	2.93E-12	3.28E-12	3.64E-12	4.02E-12	4.41E-12
he 4	1.14E-07	1.21E-07	1.28E-07	1.35E-07	1.42E-07
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.37E-08	1.45E-08	1.54E-08	1.62E-08	1.70E-08
ne 21	3.48E-15	3.90E-15	4.35E-15	4.81E-15	5.30E-15
ne 22	5.26E-11	5.75E-11	6.25E-11	6.75E-11	7.27E-11
ne 23	7.03E-30	7.03E-15	7.03E-15	7.03E-15	7.03E-15
na 22	3.66E-11	3.72E-11	3.77E-11	3.82E-11	3.86E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.53E-08	2.74E-08	2.74E-08	2.74E-08	2.74E-08
na 24m	4.55E-30	4.51E-15	4.51E-15	4.51E-15	4.51E-15
na 25	4.82E-43	4.64E-28	4.92E-28	5.19E-28	5.47E-28
mg 24	1.03E-04	1.08E-04	1.14E-04	1.20E-04	1.26E-04
mg 25	1.53E-11	1.63E-11	1.73E-11	1.82E-11	1.92E-11
mg 26	2.04E-09	2.17E-09	2.29E-09	2.42E-09	2.55E-09
mg 27	4.54E-16	2.10E-12	2.10E-12	2.10E-12	2.10E-12
mg 28	4.03E-24	4.29E-24	4.29E-24	4.29E-24	4.29E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.80E-25	2.03E-10	2.03E-10	2.03E-10	2.03E-10
al 29	4.34E-33	9.29E-28	1.03E-27	1.15E-27	1.26E-27
al 30	.00E+00	1.51E-40	1.78E-40	2.08E-40	2.42E-40
si 28	2.98E-04	3.14E-04	3.31E-04	3.47E-04	3.64E-04
si 29	3.25E-12	3.64E-12	4.06E-12	4.49E-12	4.95E-12
si 30	3.71E-20	4.43E-20	5.23E-20	6.12E-20	7.10E-20
si 31	1.61E-32	3.18E-32	3.76E-32	4.40E-32	5.10E-32
si 32	3.85E-40	4.89E-40	6.11E-40	7.55E-40	9.22E-40
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
flux		2.70E+08	2.70E+08	2.70E+08	2.70E+08

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 46
power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec

nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	3104.9 d	3287.5 d	3470.1 d	3652.7 d
he 4	4.57E-04	4.89E-04	5.21E-04	5.54E-04	5.87E-04
pb206	4.00E-13	5.15E-13	6.53E-13	8.18E-13	1.01E-12
pb207	4.08E-11	4.89E-11	5.79E-11	6.79E-11	7.90E-11
pb208	1.82E-11	2.22E-11	2.66E-11	3.15E-11	3.69E-11
pb209	8.78E-17	9.86E-17	1.11E-16	1.24E-16	1.37E-16
pb210	8.14E-12	9.72E-12	1.15E-11	1.35E-11	1.57E-11
pb211	1.39E-15	1.56E-15	1.75E-15	1.94E-15	2.14E-15
pb212	1.29E-14	1.46E-14	1.64E-14	1.82E-14	2.01E-14
pb214	2.32E-16	2.70E-16	3.03E-16	3.37E-16	3.73E-16

ra222	3.40E-28	3.72E-28	4.05E-28	4.39E-28	4.73E-28
ra223	6.34E-13	7.13E-13	7.96E-13	8.83E-13	9.74E-13
ra224	1.07E-13	1.21E-13	1.35E-13	1.50E-13	1.66E-13
ra225	9.53E-15	1.08E-14	1.21E-14	1.35E-14	1.50E-14
ra226	7.51E-09	8.48E-09	9.50E-09	1.06E-08	1.17E-08
ra228	6.06E-15	6.72E-15	7.41E-15	8.12E-15	8.85E-15
ac225	6.44E-15	7.28E-15	8.17E-15	9.12E-15	1.01E-14
ac227	4.48E-10	5.03E-10	5.61E-10	6.22E-10	6.86E-10
ac228	7.39E-19	8.21E-19	9.05E-19	9.91E-19	1.08E-18
th226	1.66E-26	1.82E-26	1.98E-26	2.14E-26	2.31E-26
th227	1.02E-12	1.15E-12	1.28E-12	1.42E-12	1.57E-12
th228	2.03E-11	2.29E-11	2.57E-11	2.86E-11	3.15E-11
th229	1.85E-09	2.09E-09	2.35E-09	2.62E-09	2.91E-09
th230	2.04E-04	2.17E-04	2.30E-04	2.43E-04	2.55E-04
th231	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09
th232	4.13E-05	4.39E-05	4.65E-05	4.91E-05	5.16E-05
th233	1.05E-17	4.02E-16	4.26E-16	4.50E-16	4.73E-16
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	5.75E-06	6.11E-06	6.47E-06	6.83E-06	7.19E-06
pa232	9.48E-14	1.05E-13	1.11E-13	1.17E-13	1.24E-13
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.60E-23	1.76E-23	1.92E-23	2.08E-23	2.24E-23
u231	8.05E-20	8.66E-20	9.18E-20	9.69E-20	1.02E-19
u232	1.26E-09	1.38E-09	1.50E-09	1.63E-09	1.75E-09
u233	1.08E-04	1.15E-04	1.21E-04	1.28E-04	1.35E-04
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02
u237	3.07E-06	3.09E-06	3.09E-06	3.09E-06	3.09E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.06E-08	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.59E-12	8.60E-12	8.60E-12	8.60E-12	8.60E-12
np236m	1.93E-12	2.05E-12	2.05E-12	2.05E-12	2.05E-12
np236	1.59E-09	1.68E-09	1.78E-09	1.88E-09	1.97E-09
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.51E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 47
power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	3104.9 d	3287.5 d	3470.1 d	3652.7 d
np239	4.51E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.57E-15	9.32E-15	9.32E-15	9.32E-15	9.32E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	9.57E-10	9.74E-10	9.89E-10	1.00E-09	1.01E-09
pu237	1.40E-14	1.48E-14	1.57E-14	1.65E-14	1.74E-14
pu238	1.45E-03	1.53E-03	1.62E-03	1.71E-03	1.79E-03
pu239	4.07E-02	4.32E-02	4.57E-02	4.82E-02	5.07E-02
pu240	1.60E-06	1.81E-06	2.03E-06	2.26E-06	2.50E-06
pu241	7.79E-11	9.28E-11	1.09E-10	1.28E-10	1.48E-10
pu242	1.27E-15	1.62E-15	2.02E-15	2.50E-15	3.05E-15
pu243	2.05E-24	3.40E-24	4.25E-24	5.25E-24	6.42E-24
pu244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

```
     pu245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.70E+08  2.70E+08  2.70E+08  2.70E+08
0  .results on logical unit no. 71, position  1, for time step  4, subcase 6. (run position 1, case position 1)
   title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                light elements         page   48
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec
0                                          nuclide concentrations, grams
                                           basis =single reactor assembly
              initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
     h  1   8.59E-07  8.59E-07  8.59E-07  8.59E-07  8.59E-07  8.59E-07  8.59E-07
     he  4  5.68E-07  5.68E-07  5.68E-07  5.68E-07  5.68E-07  5.68E-07  5.68E-07
     na 23  1.73E+05  1.73E+05  1.73E+05  1.73E+05  1.73E+05  1.73E+05  1.73E+05
     mg 24  3.01E-03  3.01E-03  3.01E-03  3.01E-03  3.01E-03  3.01E-03  3.01E-03
     al 27  1.35E+06  1.35E+06  1.35E+06  1.35E+06  1.35E+06  1.35E+06  1.35E+06
     si 28  1.02E-02  1.02E-02  1.02E-02  1.02E-02  1.02E-02  1.02E-02  1.02E-02
   total    1.52E+06  1.52E+06  1.52E+06  1.52E+06  1.52E+06  1.52E+06  1.52E+06
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                light elements         page   49
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec
0                                          element radioactivity, curies
                                           basis =single reactor assembly
              initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
      na     8.39E+00  4.25E-06  3.40E-06  2.73E-06  2.18E-06  1.75E-06  1.40E-06
   totals    2.55E+01  4.64E-06  3.78E-06  3.08E-06  2.53E-06  2.08E-06  1.71E-06
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                light elements         page   50
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec
0                                          element thermal power, watts
                                           basis =single reactor assembly
              initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
      na     1.70E-01  6.01E-08  4.81E-08  3.86E-08  3.09E-08  2.47E-08  1.98E-08
   totals    4.76E-01  6.01E-08  4.82E-08  3.86E-08  3.09E-08  2.47E-08  1.98E-08
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                light elements         page   51
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec
0                                          nuclide gamma power, watts
                                           basis =single reactor assembly
              initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
     na 22   6.90E-08  5.52E-08  4.42E-08  3.54E-08  2.84E-08  2.27E-08  1.82E-08
   total     3.31E-01  5.52E-08  4.42E-08  3.54E-08  2.84E-08  2.27E-08  1.82E-08
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                  actinides            page   52
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec
0                                          nuclide concentrations, gram atoms
                                           basis = single reactor assembly
              initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
     he  4   5.87E-04  6.42E-04  6.97E-04  7.52E-04  8.07E-04  8.62E-04  9.17E-04
     th230   2.55E-04  2.77E-04  2.98E-04  3.19E-04  3.41E-04  3.62E-04  3.83E-04
     th232   5.16E-05  5.59E-05  6.02E-05  6.45E-05  6.88E-05  7.31E-05  7.75E-05
     th234   5.37E-07  5.37E-07  5.37E-07  5.37E-07  5.37E-07  5.37E-07  5.37E-07
     pa231   7.19E-06  7.79E-06  8.40E-06  9.00E-06  9.60E-06  1.02E-05  1.08E-05
     pa233   1.46E-06  1.46E-06  1.46E-06  1.46E-06  1.46E-06  1.46E-06  1.46E-06
      u233   1.35E-04  1.48E-04  1.61E-04  1.74E-04  1.86E-04  1.99E-04  2.12E-04
      u234   9.06E+00  9.06E+00  9.06E+00  9.06E+00  9.06E+00  9.06E+00  9.06E+00
      u235   7.30E+02  7.30E+02  7.30E+02  7.30E+02  7.30E+02  7.30E+02  7.30E+02
      u236   1.74E+02  1.74E+02  1.74E+02  1.74E+02  1.74E+02  1.74E+02  1.74E+02
      u238   3.64E+04  3.64E+04  3.64E+04  3.64E+04  3.64E+04  3.64E+04  3.64E+04
```

np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
pu238	1.79E-03	1.78E-03	1.77E-03	1.76E-03	1.75E-03	1.74E-03	1.73E-03
pu239	5.07E-02	5.07E-02	5.07E-02	5.07E-02	5.07E-02	5.07E-02	5.07E-02
pu240	2.50E-06	2.50E-06	2.50E-06	2.50E-06	2.50E-06	2.50E-06	2.50E-06
total	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 53
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec
0 element concentrations, gram atoms
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	5.87E-04	6.42E-04	6.97E-04	7.52E-04	8.07E-04	8.62E-04	9.17E-04
th	3.08E-04	3.33E-04	3.59E-04	3.84E-04	4.10E-04	4.36E-04	4.61E-04
pa	8.65E-06	9.25E-06	9.85E-06	1.05E-05	1.11E-05	1.17E-05	1.23E-05
u	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
np	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
pu	5.25E-02	5.25E-02	5.25E-02	5.25E-02	5.25E-02	5.25E-02	5.25E-02
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 54
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he 4	2.35E-03	2.57E-03	2.79E-03	3.01E-03	3.23E-03	3.45E-03	3.67E-03
ra226	2.65E-06	3.11E-06	3.61E-06	4.14E-06	4.71E-06	5.32E-06	5.96E-06
th229	6.66E-07	7.84E-07	9.13E-07	1.05E-06	1.20E-06	1.36E-06	1.53E-06
th230	5.88E-02	6.37E-02	6.85E-02	7.34E-02	7.83E-02	8.32E-02	8.81E-02
th231	6.98E-07	6.98E-07	6.98E-07	6.98E-07	6.98E-07	6.98E-07	6.98E-07
th232	1.20E-02	1.30E-02	1.40E-02	1.50E-02	1.60E-02	1.70E-02	1.80E-02
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	1.66E-03	1.80E-03	1.94E-03	2.08E-03	2.22E-03	2.36E-03	2.50E-03
pa233	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04
u232	4.07E-07	4.46E-07	4.77E-07	5.01E-07	5.20E-07	5.35E-07	5.46E-07
u233	3.15E-02	3.45E-02	3.75E-02	4.04E-02	4.34E-02	4.64E-02	4.94E-02
u234	2.12E+03	2.12E+03	2.12E+03	2.12E+03	2.12E+03	2.12E+03	2.12E+03
u235	1.72E+05	1.72E+05	1.72E+05	1.72E+05	1.72E+05	1.72E+05	1.72E+05
u236	4.12E+04	4.12E+04	4.12E+04	4.12E+04	4.12E+04	4.12E+04	4.12E+04
u238	8.66E+06	8.66E+06	8.66E+06	8.66E+06	8.66E+06	8.66E+06	8.66E+06
np237	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03
pu238	4.27E-01	4.24E-01	4.22E-01	4.19E-01	4.16E-01	4.13E-01	4.11E-01
pu239	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01
pu240	6.00E-04	6.00E-04	5.99E-04	5.99E-04	5.99E-04	5.99E-04	5.99E-04
total	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 55
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec
0 element concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	2.35E-03	2.57E-03	2.79E-03	3.01E-03	3.23E-03	3.45E-03	3.67E-03
ra	2.65E-06	3.11E-06	3.61E-06	4.14E-06	4.71E-06	5.32E-06	5.96E-06
th	7.09E-02	7.68E-02	8.27E-02	8.85E-02	9.44E-02	1.00E-01	1.06E-01
pa	2.00E-03	2.14E-03	2.28E-03	2.42E-03	2.56E-03	2.70E-03	2.84E-03
u	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06
np	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03
pu	1.25E+01	1.26E+01	1.26E+01	1.25E+01	1.25E+01	1.25E+01	1.25E+01
totals	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 56

decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl207	1.11E-05	1.31E-05	1.51E-05	1.72E-05	1.94E-05	2.17E-05	2.41E-05
tl208	2.13E-06	2.46E-06	2.78E-06	3.07E-06	3.33E-06	3.56E-06	3.76E-06
pb210	2.51E-07	3.17E-07	3.94E-07	4.82E-07	5.81E-07	6.93E-07	8.17E-07
pb211	1.11E-05	1.31E-05	1.51E-05	1.72E-05	1.94E-05	2.18E-05	2.42E-05
pb212	5.91E-06	6.84E-06	7.73E-06	8.55E-06	9.27E-06	9.91E-06	1.05E-05
pb214	2.62E-06	3.08E-06	3.57E-06	4.09E-06	4.66E-06	5.26E-06	5.89E-06
bi210	2.51E-07	3.18E-07	3.94E-07	4.82E-07	5.81E-07	6.93E-07	8.18E-07
bi211	1.11E-05	1.31E-05	1.51E-05	1.72E-05	1.94E-05	2.18E-05	2.42E-05
bi212	5.91E-06	6.84E-06	7.73E-06	8.55E-06	9.27E-06	9.91E-06	1.05E-05
bi214	2.62E-06	3.08E-06	3.57E-06	4.09E-06	4.66E-06	5.26E-06	5.89E-06
po210	2.12E-07	2.71E-07	3.40E-07	4.20E-07	5.10E-07	6.13E-07	7.27E-07
po212	3.79E-06	4.38E-06	4.95E-06	5.47E-06	5.94E-06	6.35E-06	6.70E-06
po214	2.62E-06	3.08E-06	3.57E-06	4.09E-06	4.66E-06	5.26E-06	5.89E-06
po215	1.11E-05	1.31E-05	1.51E-05	1.72E-05	1.94E-05	2.18E-05	2.42E-05
po216	5.91E-06	6.84E-06	7.73E-06	8.55E-06	9.27E-06	9.91E-06	1.05E-05
po218	2.62E-06	3.08E-06	3.57E-06	4.10E-06	4.66E-06	5.26E-06	5.89E-06
rn219	1.11E-05	1.31E-05	1.51E-05	1.72E-05	1.94E-05	2.18E-05	2.42E-05
rn220	5.91E-06	6.84E-06	7.73E-06	8.55E-06	9.27E-06	9.91E-06	1.05E-05
rn222	2.62E-06	3.08E-06	3.57E-06	4.10E-06	4.66E-06	5.26E-06	5.89E-06
ra223	1.11E-05	1.31E-05	1.51E-05	1.72E-05	1.94E-05	2.18E-05	2.42E-05
ra224	5.91E-06	6.84E-06	7.73E-06	8.55E-06	9.27E-06	9.91E-06	1.05E-05
ra226	2.62E-06	3.08E-06	3.57E-06	4.10E-06	4.66E-06	5.26E-06	5.89E-06
ac227	1.13E-05	1.31E-05	1.51E-05	1.72E-05	1.94E-05	2.17E-05	2.41E-05
th227	1.10E-05	1.30E-05	1.49E-05	1.70E-05	1.92E-05	2.15E-05	2.39E-05
th228	5.89E-06	6.82E-06	7.70E-06	8.52E-06	9.24E-06	9.87E-06	1.04E-05
th230	1.21E-03	1.31E-03	1.41E-03	1.51E-03	1.62E-03	1.72E-03	1.82E-03
th231	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	7.85E-05	8.51E-05	9.16E-05	9.82E-05	1.05E-04	1.11E-04	1.18E-04
pa233	7.04E+00	7.05E+00	7.05E+00	7.05E+00	7.05E+00	7.05E+00	7.05E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.79E-03	3.79E-03	3.79E-03	3.79E-03	3.79E-03	3.79E-03
u232	8.98E-06	9.84E-06	1.05E-05	1.11E-05	1.15E-05	1.18E-05	1.21E-05
u233	3.03E-04	3.32E-04	3.61E-04	3.90E-04	4.19E-04	4.48E-04	4.76E-04
u234	1.32E+01	1.32E+01	1.32E+01	1.32E+01	1.32E+01	1.32E+01	1.32E+01
u235	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01
u236	2.66E+00	2.66E+00	2.66E+00	2.66E+00	2.66E+00	2.66E+00	2.66E+00
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
np237	7.04E+00	7.04E+00	7.04E+00	7.04E+00	7.04E+00	7.04E+00	7.04E+00
pu236	1.25E-04	1.03E-04	8.41E-05	6.89E-05	5.65E-05	4.63E-05	3.79E-05
pu238	7.31E+00	7.27E+00	7.22E+00	7.18E+00	7.13E+00	7.08E+00	7.04E+00
pu239	7.52E-01	7.53E-01	7.53E-01	7.53E-01	7.53E-01	7.53E-01	7.53E-01
pu240	1.36E-04	1.36E-04	1.36E-04	1.36E-04	1.36E-04	1.36E-04	1.36E-04
pu241	3.69E-06	3.54E-06	3.40E-06	3.27E-06	3.14E-06	3.02E-06	2.90E-06
total	5.29E+03	4.74E+01	4.74E+01	4.73E+01	4.73E+01	4.73E+01	4.72E+01

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 57
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec
0 element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl	8.25E-08	9.62E-08	1.09E-07	1.23E-07	1.35E-07	1.47E-07	1.59E-07
pb	5.42E-08	6.37E-08	7.31E-08	8.29E-08	9.30E-08	1.03E-07	1.14E-07
bi	5.78E-07	6.80E-07	7.80E-07	8.85E-07	9.93E-07	1.10E-06	1.22E-06
po	1.17E-06	1.37E-06	1.57E-06	1.77E-06	1.98E-06	2.18E-06	2.39E-06
at	5.64E-09	6.63E-09	7.72E-09	8.90E-09	1.02E-08	1.15E-08	1.30E-08

rn	7.73E-07	9.07E-07	1.04E-06	1.17E-06	1.31E-06	1.45E-06	1.60E-06
fr	5.48E-09	6.44E-09	7.49E-09	8.63E-09	9.85E-09	1.12E-08	1.26E-08
ra	6.75E-07	7.91E-07	9.06E-07	1.02E-06	1.14E-06	1.27E-06	1.39E-06
ac	1.01E-08	1.18E-08	1.36E-08	1.56E-08	1.77E-08	1.99E-08	2.23E-08
th	1.64E-03	1.65E-03	1.65E-03	1.65E-03	1.66E-03	1.66E-03	1.66E-03
pa	3.22E-02	3.22E-02	3.22E-02	3.22E-02	3.22E-02	3.22E-02	3.22E-02
u	7.55E+00	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
np	7.11E+00	2.01E-01	2.01E-01	2.01E-01	2.01E-01	2.01E-01	2.01E-01
pu	2.66E-01	2.64E-01	2.63E-01	2.61E-01	2.60E-01	2.58E-01	2.57E-01
totals	1.50E+01	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 58
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec
0
nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl208	4.23E-08	4.90E-08	5.53E-08	6.12E-08	6.64E-08	7.10E-08	7.49E-08
pb211	4.46E-09	5.27E-09	6.06E-09	6.90E-09	7.79E-09	8.72E-09	9.70E-09
pb212	5.08E-09	5.88E-09	6.64E-09	7.35E-09	7.97E-09	8.52E-09	8.99E-09
pb214	3.88E-09	4.56E-09	5.29E-09	6.07E-09	6.90E-09	7.79E-09	8.73E-09
bi211	3.09E-09	3.65E-09	4.19E-09	4.78E-09	5.39E-09	6.04E-09	6.71E-09
bi212	3.69E-09	4.27E-09	4.82E-09	5.33E-09	5.78E-09	6.18E-09	6.52E-09
bi214	2.34E-08	2.75E-08	3.19E-08	3.66E-08	4.16E-08	4.70E-08	5.27E-08
rn219	3.70E-09	4.36E-09	5.02E-09	5.71E-09	6.45E-09	7.22E-09	8.03E-09
ra223	8.87E-09	1.05E-08	1.20E-08	1.37E-08	1.55E-08	1.73E-08	1.93E-08
th227	7.21E-09	8.53E-09	9.81E-09	1.12E-08	1.26E-08	1.41E-08	1.57E-08
th230	1.21E-08	1.31E-08	1.41E-08	1.51E-08	1.61E-08	1.71E-08	1.81E-08
th231	6.82E-05	6.82E-05	6.82E-05	6.82E-05	6.82E-05	6.82E-05	6.82E-05
th234	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04
pa231	1.86E-08	2.02E-08	2.17E-08	2.33E-08	2.48E-08	2.64E-08	2.80E-08
pa233	9.33E-03	9.34E-03	9.34E-03	9.34E-03	9.34E-03	9.34E-03	9.34E-03
pa234m	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04
pa234	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05
u234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
u235	3.66E-04	3.66E-04	3.66E-04	3.66E-04	3.66E-04	3.66E-04	3.66E-04
u236	2.68E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05
u238	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05
np237	1.47E-03	1.47E-03	1.47E-03	1.47E-03	1.47E-03	1.47E-03	1.47E-03
pu238	8.24E-05	8.19E-05	8.14E-05	8.08E-05	8.03E-05	7.98E-05	7.93E-05
pu239	3.61E-06	3.61E-06	3.61E-06	3.61E-06	3.61E-06	3.61E-06	3.61E-06
total	3.97E+00	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 59
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec
0
nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	1.65E-05	1.57E-05	1.50E-05	1.43E-05	1.37E-05	1.30E-05	1.24E-05
ge 72	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06
ge 73	5.53E-06	5.53E-06	5.53E-06	5.53E-06	5.53E-06	5.53E-06	5.53E-06
ge 74	4.84E-06	4.84E-06	4.84E-06	4.84E-06	4.84E-06	4.84E-06	4.84E-06
as 75	5.64E-05	5.64E-05	5.64E-05	5.64E-05	5.64E-05	5.64E-05	5.64E-05
ge 76	1.88E-04	1.88E-04	1.88E-04	1.88E-04	1.88E-04	1.88E-04	1.88E-04
se 77	4.17E-04	4.17E-04	4.17E-04	4.17E-04	4.17E-04	4.17E-04	4.17E-04
se 78	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03
se 79	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03
se 80	6.79E-03	6.79E-03	6.79E-03	6.79E-03	6.79E-03	6.79E-03	6.79E-03
br 81	1.01E-02	1.01E-02	1.01E-02	1.01E-02	1.01E-02	1.01E-02	1.01E-02
se 82	1.75E-02	1.75E-02	1.75E-02	1.75E-02	1.75E-02	1.75E-02	1.75E-02
kr 82	3.25E-06	3.25E-06	3.25E-06	3.25E-06	3.25E-06	3.25E-06	3.25E-06

kr 83	2.91E-02	2.91E-02	2.91E-02	2.91E-02	2.91E-02	2.91E-02	2.91E-02
kr 84	5.86E-02	5.86E-02	5.86E-02	5.86E-02	5.86E-02	5.86E-02	5.86E-02
kr 85	1.07E-02	1.02E-02	9.64E-03	9.14E-03	8.66E-03	8.20E-03	7.77E-03
rb 85	5.71E-02	5.77E-02	5.82E-02	5.87E-02	5.92E-02	5.96E-02	6.01E-02
kr 86	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01
rb 87	1.44E-01	1.44E-01	1.44E-01	1.44E-01	1.44E-01	1.44E-01	1.44E-01
sr 88	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01
y 89	2.76E-01	2.81E-01	2.81E-01	2.81E-01	2.81E-01	2.81E-01	2.81E-01
sr 90	3.04E-01	2.98E-01	2.92E-01	2.86E-01	2.80E-01	2.74E-01	2.69E-01
y 90	7.90E-05	7.74E-05	7.59E-05	7.43E-05	7.28E-05	7.13E-05	6.99E-05
zr 90	3.89E-02	4.51E-02	5.12E-02	5.71E-02	6.29E-02	6.86E-02	7.42E-02
zr 91	3.43E-01	3.51E-01	3.51E-01	3.51E-01	3.51E-01	3.51E-01	3.51E-01
zr 92	3.58E-01	3.58E-01	3.58E-01	3.58E-01	3.58E-01	3.58E-01	3.58E-01
zr 93	2.56E-01	2.56E-01	2.56E-01	2.56E-01	2.56E-01	2.56E-01	2.56E-01
nb 93m	5.05E-07	5.82E-07	6.56E-07	7.28E-07	7.98E-07	8.64E-07	9.29E-07
zr 94	3.94E-01	3.94E-01	3.94E-01	3.94E-01	3.94E-01	3.94E-01	3.94E-01
mo 95	3.86E-01	4.01E-01	4.02E-01	4.02E-01	4.02E-01	4.02E-01	4.02E-01
zr 96	3.94E-01	3.94E-01	3.94E-01	3.94E-01	3.94E-01	3.94E-01	3.94E-01
mo 96	3.50E-05	3.50E-05	3.50E-05	3.50E-05	3.50E-05	3.50E-05	3.50E-05
mo 97	3.58E-01	3.58E-01	3.58E-01	3.58E-01	3.58E-01	3.58E-01	3.58E-01
mo 98	3.72E-01	3.72E-01	3.72E-01	3.72E-01	3.72E-01	3.72E-01	3.72E-01
tc 99	3.96E-01	3.96E-01	3.96E-01	3.96E-01	3.96E-01	3.96E-01	3.96E-01
ru 99	1.94E-05	2.05E-05	2.15E-05	2.26E-05	2.37E-05	2.48E-05	2.59E-05
mo100	4.10E-01	4.10E-01	4.10E-01	4.10E-01	4.10E-01	4.10E-01	4.10E-01
ru100	3.68E-06	3.68E-06	3.68E-06	3.68E-06	3.68E-06	3.68E-06	3.68E-06
ru101	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01
ru102	2.87E-01	2.87E-01	2.87E-01	2.87E-01	2.87E-01	2.87E-01	2.87E-01
rh103	2.09E-01	2.12E-01	2.12E-01	2.12E-01	2.12E-01	2.12E-01	2.12E-01
ru104	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01
pd104	4.54E-06	4.54E-06	4.54E-06	4.54E-06	4.54E-06	4.54E-06	4.54E-06
pd105	7.34E-02	7.34E-02	7.34E-02	7.34E-02	7.34E-02	7.34E-02	7.34E-02
ru106	4.77E-03	2.71E-03	1.53E-03	8.69E-04	4.93E-04	2.79E-04	1.58E-04
pd106	2.78E-02	2.99E-02	3.11E-02	3.17E-02	3.21E-02	3.23E-02	3.24E-02
pd107	1.24E-02	1.24E-02	1.24E-02	1.24E-02	1.24E-02	1.24E-02	1.24E-02
pd108	5.95E-03	5.95E-03	5.95E-03	5.95E-03	5.95E-03	5.95E-03	5.95E-03
ag109	2.99E-03	3.00E-03	3.00E-03	3.00E-03	3.00E-03	3.00E-03	3.00E-03
pd110	2.43E-03	2.43E-03	2.43E-03	2.43E-03	2.43E-03	2.43E-03	2.43E-03
cd111	1.60E-03	1.61E-03	1.61E-03	1.61E-03	1.61E-03	1.61E-03	1.61E-03
cd112	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 60
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec
0
nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
cd113	1.27E-03	1.27E-03	1.27E-03	1.27E-03	1.27E-03	1.27E-03	1.27E-03
cd113m	1.67E-05	1.61E-05	1.54E-05	1.48E-05	1.42E-05	1.36E-05	1.31E-05
in113	4.45E-06	5.12E-06	5.76E-06	6.38E-06	6.98E-06	7.55E-06	8.09E-06
cd114	1.12E-03	1.12E-03	1.12E-03	1.12E-03	1.12E-03	1.12E-03	1.12E-03
in115	8.52E-04	8.53E-04	8.53E-04	8.53E-04	8.53E-04	8.53E-04	8.53E-04
sn115	4.29E-05	4.29E-05	4.29E-05	4.29E-05	4.29E-05	4.29E-05	4.29E-05
cd116	1.35E-03	1.35E-03	1.35E-03	1.35E-03	1.35E-03	1.35E-03	1.35E-03
sn117	8.93E-04	8.93E-04	8.93E-04	8.93E-04	8.93E-04	8.93E-04	8.93E-04
sn118	9.16E-04	9.16E-04	9.16E-04	9.16E-04	9.16E-04	9.16E-04	9.16E-04
sn119	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03
sn120	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03
sn121m	6.29E-06	6.22E-06	6.16E-06	6.09E-06	6.03E-06	5.97E-06	5.91E-06
sb121	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03
sn122	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03
sb123	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03

sn124	2.15E-03	2.15E-03	2.15E-03	2.15E-03	2.15E-03	2.15E-03	2.15E-03
te124	9.58E-07	9.79E-07	9.80E-07	9.80E-07	9.80E-07	9.80E-07	9.80E-07
sb125	8.94E-04	7.26E-04	5.88E-04	4.76E-04	3.85E-04	3.11E-04	2.52E-04
te125	1.56E-03	1.73E-03	1.87E-03	1.99E-03	2.08E-03	2.15E-03	2.21E-03
te125m	1.19E-05	1.03E-05	8.35E-06	6.76E-06	5.47E-06	4.42E-06	3.58E-06
sn126	3.54E-03	3.54E-03	3.54E-03	3.54E-03	3.54E-03	3.54E-03	3.54E-03
te126	2.06E-05	2.07E-05	2.07E-05	2.07E-05	2.07E-05	2.08E-05	2.08E-05
i127	1.03E-02	1.04E-02	1.04E-02	1.04E-02	1.04E-02	1.04E-02	1.04E-02
te128	2.99E-02	2.99E-02	2.99E-02	2.99E-02	2.99E-02	2.99E-02	2.99E-02
i129	6.41E-02	6.42E-02	6.42E-02	6.42E-02	6.42E-02	6.42E-02	6.42E-02
te130	1.50E-01	1.50E-01	1.50E-01	1.50E-01	1.50E-01	1.50E-01	1.50E-01
xe130	1.81E-05	1.81E-05	1.81E-05	1.81E-05	1.81E-05	1.81E-05	1.81E-05
xe131	2.48E-01	2.49E-01	2.49E-01	2.49E-01	2.49E-01	2.49E-01	2.49E-01
xe132	3.74E-01	3.75E-01	3.75E-01	3.75E-01	3.75E-01	3.75E-01	3.75E-01
cs133	5.83E-01	5.85E-01	5.85E-01	5.85E-01	5.85E-01	5.85E-01	5.85E-01
xe134	6.87E-01	6.87E-01	6.87E-01	6.87E-01	6.87E-01	6.87E-01	6.87E-01
ba134	2.62E-06	3.02E-06	3.33E-06	3.56E-06	3.74E-06	3.87E-06	3.97E-06
cs135	5.79E-01	5.79E-01	5.79E-01	5.79E-01	5.79E-01	5.79E-01	5.79E-01
ba135	9.61E-07	1.11E-06	1.25E-06	1.40E-06	1.54E-06	1.69E-06	1.83E-06
xe136	5.63E-01	5.63E-01	5.63E-01	5.63E-01	5.63E-01	5.63E-01	5.63E-01
ba136	4.75E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04
cs137	5.03E-01	4.94E-01	4.84E-01	4.75E-01	4.66E-01	4.57E-01	4.49E-01
ba137	6.05E-02	7.01E-02	7.95E-02	8.87E-02	9.78E-02	1.07E-01	1.15E-01
ba138	6.04E-01	6.04E-01	6.04E-01	6.04E-01	6.04E-01	6.04E-01	6.04E-01
la138	3.03E-06	3.03E-06	3.03E-06	3.03E-06	3.03E-06	3.03E-06	3.03E-06
la139	5.78E-01	5.78E-01	5.78E-01	5.78E-01	5.78E-01	5.78E-01	5.78E-01
ce140	5.75E-01	5.78E-01	5.78E-01	5.78E-01	5.78E-01	5.78E-01	5.78E-01
pr141	5.28E-01	5.35E-01	5.35E-01	5.35E-01	5.35E-01	5.35E-01	5.35E-01
ce142	5.44E-01	5.44E-01	5.44E-01	5.44E-01	5.44E-01	5.44E-01	5.44E-01
nd142	5.71E-07	5.72E-07	5.72E-07	5.72E-07	5.72E-07	5.72E-07	5.72E-07
nd143	5.51E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01
ce144	5.79E-02	2.76E-02	1.32E-02	6.28E-03	2.99E-03	1.43E-03	6.81E-04
nd144	4.56E-01	4.86E-01	5.01E-01	5.08E-01	5.11E-01	5.13E-01	5.13E-01
nd145	3.72E-01	3.72E-01	3.72E-01	3.72E-01	3.72E-01	3.72E-01	3.72E-01
nd146	2.86E-01	2.86E-01	2.86E-01	2.86E-01	2.86E-01	2.86E-01	2.86E-01
pm147	7.65E-02	6.21E-02	4.98E-02	4.00E-02	3.21E-02	2.57E-02	2.07E-02
sm147	1.42E-01	1.57E-01	1.69E-01	1.79E-01	1.87E-01	1.93E-01	1.98E-01

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 61
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
nd148	1.63E-01	1.63E-01	1.63E-01	1.63E-01	1.63E-01	1.63E-01	1.63E-01
sm148	4.73E-06	4.78E-06	4.78E-06	4.78E-06	4.78E-06	4.78E-06	4.78E-06
sm149	1.05E-01	1.05E-01	1.05E-01	1.05E-01	1.05E-01	1.05E-01	1.05E-01
nd150	6.57E-02	6.57E-02	6.57E-02	6.57E-02	6.57E-02	6.57E-02	6.57E-02
sm150	7.32E-04	7.32E-04	7.32E-04	7.32E-04	7.32E-04	7.32E-04	7.32E-04
sm151	4.10E-02	4.07E-02	4.05E-02	4.02E-02	4.00E-02	3.97E-02	3.95E-02
eu151	1.60E-03	1.86E-03	2.12E-03	2.38E-03	2.64E-03	2.89E-03	3.15E-03
sm152	2.75E-02	2.75E-02	2.75E-02	2.75E-02	2.75E-02	2.75E-02	2.75E-02
eu153	1.70E-02	1.70E-02	1.70E-02	1.70E-02	1.70E-02	1.70E-02	1.70E-02
sm154	7.86E-03	7.86E-03	7.86E-03	7.86E-03	7.86E-03	7.86E-03	7.86E-03
eu155	1.87E-03	1.65E-03	1.46E-03	1.29E-03	1.14E-03	1.01E-03	8.90E-04
gd155	1.71E-03	1.93E-03	2.12E-03	2.29E-03	2.44E-03	2.57E-03	2.69E-03
gd156	1.55E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03
gd157	7.32E-04	7.32E-04	7.32E-04	7.32E-04	7.32E-04	7.32E-04	7.32E-04
gd158	3.57E-04	3.57E-04	3.57E-04	3.57E-04	3.57E-04	3.57E-04	3.57E-04
tb159	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04
gd160	4.29E-05	4.29E-05	4.29E-05	4.29E-05	4.29E-05	4.29E-05	4.29E-05

dy161	1.32E-05	1.32E-05	1.32E-05	1.32E-05	1.32E-05	1.32E-05	1.32E-05
dy162	3.64E-06	3.64E-06	3.64E-06	3.64E-06	3.64E-06	3.64E-06	3.64E-06
dy163	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06
total	1.52E+01	1.52E+01	1.52E+01	1.52E+01	1.52E+01	1.52E+01	1.52E+01

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 62
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec

0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	1.59E-01	1.52E-01	1.45E-01	1.38E-01	1.32E-01	1.26E-01	1.20E-01
se 79	3.13E-05	3.13E-05	3.13E-05	3.13E-05	3.13E-05	3.13E-05	3.13E-05
kr 85	4.22E+00	3.99E+00	3.78E+00	3.59E+00	3.40E+00	3.22E+00	3.05E+00
sr 90	4.29E+01	4.21E+01	4.12E+01	4.04E+01	3.95E+01	3.87E+01	3.80E+01
y 90	4.29E+01	4.21E+01	4.12E+01	4.04E+01	3.96E+01	3.88E+01	3.80E+01
y 91	1.98E+02	5.43E+00	1.47E-01	4.00E-03	1.09E-04	2.95E-06	8.02E-08
zr 93	6.43E-04	6.43E-04	6.43E-04	6.43E-04	6.43E-04	6.43E-04	6.43E-04
nb 93m	1.20E-04	1.39E-04	1.57E-04	1.74E-04	1.90E-04	2.06E-04	2.21E-04
zr 95	2.18E+02	8.09E+00	3.00E-01	1.11E-02	4.11E-04	1.52E-05	5.64E-07
nb 95	2.18E+02	1.72E+01	6.58E-01	2.44E-02	9.05E-04	3.35E-05	1.24E-06
tc 99	6.77E-03	6.78E-03	6.78E-03	6.78E-03	6.78E-03	6.78E-03	6.78E-03
rh102	7.21E-06	5.91E-06	4.84E-06	3.97E-06	3.25E-06	2.66E-06	2.18E-06
ru106	1.58E+01	8.97E+00	5.08E+00	2.88E+00	1.63E+00	9.26E-01	5.25E-01
rh106	1.58E+01	8.97E+00	5.08E+00	2.88E+00	1.63E+00	9.26E-01	5.25E-01
pd107	6.39E-06	6.39E-06	6.39E-06	6.39E-06	6.39E-06	6.39E-06	6.39E-06
cd113m	3.76E-03	3.61E-03	3.46E-03	3.32E-03	3.19E-03	3.06E-03	2.94E-03
sn119m	1.53E-03	7.43E-04	3.62E-04	1.76E-04	8.57E-05	4.17E-05	2.03E-05
sn121	4.68E-01	2.60E-04	2.57E-04	2.54E-04	2.51E-04	2.49E-04	2.46E-04
sn121m	3.38E-04	3.34E-04	3.31E-04	3.27E-04	3.24E-04	3.21E-04	3.17E-04
sn123	5.81E-02	1.14E-02	2.22E-03	4.33E-04	8.45E-05	1.65E-05	3.22E-06
sb125	9.37E-01	7.61E-01	6.16E-01	4.98E-01	4.03E-01	3.26E-01	2.64E-01
te125m	2.15E-01	1.85E-01	1.50E-01	1.22E-01	9.85E-02	7.97E-02	6.45E-02
sn126	1.01E-04	1.01E-04	1.01E-04	1.01E-04	1.01E-04	1.01E-04	1.01E-04
sb126	3.87E-03	1.41E-05	1.41E-05	1.41E-05	1.41E-05	1.41E-05	1.41E-05
sb126m	5.40E-03	1.01E-04	1.01E-04	1.01E-04	1.01E-04	1.01E-04	1.01E-04
te127	4.19E+00	1.07E-01	1.54E-02	2.23E-03	3.21E-04	4.64E-05	6.69E-06
te127m	7.28E-01	1.09E-01	1.57E-02	2.27E-03	3.28E-04	4.73E-05	6.83E-06
i129	1.13E-05	1.13E-05	1.13E-05	1.13E-05	1.13E-05	1.13E-05	1.13E-05
cs134	2.16E-03	1.63E-03	1.23E-03	9.30E-04	7.03E-04	5.31E-04	4.01E-04
cs135	6.67E-04	6.67E-04	6.67E-04	6.67E-04	6.67E-04	6.67E-04	6.67E-04
cs137	4.38E+01	4.30E+01	4.22E+01	4.14E+01	4.06E+01	3.98E+01	3.90E+01
ba137m	4.14E+01	4.06E+01	3.98E+01	3.91E+01	3.83E+01	3.76E+01	3.69E+01
ce144	1.84E+02	8.79E+01	4.19E+01	2.00E+01	9.53E+00	4.55E+00	2.17E+00
pr144	1.84E+02	8.79E+01	4.19E+01	2.00E+01	9.53E+00	4.55E+00	2.17E+00
pr144m	2.58E+00	1.23E+00	5.87E-01	2.80E-01	1.33E-01	6.36E-02	3.04E-02
pm147	7.09E+01	5.76E+01	4.62E+01	3.71E+01	2.98E+01	2.39E+01	1.92E+01
sm151	1.08E+00	1.07E+00	1.07E+00	1.06E+00	1.05E+00	1.05E+00	1.04E+00
eu152	5.90E-05	5.65E-05	5.41E-05	5.18E-05	4.96E-05	4.75E-05	4.55E-05
eu154	1.67E-04	1.56E-04	1.46E-04	1.36E-04	1.28E-04	1.19E-04	1.12E-04
eu155	9.20E-01	8.13E-01	7.19E-01	6.35E-01	5.61E-01	4.96E-01	4.39E-01
total	2.01E+04	4.62E+02	3.13E+02	2.50E+02	2.16E+02	1.95E+02	1.81E+02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 63
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec

0 element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h	5.37E-06	5.13E-06	4.89E-06	4.67E-06	4.45E-06	4.25E-06	4.06E-06
se	3.33E+00	9.80E-09	9.80E-09	9.80E-09	9.80E-09	9.80E-09	9.80E-09
kr	1.30E+01	5.99E-03	5.68E-03	5.38E-03	5.10E-03	4.83E-03	4.58E-03

sr	2.00E+01	5.75E-02	4.80E-02	4.69E-02	4.59E-02	4.50E-02	4.41E-02
y	2.74E+01	2.52E-01	2.29E-01	2.24E-01	2.19E-01	2.15E-01	2.10E-01
zr	1.20E+01	4.08E-02	1.51E-03	5.60E-05	2.14E-06	1.49E-07	7.53E-08
nb	2.15E+01	8.25E-02	3.16E-03	1.17E-04	4.38E-06	1.97E-07	4.42E-08
tc	6.47E+00	3.40E-06	3.40E-06	3.40E-06	3.40E-06	3.40E-06	3.40E-06
ru	7.07E-01	2.17E-03	3.10E-04	1.71E-04	9.71E-05	5.51E-05	3.12E-05
rh	3.77E-01	8.61E-02	4.87E-02	2.76E-02	1.57E-02	8.88E-03	5.03E-03
cd	6.85E-02	4.48E-06	3.77E-06	3.62E-06	3.47E-06	3.33E-06	3.20E-06
sn	1.87E+00	3.63E-05	7.52E-06	1.85E-06	7.12E-07	4.74E-07	4.19E-07
sb	7.51E+00	2.41E-03	1.95E-03	1.58E-03	1.28E-03	1.03E-03	8.37E-04
te	9.30E+00	3.96E-04	1.56E-04	1.07E-04	8.35E-05	6.72E-05	5.43E-05
i	2.08E+01	5.31E-09	5.31E-09	5.31E-09	5.31E-09	5.31E-09	5.31E-09
cs	1.81E+01	4.78E-02	4.69E-02	4.60E-02	4.51E-02	4.42E-02	4.34E-02
ba	1.14E+01	1.59E-01	1.56E-01	1.53E-01	1.50E-01	1.48E-01	1.45E-01
ce	4.41E+00	5.79E-02	2.74E-02	1.31E-02	6.24E-03	2.97E-03	1.42E-03
pr	6.24E+00	6.45E-01	3.08E-01	1.47E-01	7.00E-02	3.34E-02	1.59E-02
pm	3.37E-01	2.11E-02	1.70E-02	1.36E-02	1.09E-02	8.77E-03	7.03E-03
sm	2.01E-02	1.26E-04	1.25E-04	1.25E-04	1.24E-04	1.23E-04	1.22E-04
eu	8.73E-03	6.34E-04	5.60E-04	4.95E-04	4.38E-04	3.87E-04	3.42E-04
totals	2.59E+02	1.46E+00	8.94E-01	6.79E-01	5.70E-01	5.12E-01	4.78E-01

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 64
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	5.57E-05	5.28E-05	5.00E-05	4.74E-05	4.49E-05	4.26E-05	4.03E-05
y 90	4.33E-07	4.24E-07	4.15E-07	4.07E-07	3.99E-07	3.90E-07	3.83E-07
zr 95	9.47E-01	3.51E-02	1.30E-03	4.82E-05	1.78E-06	6.61E-08	2.45E-09
nb 95	9.89E-01	7.79E-02	2.98E-03	1.11E-04	4.10E-06	1.52E-07	5.63E-09
rh102	9.23E-08	7.56E-08	6.20E-08	5.08E-08	4.16E-08	3.41E-08	2.79E-08
rh106	1.93E-02	1.10E-02	6.21E-03	3.52E-03	1.99E-03	1.13E-03	6.41E-04
sn121m	1.00E-08	9.91E-09	9.81E-09	9.70E-09	9.60E-09	9.50E-09	9.40E-09
sb125	2.41E-03	1.96E-03	1.58E-03	1.28E-03	1.04E-03	8.40E-04	6.80E-04
te125m	4.53E-05	3.91E-05	3.17E-05	2.57E-05	2.08E-05	1.68E-05	1.36E-05
sn126	7.78E-08	7.78E-08	7.78E-08	7.78E-08	7.78E-08	7.78E-08	7.78E-08
sb126	6.31E-05	2.30E-07	2.30E-07	2.30E-07	2.30E-07	2.30E-07	2.30E-07
sb126m	4.97E-05	9.27E-07	9.27E-07	9.27E-07	9.27E-07	9.27E-07	9.27E-07
cs134	1.99E-05	1.50E-05	1.13E-05	8.58E-06	6.48E-06	4.90E-06	3.70E-06
ba137m	1.47E-01	1.44E-01	1.41E-01	1.39E-01	1.36E-01	1.33E-01	1.31E-01
ce144	2.07E-02	9.89E-03	4.72E-03	2.25E-03	1.07E-03	5.12E-04	2.44E-04
pr144	3.16E-02	1.51E-02	7.18E-03	3.42E-03	1.63E-03	7.79E-04	3.71E-04
pr144m	1.91E-04	9.11E-05	4.35E-05	2.07E-05	9.89E-06	4.72E-06	2.25E-06
pm147	1.84E-06	1.50E-06	1.20E-06	9.63E-07	7.73E-07	6.20E-07	4.97E-07
sm151	9.08E-08	9.03E-08	8.97E-08	8.91E-08	8.85E-08	8.80E-08	8.74E-08
eu152	4.06E-07	3.89E-07	3.73E-07	3.57E-07	3.42E-07	3.27E-07	3.13E-07
eu154	1.24E-06	1.16E-06	1.08E-06	1.01E-06	9.48E-07	8.87E-07	8.29E-07
eu155	3.53E-04	3.12E-04	2.76E-04	2.44E-04	2.15E-04	1.90E-04	1.68E-04
total	1.28E+02	2.97E-01	1.66E-01	1.50E-01	1.42E-01	1.37E-01	1.33E-01

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 65
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+01mwd, flux= 2.79E+08n/cm**2-sec
0 element gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr	6.74E+00	5.28E-05	5.00E-05	4.74E-05	4.49E-05	4.26E-05	4.03E-05
y	9.80E+00	1.18E-04	3.58E-06	4.93E-07	4.01E-07	3.91E-07	3.83E-07
zr	4.81E+00	3.51E-02	1.30E-03	4.82E-05	1.78E-06	6.61E-08	2.45E-09
nb	9.13E+00	7.79E-02	2.98E-03	1.11E-04	4.11E-06	1.55E-07	8.28E-09
rh	1.05E-01	1.10E-02	6.21E-03	3.52E-03	1.99E-03	1.13E-03	6.41E-04

sn	1.23E+00	6.03E-07	2.03E-07	1.17E-07	9.67E-08	9.08E-08	8.88E-08
sb	5.16E+00	1.96E-03	1.59E-03	1.28E-03	1.04E-03	8.41E-04	6.81E-04
te	5.57E+00	5.34E-05	3.32E-05	2.59E-05	2.08E-05	1.68E-05	1.36E-05
cs	8.75E+00	1.50E-05	1.13E-05	8.58E-06	6.48E-06	4.90E-06	3.70E-06
ba	4.85E+00	1.44E-01	1.41E-01	1.39E-01	1.36E-01	1.33E-01	1.31E-01
ce	2.08E+00	1.00E-02	4.72E-03	2.25E-03	1.07E-03	5.12E-04	2.44E-04
pr	1.80E+00	1.51E-02	7.22E-03	3.45E-03	1.64E-03	7.84E-04	3.74E-04
pm	8.53E-02	1.55E-06	1.20E-06	9.63E-07	7.73E-07	6.20E-07	4.97E-07
sm	4.44E-03	9.03E-08	8.97E-08	8.91E-08	8.85E-08	8.80E-08	8.74E-08
eu	5.40E-03	3.13E-04	2.77E-04	2.45E-04	2.17E-04	1.92E-04	1.69E-04
totals	1.28E+02	2.97E-01	1.66E-01	1.50E-01	1.42E-01	1.37E-01	1.33E-01

1 page 66

photon spectrum as a function of time for light elements, cladding and structural materials

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 15.mwd, flux= 2.79E+08 n**2-sec

0 spectrum of photon release rates, photons/sec
basis = single reactor assembly

0

emean	time after discharge						
(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	5.14E+11	5.17E+04	4.14E+04	3.32E+04	2.66E+04	2.13E+04	1.70E+04
3.00E-02	1.69E+11	1.65E+04	1.32E+04	1.06E+04	8.46E+03	6.77E+03	5.43E+03
5.50E-02	1.18E+11	1.11E+04	8.91E+03	7.13E+03	5.71E+03	4.58E+03	3.66E+03
8.50E-02	6.89E+10	6.26E+03	5.01E+03	4.01E+03	3.22E+03	2.58E+03	2.06E+03
1.20E-01	4.90E+10	4.28E+03	3.43E+03	2.74E+03	2.20E+03	1.76E+03	1.41E+03
1.70E-01	5.12E+10	4.20E+03	3.36E+03	2.69E+03	2.16E+03	1.73E+03	1.38E+03
3.00E-01	5.87E+10	4.18E+03	3.35E+03	2.68E+03	2.15E+03	1.72E+03	1.38E+03
6.50E-01	2.89E+10	2.23E+05	1.79E+05	1.43E+05	1.15E+05	9.19E+04	7.36E+04
1.13E+00	4.97E+09	1.78E+05	1.43E+05	1.14E+05	9.14E+04	7.32E+04	5.87E+04
1.58E+00	9.03E+11	4.46E-01	3.57E-01	2.86E-01	2.29E-01	1.83E-01	1.47E-01
2.00E+00	1.79E+08	3.96E-02	3.18E-02	2.54E-02	2.04E-02	1.63E-02	1.31E-02
2.40E+00	3.62E+07	8.89E-03	7.12E-03	5.70E-03	4.57E-03	3.66E-03	2.93E-03
2.80E+00	2.13E+11	1.39E-04	1.11E-04	8.93E-05	7.15E-05	5.73E-05	4.59E-05
3.25E+00	1.35E+04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
3.75E+00	1.39E+08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.25E+00	1.82E+06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.75E+00	6.63E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
5.50E+00	1.10E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0 total	2.18E+12	5.00E+05	4.00E+05	3.20E+05	2.57E+05	2.06E+05	1.65E+05
0 mev/sec	2.10E+12	3.50E+05	2.80E+05	2.25E+05	1.80E+05	1.44E+05	1.15E+05

0 spectrum of energy release rates, mev/watt-sec
basis = single reactor assembly

0

emean	time after discharge						
(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	1.29E+06	1.29E-01	1.04E-01	8.29E-02	6.64E-02	5.32E-02	4.26E-02
3.00E-02	1.27E+06	1.23E-01	9.89E-02	7.92E-02	6.34E-02	5.08E-02	4.07E-02
5.50E-02	1.62E+06	1.53E-01	1.22E-01	9.81E-02	7.86E-02	6.29E-02	5.04E-02
8.50E-02	1.46E+06	1.33E-01	1.07E-01	8.53E-02	6.83E-02	5.47E-02	4.38E-02
1.20E-01	1.47E+06	1.28E-01	1.03E-01	8.23E-02	6.59E-02	5.28E-02	4.23E-02
1.70E-01	2.18E+06	1.79E-01	1.43E-01	1.15E-01	9.17E-02	7.35E-02	5.88E-02
3.00E-01	4.41E+06	3.13E-01	2.51E-01	2.01E-01	1.61E-01	1.29E-01	1.03E-01
6.50E-01	4.70E+06	3.63E+01	2.91E+01	2.33E+01	1.86E+01	1.49E+01	1.20E+01
1.13E+00	1.40E+06	5.01E+01	4.01E+01	3.21E+01	2.57E+01	2.06E+01	1.65E+01
1.58E+00	3.56E+08	1.76E-04	1.41E-04	1.13E-04	9.02E-05	7.22E-05	5.79E-05
2.00E+00	8.95E+04	1.98E-05	1.59E-05	1.27E-05	1.02E-05	8.16E-06	6.53E-06
2.40E+00	2.17E+04	5.33E-06	4.27E-06	3.42E-06	2.74E-06	2.19E-06	1.76E-06
2.80E+00	1.49E+08	9.74E-08	7.80E-08	6.25E-08	5.01E-08	4.01E-08	3.21E-08
3.25E+00	1.10E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

	3.75E+00	1.30E+05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	4.25E+00	1.93E+03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	4.75E+00	7.87E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	5.50E+00	1.51E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0	total	5.25E+08	8.75E+01	7.01E+01	5.61E+01	4.50E+01	3.60E+01	2.88E+01
0	gamma watts	3.37E-01	5.61E-08	4.49E-08	3.60E-08	2.88E-08	2.31E-08	1.85E-08

1 page 67

photon spectrum as a function of time for fission products

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 15.mwd, flux= 2.79E+08 n**2-sec

0 spectrum of photon release rates, photons/sec
basis = single reactor assembly

0

	emean		time after discharge					
	(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	1.00E-02	2.57E+14	4.09E+12	2.53E+12	1.83E+12	1.47E+12	1.28E+12	1.17E+12
	3.00E-02	1.12E+14	1.81E+12	1.11E+12	7.88E+11	6.24E+11	5.39E+11	4.92E+11
	5.50E-02	5.99E+13	9.26E+11	5.64E+11	3.97E+11	3.14E+11	2.70E+11	2.46E+11
	8.50E-02	4.15E+13	5.86E+11	3.50E+11	2.40E+11	1.85E+11	1.56E+11	1.41E+11
	1.20E-01	3.41E+13	7.47E+11	4.04E+11	2.42E+11	1.62E+11	1.23E+11	1.03E+11
	1.70E-01	5.47E+13	3.67E+11	2.18E+11	1.51E+11	1.17E+11	9.93E+10	8.98E+10
	3.00E-01	1.10E+14	4.10E+11	2.42E+11	1.63E+11	1.24E+11	1.04E+11	9.36E+10
	6.50E-01	2.25E+14	2.83E+12	1.59E+12	1.45E+12	1.38E+12	1.34E+12	1.30E+12
	1.13E+00	7.81E+13	3.94E+10	2.18E+10	1.33E+10	8.99E+09	6.76E+09	5.58E+09
	1.58E+00	4.04E+13	1.73E+10	8.72E+09	4.56E+09	2.53E+09	1.53E+09	1.04E+09
	2.00E+00	1.23E+13	2.93E+10	1.40E+10	6.74E+09	3.25E+09	1.58E+09	7.75E+08
	2.40E+00	1.06E+13	6.16E+08	3.25E+08	1.72E+08	9.22E+07	4.96E+07	2.69E+07
	2.80E+00	4.23E+12	8.00E+07	4.34E+07	2.37E+07	1.30E+07	7.14E+06	3.95E+06
	3.25E+00	2.48E+12	1.00E+07	5.68E+06	3.22E+06	1.82E+06	1.03E+06	5.86E+05
	3.75E+00	1.26E+12	4.42E+03	2.50E+03	1.42E+03	8.05E+02	4.56E+02	2.59E+02
	4.25E+00	1.40E+12	1.86E-08	1.89E-08	1.92E-08	1.94E-08	1.96E-08	1.97E-08
	4.75E+00	4.09E+11	9.34E-09	9.50E-09	9.63E-09	9.73E-09	9.81E-09	9.87E-09
	5.50E+00	3.04E+11	6.93E-09	7.05E-09	7.14E-09	7.22E-09	7.28E-09	7.32E-09
0	total	1.04E+15	1.18E+13	7.06E+12	5.28E+12	4.39E+12	3.92E+12	3.65E+12
0	mev/sec	4.41E+14	2.44E+12	1.38E+12	1.17E+12	1.06E+12	1.00E+12	9.61E+11

0 spectrum of energy release rates, mev/watt-sec
basis = single reactor assembly

0

	emean		time after discharge					
	(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	1.00E-02	6.42E+08	1.02E+07	6.33E+06	4.56E+06	3.67E+06	3.20E+06	2.94E+06
	3.00E-02	8.42E+08	1.36E+07	8.35E+06	5.91E+06	4.68E+06	4.04E+06	3.69E+06
	5.50E-02	8.24E+08	1.27E+07	7.76E+06	5.46E+06	4.31E+06	3.71E+06	3.38E+06
	8.50E-02	8.82E+08	1.24E+07	7.43E+06	5.10E+06	3.93E+06	3.32E+06	2.99E+06
	1.20E-01	1.02E+09	2.24E+07	1.21E+07	7.25E+06	4.87E+06	3.70E+06	3.10E+06
	1.70E-01	2.32E+09	1.56E+07	9.27E+06	6.40E+06	4.96E+06	4.22E+06	3.82E+06
	3.00E-01	8.23E+09	3.07E+07	1.82E+07	1.23E+07	9.33E+06	7.82E+06	7.02E+06
	6.50E-01	3.65E+10	4.59E+08	2.58E+08	2.35E+08	2.24E+08	2.17E+08	2.11E+08
	1.13E+00	2.20E+10	1.11E+07	6.14E+06	3.74E+06	2.53E+06	1.90E+06	1.57E+06
	1.58E+00	1.59E+10	6.80E+06	3.43E+06	1.80E+06	9.97E+05	6.04E+05	4.08E+05
	2.00E+00	6.14E+09	1.46E+07	7.01E+06	3.37E+06	1.62E+06	7.89E+05	3.88E+05
	2.40E+00	6.37E+09	3.69E+05	1.95E+05	1.03E+05	5.53E+04	2.98E+04	1.61E+04
	2.80E+00	2.96E+09	5.60E+04	3.04E+04	1.66E+04	9.08E+03	5.00E+03	2.76E+03
	3.25E+00	2.01E+09	8.14E+03	4.61E+03	2.62E+03	1.48E+03	8.40E+02	4.76E+02
	3.75E+00	1.18E+09	4.14E+00	2.35E+00	1.33E+00	7.54E-01	4.28E-01	2.42E-01
	4.25E+00	1.48E+09	1.98E-11	2.01E-11	2.04E-11	2.06E-11	2.08E-11	2.09E-11
	4.75E+00	4.85E+08	1.11E-11	1.13E-11	1.14E-11	1.16E-11	1.16E-11	1.17E-11
	5.50E+00	4.18E+08	9.53E-12	9.69E-12	9.82E-12	9.92E-12	1.00E-11	1.01E-11
0	total	1.10E+11	6.10E+08	3.45E+08	2.91E+08	2.65E+08	2.50E+08	2.40E+08

0 gamma watts 7.07E+01 3.91E-01 2.21E-01 1.87E-01 1.70E-01 1.60E-01 1.54E-01

1

0 principal photon sources in group 1, photons/sec
mean energy = .0100 mev. nuclides exceeding 1.0E-03 of total group release rate (1.28E+12) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	2.22E+10	2.11E+10	2.00E+10	1.89E+10	1.79E+10	1.70E+10	1.61E+10
sr 90	1.75E+11	1.71E+11	1.68E+11	1.64E+11	1.61E+11	1.58E+11	1.55E+11
y 90	8.60E+11	8.42E+11	8.25E+11	8.08E+11	7.92E+11	7.76E+11	7.60E+11
rh106	4.71E+11	2.67E+11	1.51E+11	8.58E+10	4.86E+10	2.76E+10	1.56E+10
cs137	1.55E+11	1.52E+11	1.49E+11	1.46E+11	1.43E+11	1.40E+11	1.38E+11
ba137m	7.25E+09	7.11E+09	6.98E+09	6.84E+09	6.71E+09	6.59E+09	6.46E+09
ce144	3.55E+11	1.69E+11	8.07E+10	3.85E+10	1.83E+10	8.75E+09	4.17E+09
pr144	4.70E+12	2.24E+12	1.07E+12	5.10E+11	2.43E+11	1.16E+11	5.53E+10
pm147	8.24E+10	6.69E+10	5.37E+10	4.31E+10	3.46E+10	2.77E+10	2.23E+10
eu155	2.43E+09	2.15E+09	1.90E+09	1.68E+09	1.49E+09	1.31E+09	1.16E+09

0 principal photon sources in group 2, photons/sec
mean energy = .0300 mev. nuclides exceeding 1.0E-03 of total group release rate (5.39E+11) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	6.48E+09	6.14E+09	5.82E+09	5.51E+09	5.23E+09	4.95E+09	4.69E+09
sr 90	4.94E+10	4.84E+10	4.74E+10	4.65E+10	4.55E+10	4.46E+10	4.37E+10
y 90	2.80E+11	2.74E+11	2.69E+11	2.63E+11	2.58E+11	2.53E+11	2.48E+11
rh106	1.57E+11	8.91E+10	5.05E+10	2.86E+10	1.62E+10	9.20E+09	5.22E+09
sb125	1.72E+10	1.40E+10	1.13E+10	9.15E+09	7.40E+09	5.99E+09	4.85E+09
te125m	9.19E+09	7.94E+09	6.44E+09	5.21E+09	4.22E+09	3.41E+09	2.76E+09
cs137	4.31E+10	4.23E+10	4.14E+10	4.07E+10	3.99E+10	3.91E+10	3.84E+10
ba137m	1.25E+11	1.22E+11	1.20E+11	1.18E+11	1.15E+11	1.13E+11	1.11E+11
ce144	8.23E+11	3.93E+11	1.87E+11	8.93E+10	4.26E+10	2.03E+10	9.69E+09
pr144	1.55E+12	7.42E+11	3.54E+11	1.69E+11	8.04E+10	3.84E+10	1.83E+10
pr144m	3.18E+10	1.51E+10	7.22E+09	3.44E+09	1.64E+09	7.83E+08	3.74E+08
pm147	1.81E+10	1.47E+10	1.18E+10	9.48E+09	7.60E+09	6.10E+09	4.90E+09

0 principal photon sources in group 3, photons/sec
mean energy = .0550 mev. nuclides exceeding 1.0E-03 of total group release rate (2.70E+11) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	3.97E+09	3.77E+09	3.57E+09	3.38E+09	3.20E+09	3.04E+09	2.88E+09
sr 90	2.92E+10	2.86E+10	2.80E+10	2.75E+10	2.69E+10	2.64E+10	2.58E+10
y 90	1.94E+11	1.90E+11	1.86E+11	1.82E+11	1.78E+11	1.75E+11	1.71E+11
rh106	1.11E+11	6.31E+10	3.58E+10	2.03E+10	1.15E+10	6.52E+09	3.69E+09
cs137	2.51E+10	2.46E+10	2.41E+10	2.37E+10	2.32E+10	2.28E+10	2.23E+10
ce144	1.19E+11	5.68E+10	2.71E+10	1.29E+10	6.16E+09	2.94E+09	1.40E+09
pr144	1.09E+12	5.21E+11	2.48E+11	1.18E+11	5.65E+10	2.69E+10	1.28E+10
pm147	7.61E+09	6.18E+09	4.96E+09	3.98E+09	3.19E+09	2.56E+09	2.06E+09
eu155	7.09E+09	6.27E+09	5.54E+09	4.90E+09	4.33E+09	3.83E+09	3.38E+09

1

0 principal photon sources in group 4, photons/sec
mean energy = .0850 mev. nuclides exceeding 1.0E-03 of total group release rate (1.56E+11) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	1.99E+09	1.89E+09	1.79E+09	1.69E+09	1.60E+09	1.52E+09	1.44E+09
sr 90	1.39E+10	1.36E+10	1.34E+10	1.31E+10	1.28E+10	1.26E+10	1.23E+10
y 90	1.12E+11	1.10E+11	1.07E+11	1.05E+11	1.03E+11	1.01E+11	9.90E+10
rh106	6.62E+10	3.75E+10	2.13E+10	1.21E+10	6.83E+09	3.87E+09	2.20E+09
cs137	1.17E+10	1.15E+10	1.13E+10	1.11E+10	1.09E+10	1.07E+10	1.05E+10
ce144	1.68E+11	8.02E+10	3.83E+10	1.82E+10	8.70E+09	4.15E+09	1.98E+09
pr144	6.42E+11	3.06E+11	1.46E+11	6.97E+10	3.32E+10	1.59E+10	7.56E+09
pm147	2.17E+09	1.76E+09	1.41E+09	1.13E+09	9.09E+08	7.29E+08	5.85E+08
eu155	1.08E+10	9.52E+09	8.41E+09	7.44E+09	6.57E+09	5.81E+09	5.14E+09

0 principal photon sources in group 5, photons/sec

mean energy = .1200 mev. nuclides exceeding 1.0E-03 of total group release rate (1.23E+11) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.20E+09	1.14E+09	1.08E+09	1.02E+09	9.67E+08	9.16E+08	8.68E+08
sr 90	7.93E+09	7.77E+09	7.61E+09	7.45E+09	7.30E+09	7.15E+09	7.01E+09
y 90	7.88E+10	7.72E+10	7.56E+10	7.41E+10	7.26E+10	7.11E+10	6.97E+10
rh106	4.78E+10	2.71E+10	1.54E+10	8.71E+09	4.94E+09	2.80E+09	1.59E+09
cs137	6.58E+09	6.45E+09	6.33E+09	6.21E+09	6.09E+09	5.98E+09	5.86E+09
ce144	8.25E+11	3.93E+11	1.88E+11	8.95E+10	4.27E+10	2.04E+10	9.71E+09
pr144	4.60E+11	2.19E+11	1.05E+11	4.99E+10	2.38E+10	1.13E+10	5.41E+09
pm147	6.87E+08	5.58E+08	4.48E+08	3.59E+08	2.88E+08	2.31E+08	1.86E+08
eu155	6.15E+09	5.43E+09	4.80E+09	4.25E+09	3.75E+09	3.32E+09	2.93E+09

0 principal photon sources in group 6, photons/sec

mean energy = .1700 mev. nuclides exceeding 1.0E-03 of total group release rate (9.93E+10) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	9.53E+08	9.03E+08	8.56E+08	8.11E+08	7.68E+08	7.28E+08	6.90E+08
sr 90	5.65E+09	5.54E+09	5.43E+09	5.32E+09	5.21E+09	5.10E+09	5.00E+09
y 90	8.12E+10	7.96E+10	7.80E+10	7.64E+10	7.48E+10	7.33E+10	7.18E+10
rh106	5.13E+10	2.91E+10	1.65E+10	9.34E+09	5.29E+09	3.00E+09	1.70E+09
sb125	2.59E+09	2.10E+09	1.70E+09	1.38E+09	1.11E+09	9.02E+08	7.30E+08
cs137	4.65E+09	4.56E+09	4.47E+09	4.39E+09	4.30E+09	4.22E+09	4.14E+09
pr144	4.86E+11	2.32E+11	1.11E+11	5.27E+10	2.51E+10	1.20E+10	5.72E+09

0 principal photon sources in group 7, photons/sec

mean energy = .3000 mev. nuclides exceeding 1.0E-03 of total group release rate (1.04E+11) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	5.75E+08	5.45E+08	5.17E+08	4.89E+08	4.64E+08	4.39E+08	4.16E+08
sr 90	2.56E+09	2.51E+09	2.46E+09	2.41E+09	2.36E+09	2.31E+09	2.27E+09
y 90	9.02E+10	8.84E+10	8.66E+10	8.48E+10	8.31E+10	8.14E+10	7.98E+10
rh106	6.18E+10	3.51E+10	1.99E+10	1.13E+10	6.38E+09	3.62E+09	2.05E+09
sb125	9.81E+08	7.96E+08	6.44E+08	5.22E+08	4.22E+08	3.42E+08	2.76E+08
cs137	2.35E+09	2.31E+09	2.26E+09	2.22E+09	2.18E+09	2.14E+09	2.10E+09
pr144	5.69E+11	2.71E+11	1.29E+11	6.17E+10	2.94E+10	1.40E+10	6.70E+09

1 page 70

0 principal photon sources in group 8, photons/sec

mean energy = .6500 mev. nuclides exceeding 1.0E-03 of total group release rate (1.34E+12) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	3.81E+10	3.74E+10	3.66E+10	3.58E+10	3.51E+10	3.44E+10	3.37E+10
rh106	1.91E+11	1.08E+11	6.13E+10	3.48E+10	1.97E+10	1.12E+10	6.33E+09
sb125	2.10E+10	1.71E+10	1.38E+10	1.12E+10	9.06E+09	7.33E+09	5.93E+09
ba137m	1.40E+12	1.37E+12	1.35E+12	1.32E+12	1.30E+12	1.27E+12	1.25E+12
pr144	3.88E+11	1.85E+11	8.83E+10	4.21E+10	2.01E+10	9.58E+09	4.57E+09

0 principal photon sources in group 9, photons/sec

mean energy = 1.1250 mev. nuclides exceeding 1.0E-03 of total group release rate (6.76E+09) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	4.97E+09	4.87E+09	4.77E+09	4.68E+09	4.58E+09	4.49E+09	4.40E+09
rh106	1.78E+10	1.01E+10	5.71E+09	3.24E+09	1.84E+09	1.04E+09	5.90E+08
pr144	4.97E+10	2.37E+10	1.13E+10	5.39E+09	2.57E+09	1.23E+09	5.85E+08

0 principal photon sources in group 10, photons/sec

mean energy = 1.5750 mev. nuclides exceeding 1.0E-03 of total group release rate (1.53E+09) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	6.35E+08	6.22E+08	6.09E+08	5.97E+08	5.85E+08	5.73E+08	5.61E+08
rh106	3.35E+09	1.90E+09	1.08E+09	6.11E+08	3.46E+08	1.96E+08	1.11E+08
pr144	3.09E+10	1.47E+10	7.03E+09	3.35E+09	1.60E+09	7.63E+08	3.64E+08

0 principal photon sources in group 11, photons/sec

mean energy = 2.0000 mev. nuclides exceeding 1.0E-03 of total group release rate (1.58E+09) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
y 90	3.80E+07	3.72E+07	3.64E+07	3.57E+07	3.50E+07	3.43E+07	3.36E+07
rh106	1.09E+09	6.18E+08	3.50E+08	1.99E+08	1.13E+08	6.38E+07	3.62E+07
pr144	6.00E+10	2.86E+10	1.36E+10	6.50E+09	3.10E+09	1.48E+09	7.06E+08

0 principal photon sources in group 12, photons/sec

mean energy = 2.4000 mev. nuclides exceeding 1.0E-03 of total group release rate (4.96E+07) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
rh106	6.09E+08	3.45E+08	1.96E+08	1.11E+08	6.29E+07	3.56E+07	2.02E+07
pr144	5.67E+08	2.70E+08	1.29E+08	6.15E+07	2.93E+07	1.40E+07	6.67E+06

1

0 principal photon sources in group 13, photons/sec

mean energy = 2.8000 mev. nuclides exceeding 1.0E-03 of total group release rate (7.14E+06) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
rh106	1.03E+08	5.83E+07	3.30E+07	1.87E+07	1.06E+07	6.02E+06	3.41E+06
pr144	4.56E+07	2.18E+07	1.04E+07	4.95E+06	2.36E+06	1.13E+06	5.37E+05

0 principal photon sources in group 14, photons/sec

mean energy = 3.2500 mev. nuclides exceeding 1.0E-03 of total group release rate (1.03E+06) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
rh106	1.77E+07	1.00E+07	5.68E+06	3.22E+06	1.82E+06	1.03E+06	5.86E+05

0 principal photon sources in group 15, photons/sec

mean energy = 3.7500 mev. nuclides exceeding 1.0E-03 of total group release rate (4.56E+02) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
rh106	7.79E+03	4.42E+03	2.50E+03	1.42E+03	8.05E+02	4.56E+02	2.59E+02

0 principal photon sources in group 16, photons/sec

mean energy = 4.2500 mev. nuclides exceeding 1.0E-03 of total group release rate (1.96E-08) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
ce142	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08
sm147	3.63E-09	4.02E-09	4.34E-09	4.59E-09	4.79E-09	4.96E-09	5.09E-09

0 principal photon sources in group 17, photons/sec

mean energy = 4.7500 mev. nuclides exceeding 1.0E-03 of total group release rate (9.81E-09) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
ce142	7.32E-09	7.32E-09	7.32E-09	7.32E-09	7.32E-09	7.32E-09	7.32E-09
sm147	1.82E-09	2.02E-09	2.18E-09	2.30E-09	2.40E-09	2.49E-09	2.55E-09

0 principal photon sources in group 18, photons/sec

mean energy = 5.5000 mev. nuclides exceeding 1.0E-03 of total group release rate (7.28E-09) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
ce142	5.43E-09	5.43E-09	5.43E-09	5.43E-09	5.43E-09	5.43E-09	5.43E-09
sm147	1.35E-09	1.50E-09	1.61E-09	1.71E-09	1.78E-09	1.84E-09	1.89E-09

1

photon spectrum as a function of time for heavy metals and their daughters

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 15.mwd, flux= 2.79E+08 n**2-sec

0 actinide photon release rates, photons/sec
basis = single reactor assembly

0

emean (mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
1.00E-02	1.33E+14	5.89E+11	5.89E+11	5.89E+11	5.88E+11	5.88E+11	5.88E+11
3.00E-02	8.46E+12	4.62E+10	4.62E+10	4.62E+10	4.62E+10	4.62E+10	4.62E+10
5.50E-02	1.09E+13	2.02E+10	2.02E+10	2.02E+10	2.02E+10	2.02E+10	2.02E+10
8.50E-02	5.26E+13	1.51E+11	1.51E+11	1.51E+11	1.51E+11	1.51E+11	1.51E+11

	1.20E-01	5.42E+13	2.90E+10	2.90E+10	2.90E+10	2.90E+10	2.90E+10	2.90E+10
	1.70E-01	1.72E+12	1.90E+10	1.90E+10	1.90E+10	1.90E+10	1.90E+10	1.90E+10
	3.00E-01	2.87E+13	1.30E+11	1.30E+11	1.30E+11	1.30E+11	1.30E+11	1.30E+11
	6.50E-01	1.45E+12	6.30E+09	6.30E+09	6.30E+09	6.30E+09	6.30E+09	6.30E+09
	1.13E+00	1.86E+12	9.16E+08	9.16E+08	9.16E+08	9.16E+08	9.16E+08	9.16E+08
	1.58E+00	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08
	2.00E+00	3.65E+07	3.65E+07	3.65E+07	3.65E+07	3.65E+07	3.65E+07	3.65E+07
	2.40E+00	3.35E+04	3.42E+04	3.50E+04	3.58E+04	3.67E+04	3.77E+04	3.87E+04
	2.80E+00	9.08E+04	1.02E+05	1.13E+05	1.24E+05	1.33E+05	1.40E+05	1.47E+05
	3.25E+00	1.03E+04	1.03E+04	1.03E+04	1.03E+04	1.03E+04	1.03E+04	1.04E+04
	3.75E+00	5.95E+03	5.95E+03	5.95E+03	5.95E+03	5.95E+03	5.95E+03	5.95E+03
	4.25E+00	3.45E+03	3.44E+03	3.44E+03	3.44E+03	3.44E+03	3.44E+03	3.44E+03
	4.75E+00	1.99E+03	1.99E+03	1.99E+03	1.99E+03	1.99E+03	1.99E+03	1.99E+03
	5.50E+00	1.80E+03	1.80E+03	1.80E+03	1.80E+03	1.80E+03	1.80E+03	1.80E+03
0	total	2.93E+14	9.92E+11	9.92E+11	9.91E+11	9.91E+11	9.91E+11	9.91E+11
0	mev/sec	2.51E+13	7.24E+10	7.24E+10	7.24E+10	7.24E+10	7.24E+10	7.24E+10

0 actinide energy release rates, mev/watt-sec
basis = single reactor assembly

0

	emean		time after discharge					
	(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	1.00E-02	3.33E+08	1.47E+06	1.47E+06	1.47E+06	1.47E+06	1.47E+06	1.47E+06
	3.00E-02	6.34E+07	3.46E+05	3.46E+05	3.46E+05	3.46E+05	3.46E+05	3.46E+05
	5.50E-02	1.50E+08	2.78E+05	2.78E+05	2.78E+05	2.78E+05	2.78E+05	2.78E+05
	8.50E-02	1.12E+09	3.20E+06	3.20E+06	3.20E+06	3.20E+06	3.20E+06	3.20E+06
	1.20E-01	1.63E+09	8.70E+05	8.70E+05	8.70E+05	8.70E+05	8.70E+05	8.70E+05
	1.70E-01	7.31E+07	8.07E+05	8.07E+05	8.07E+05	8.07E+05	8.07E+05	8.07E+05
	3.00E-01	2.15E+09	9.77E+06	9.77E+06	9.77E+06	9.77E+06	9.77E+06	9.77E+06
	6.50E-01	2.36E+08	1.02E+06	1.02E+06	1.02E+06	1.02E+06	1.02E+06	1.02E+06
	1.13E+00	5.24E+08	2.58E+05	2.58E+05	2.58E+05	2.58E+05	2.58E+05	2.58E+05
	1.58E+00	4.21E+04	4.21E+04	4.21E+04	4.21E+04	4.21E+04	4.21E+04	4.21E+04
	2.00E+00	1.82E+04	1.82E+04	1.82E+04	1.82E+04	1.82E+04	1.82E+04	1.82E+04
	2.40E+00	2.01E+01	2.05E+01	2.10E+01	2.15E+01	2.20E+01	2.26E+01	2.32E+01
	2.80E+00	6.36E+01	7.16E+01	7.94E+01	8.65E+01	9.28E+01	9.83E+01	1.03E+02
	3.25E+00	8.38E+00	8.39E+00	8.39E+00	8.40E+00	8.40E+00	8.41E+00	8.41E+00
	3.75E+00	5.58E+00	5.58E+00	5.58E+00	5.58E+00	5.58E+00	5.58E+00	5.58E+00
	4.25E+00	3.66E+00	3.66E+00	3.66E+00	3.66E+00	3.66E+00	3.66E+00	3.66E+00
	4.75E+00	2.37E+00	2.37E+00	2.37E+00	2.37E+00	2.37E+00	2.37E+00	2.37E+00
	5.50E+00	2.48E+00	2.48E+00	2.48E+00	2.48E+00	2.48E+00	2.48E+00	2.48E+00
0	total	6.27E+09	1.81E+07	1.81E+07	1.81E+07	1.81E+07	1.81E+07	1.81E+07
0	gamma watts	4.02E+00	1.16E-02	1.16E-02	1.16E-02	1.16E-02	1.16E-02	1.16E-02

1 page 73

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pb210	6.08E-13	7.68E-13	9.54E-13	1.17E-12	1.41E-12	1.68E-12	1.98E-12
bi210	1.55E-10	1.96E-10	2.43E-10	2.98E-10	3.59E-10	4.28E-10	5.05E-10
bi211	1.77E-02	2.08E-02	2.40E-02	2.73E-02	3.08E-02	3.45E-02	3.84E-02
bi212	2.59E-03	3.00E-03	3.39E-03	3.75E-03	4.06E-03	4.34E-03	4.58E-03
bi213	3.06E-06	3.60E-06	4.19E-06	4.83E-06	5.51E-06	6.25E-06	7.04E-06
bi214	7.34E-07	8.62E-07	9.99E-07	1.15E-06	1.31E-06	1.47E-06	1.65E-06
po210	1.61E-04	2.06E-04	2.59E-04	3.19E-04	3.88E-04	4.66E-04	5.53E-04
po211	6.99E-05	8.25E-05	9.49E-05	1.08E-04	1.22E-04	1.37E-04	1.52E-04
po212	1.33E-02	1.54E-02	1.73E-02	1.92E-02	2.08E-02	2.22E-02	2.35E-02
po213	4.03E-04	4.75E-04	5.53E-04	6.37E-04	7.28E-04	8.25E-04	9.29E-04

po214	6.54E-03	7.68E-03	8.90E-03	1.02E-02	1.16E-02	1.31E-02	1.47E-02
po215	2.50E-02	2.95E-02	3.39E-02	3.86E-02	4.35E-02	4.88E-02	5.42E-02
po216	1.04E-02	1.20E-02	1.35E-02	1.50E-02	1.62E-02	1.74E-02	1.83E-02
po218	3.11E-03	3.65E-03	4.24E-03	4.86E-03	5.53E-03	6.24E-03	7.00E-03
at217	2.61E-04	3.08E-04	3.58E-04	4.13E-04	4.72E-04	5.35E-04	6.02E-04
rn218	2.85E-13	1.12E-17	4.41E-22	1.74E-26	.00E+00	.00E+00	.00E+00
rn219	1.98E-02	2.34E-02	2.69E-02	3.07E-02	3.46E-02	3.88E-02	4.31E-02
rn220	8.20E-03	9.49E-03	1.07E-02	1.19E-02	1.29E-02	1.37E-02	1.45E-02
rn222	2.27E-03	2.67E-03	3.09E-03	3.55E-03	4.04E-03	4.56E-03	5.11E-03
fr221	1.91E-04	2.24E-04	2.61E-04	3.01E-04	3.44E-04	3.90E-04	4.39E-04
fr223	7.61E-09	8.86E-09	1.02E-08	1.16E-08	1.31E-08	1.47E-08	1.63E-08
ra222	2.20E-13	8.67E-18	3.41E-22	1.34E-26	.00E+00	.00E+00	.00E+00
ra223	1.15E-02	1.36E-02	1.56E-02	1.78E-02	2.00E-02	2.24E-02	2.50E-02
ra224	5.80E-03	6.71E-03	7.58E-03	8.38E-03	9.09E-03	9.72E-03	1.03E-02
ra226	1.33E-03	1.56E-03	1.81E-03	2.08E-03	2.36E-03	2.67E-03	2.99E-03
ac225	1.37E-04	1.61E-04	1.88E-04	2.17E-04	2.47E-04	2.80E-04	3.16E-04
ac227	8.57E-05	9.97E-05	1.15E-04	1.31E-04	1.47E-04	1.65E-04	1.84E-04
ac228	9.62E-15	1.10E-14	1.24E-14	1.39E-14	1.54E-14	1.69E-14	1.85E-14
th226	1.99E-13	7.82E-18	3.08E-22	1.21E-26	.00E+00	.00E+00	.00E+00
th227	1.26E-02	1.50E-02	1.72E-02	1.96E-02	2.21E-02	2.48E-02	2.75E-02
th228	4.87E-03	5.64E-03	6.37E-03	7.04E-03	7.64E-03	8.17E-03	8.62E-03
th229	8.01E-05	9.43E-05	1.10E-04	1.27E-04	1.45E-04	1.64E-04	1.84E-04
th230	5.67E-01	6.14E-01	6.61E-01	7.09E-01	7.56E-01	8.03E-01	8.50E-01
th232	2.92E-07	3.17E-07	3.41E-07	3.66E-07	3.90E-07	4.14E-07	4.39E-07
pa231	4.76E-02	5.16E-02	5.56E-02	5.96E-02	6.36E-02	6.76E-02	7.15E-02
u230	1.57E-13	6.16E-18	2.42E-22	9.52E-27	.00E+00	.00E+00	.00E+00
u231	1.47E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	6.93E-03	7.59E-03	8.12E-03	8.54E-03	8.87E-03	9.12E-03	9.31E-03
u233	1.60E-01	1.76E-01	1.91E-01	2.06E-01	2.21E-01	2.37E-01	2.52E-01
u234	6.63E+03	6.63E+03	6.63E+03	6.63E+03	6.63E+03	6.63E+03	6.63E+03
u235	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02
u236	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03
u238	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02
np235	2.41E-08	1.41E-08	8.30E-09	4.88E-09	2.86E-09	1.68E-09	9.87E-10
np237	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03
pu236	1.29E-01	1.06E-01	8.68E-02	7.11E-02	5.83E-02	4.78E-02	3.91E-02
pu237	1.70E-09	1.59E-11	1.49E-13	1.40E-15	1.31E-17	1.23E-19	1.15E-21
pu238	6.34E+03	6.31E+03	6.26E+03	6.22E+03	6.18E+03	6.14E+03	6.10E+03

1 page 74

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pu239	5.12E+02	5.12E+02	5.12E+02	5.12E+02	5.12E+02	5.12E+02	5.12E+02
pu240	9.34E-02	9.34E-02	9.34E-02	9.33E-02	9.33E-02	9.33E-02	9.33E-02
pu241	4.90E-08	4.70E-08	4.52E-08	4.34E-08	4.17E-08	4.00E-08	3.85E-08
pu242	1.64E-12	1.64E-12	1.64E-12	1.64E-12	1.64E-12	1.64E-12	1.64E-12
am239	1.36E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	2.14E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	1.31E-05	1.72E-05	2.12E-05	2.50E-05	2.86E-05	3.21E-05	3.55E-05
am242m	7.75E-13	7.71E-13	7.68E-13	7.65E-13	7.62E-13	7.59E-13	7.56E-13
am243	7.43E-16	7.43E-16	7.43E-16	7.43E-16	7.43E-16	7.43E-16	7.42E-16
cm241	1.24E-21	1.99E-24	3.21E-27	5.12E-30	.00E+00	.00E+00	.00E+00
cm242	9.90E-08	2.74E-08	7.69E-09	2.28E-09	7.96E-10	3.89E-10	2.77E-10
cm243	1.43E-15	1.41E-15	1.38E-15	1.35E-15	1.32E-15	1.30E-15	1.27E-15
cm244	3.03E-18	2.94E-18	2.84E-18	2.76E-18	2.67E-18	2.58E-18	2.50E-18

	cm245	7.66E-27	7.66E-27	7.66E-27	7.66E-27	7.66E-27	7.66E-27	7.66E-27
0	total	1.88E+04	1.88E+04	1.88E+04	1.87E+04	1.87E+04	1.86E+04	1.86E+04

1

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
th230	1.45E-05	1.58E-05	1.70E-05	1.82E-05	1.94E-05	2.06E-05	2.18E-05
pa231	5.97E-06	6.47E-06	6.97E-06	7.47E-06	7.97E-06	8.47E-06	8.97E-06
u232	4.25E-07	4.66E-07	4.99E-07	5.25E-07	5.45E-07	5.60E-07	5.72E-07
u234	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01
u235	1.68E+00	1.68E+00	1.68E+00	1.68E+00	1.68E+00	1.68E+00	1.68E+00
u236	1.57E+02	1.57E+02	1.57E+02	1.57E+02	1.57E+02	1.57E+02	1.57E+02
u237	1.22E-09	1.75E-21	1.65E-21	1.59E-21	1.53E-21	1.47E-21	1.41E-21
u238	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05
u239	9.66E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	7.39E-11	7.39E-11	7.39E-11	7.39E-11	7.39E-11	7.39E-11	7.39E-11
np238	2.02E-08	2.26E-25	2.25E-25	2.25E-25	2.24E-25	2.23E-25	2.22E-25
np239	1.98E-05	7.70E-27	7.70E-27	7.70E-27	7.70E-27	7.70E-27	7.69E-27
pu236	8.74E-03	7.17E-03	5.87E-03	4.81E-03	3.94E-03	3.23E-03	2.65E-03
pu238	1.17E+03	1.16E+03	1.16E+03	1.15E+03	1.14E+03	1.13E+03	1.13E+03
pu239	2.74E-01	2.74E-01	2.74E-01	2.74E-01	2.74E-01	2.74E-01	2.74E-01
pu240	6.21E-01	6.21E-01	6.21E-01	6.21E-01	6.21E-01	6.20E-01	6.20E-01
pu241	1.76E-09	1.69E-09	1.63E-09	1.56E-09	1.50E-09	1.44E-09	1.38E-09
pu242	1.28E-09	1.28E-09	1.28E-09	1.28E-09	1.28E-09	1.28E-09	1.28E-09
pu243	1.03E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	5.03E-09	6.62E-09	8.15E-09	9.61E-09	1.10E-08	1.24E-08	1.37E-08
am242m	3.68E-12	3.67E-12	3.65E-12	3.64E-12	3.62E-12	3.61E-12	3.59E-12
am242	2.09E-12	3.98E-15	3.97E-15	3.95E-15	3.93E-15	3.92E-15	3.90E-15
am243	3.42E-18	3.42E-18	3.42E-18	3.42E-18	3.42E-18	3.42E-18	3.42E-18
am244	6.89E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm242	4.94E-07	1.37E-07	3.84E-08	1.14E-08	3.97E-09	1.94E-09	1.38E-09
cm243	3.12E-17	3.05E-17	2.99E-17	2.93E-17	2.87E-17	2.82E-17	2.76E-17
cm244	3.95E-16	3.83E-16	3.71E-16	3.59E-16	3.48E-16	3.37E-16	3.27E-16
cm245	2.08E-27	2.08E-27	2.08E-27	2.08E-27	2.08E-27	2.08E-27	2.08E-27
cm246	3.47E-27	3.47E-27	3.47E-27	3.47E-27	3.47E-27	3.47E-27	3.47E-27
0 total	1.19E+05	1.19E+05	1.19E+05	1.19E+05	1.19E+05	1.19E+05	1.19E+05
0 total	1.38E+05	1.37E+05	1.37E+05	1.37E+05	1.37E+05	1.37E+05	1.37E+05

1

alpha-n neutron source spectrum as a function of time
(using reaction spectra for uranium dioxide)

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
2	3.00E+00 - 6.43E+00	3.649E+03	3.642E+03	3.634E+03	3.626E+03	3.618E+03	3.610E+03	3.603E+03
3	1.85E+00 - 3.00E+00	1.034E+04	1.032E+04	1.029E+04	1.027E+04	1.025E+04	1.023E+04	1.021E+04
4	1.40E+00 - 1.85E+00	2.776E+03	2.771E+03	2.765E+03	2.759E+03	2.753E+03	2.747E+03	2.741E+03
5	9.00E-01 - 1.40E+00	1.562E+03	1.559E+03	1.555E+03	1.552E+03	1.549E+03	1.545E+03	1.542E+03
6	4.00E-01 - 9.00E-01	4.536E+02	4.528E+02	4.518E+02	4.508E+02	4.498E+02	4.488E+02	4.479E+02
7	1.00E-01 - 4.00E-01	7.090E+01	7.076E+01	7.061E+01	7.045E+01	7.030E+01	7.015E+01	7.000E+01

8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		1.885E+04	1.881E+04	1.877E+04	1.873E+04	1.869E+04	1.865E+04	1.861E+04

1 page 77

spontaneous fission neutron source spectrum as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	2.267E+03	2.267E+03	2.266E+03	2.265E+03	2.263E+03	2.261E+03	2.259E+03
2	3.00E+00 - 6.43E+00	2.485E+04	2.484E+04	2.484E+04	2.484E+04	2.484E+04	2.484E+04	2.484E+04
3	1.85E+00 - 3.00E+00	2.708E+04	2.707E+04	2.707E+04	2.706E+04	2.705E+04	2.704E+04	2.703E+04
4	1.40E+00 - 1.85E+00	1.534E+04	1.534E+04	1.534E+04	1.535E+04	1.536E+04	1.537E+04	1.538E+04
5	9.00E-01 - 1.40E+00	2.106E+04	2.106E+04	2.106E+04	2.106E+04	2.107E+04	2.109E+04	2.110E+04
6	4.00E-01 - 9.00E-01	2.347E+04	2.346E+04	2.346E+04	2.346E+04	2.345E+04	2.344E+04	2.343E+04
7	1.00E-01 - 4.00E-01	4.633E+03	4.633E+03	4.632E+03	4.630E+03	4.626E+03	4.621E+03	4.617E+03
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		1.187E+05	1.187E+05	1.187E+05	1.187E+05	1.187E+05	1.187E+05	1.186E+05

1 page 78

total (alpha-n plus spon. fission) neutron source spectrum as a function of time

(using reaction spectra for uranium dioxide)

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	2.267E+03	2.267E+03	2.266E+03	2.265E+03	2.263E+03	2.261E+03	2.259E+03
2	3.00E+00 - 6.43E+00	2.849E+04	2.849E+04	2.848E+04	2.847E+04	2.846E+04	2.845E+04	2.845E+04
3	1.85E+00 - 3.00E+00	3.741E+04	3.739E+04	3.737E+04	3.734E+04	3.730E+04	3.726E+04	3.723E+04
4	1.40E+00 - 1.85E+00	1.812E+04	1.811E+04	1.811E+04	1.811E+04	1.811E+04	1.812E+04	1.812E+04
5	9.00E-01 - 1.40E+00	2.262E+04	2.262E+04	2.261E+04	2.261E+04	2.262E+04	2.263E+04	2.264E+04
6	4.00E-01 - 9.00E-01	2.392E+04	2.392E+04	2.391E+04	2.391E+04	2.390E+04	2.388E+04	2.388E+04
7	1.00E-01 - 4.00E-01	4.704E+03	4.703E+03	4.702E+03	4.700E+03	4.696E+03	4.691E+03	4.687E+03
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		1.375E+05	1.375E+05	1.374E+05	1.374E+05	1.374E+05	1.373E+05	1.373E+05

1
1 * gamma sources determined *
0case applies the following photon data base
master photon library
in binary mode
0 the sources include photons of nuclides for...

light elements
actinides
fission products

1 gamma source spectrum for gamma lines (sas2)
0 1826.25 day time of the requested nuclides
0

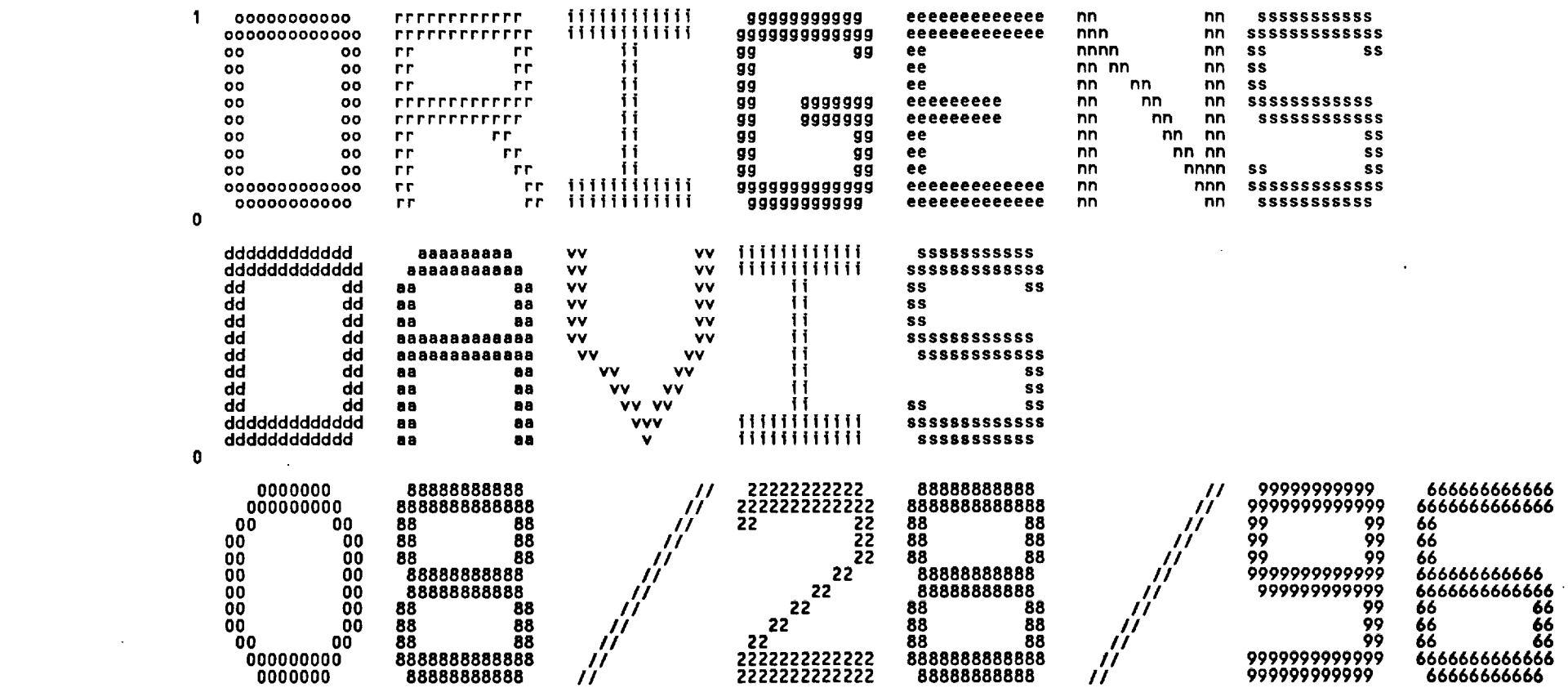
energy interval in mev			photons / second	mev / second
1.0000E-02	to	5.0000E-02	1.1389E+12	3.4166E+10
5.0000E-02	to	1.0000E-01	4.4703E+11	3.3528E+10
1.0000E-01	to	2.0000E-01	2.2869E+11	3.4304E+10
2.0000E-01	to	3.0000E-01	7.1950E+10	1.7988E+10
3.0000E-01	to	4.0000E-01	1.4071E+11	4.9249E+10
4.0000E-01	to	6.0000E-01	4.2383E+10	2.1191E+10
6.0000E-01	to	8.0000E-01	1.1773E+12	8.2409E+11
8.0000E-01	to	1.0000E+00	6.2471E+09	5.6224E+09
1.0000E+00	to	1.3300E+00	4.0598E+09	4.7297E+09
1.3300E+00	to	1.6600E+00	1.0379E+09	1.5517E+09

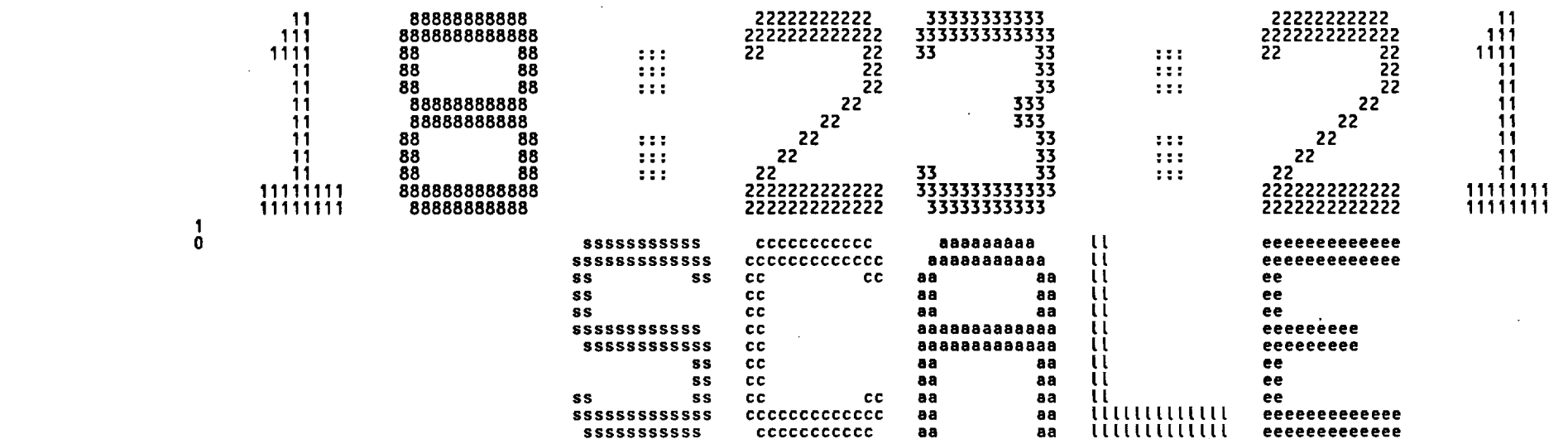
	1.6600E+00 to	2.0000E+00	2.5559E+08	4.6772E+08
	2.0000E+00 to	2.5000E+00	6.5386E+08	1.4712E+09
	2.5000E+00 to	3.0000E+00	4.9296E+06	1.3556E+07
	3.0000E+00 to	4.0000E+00	5.5379E+05	1.9383E+06
	4.0000E+00 to	5.0000E+00	5.3567E+03	2.4105E+04
	5.0000E+00 to	6.5000E+00	2.1440E+03	1.2328E+04
	6.5000E+00 to	8.0000E+00	4.1954E+02	3.0417E+03
	8.0000E+00 to	1.0000E+01	8.8927E+01	8.0034E+02
0	totals		3.2592E+12	1.0284E+12

0
0 total energy from nuclides with spectrum data = 1.0284E+12
0 total energy from nuclides with no spectrum data = 2.3297E+05
1
0 .results on logical unit no. 71, position 2, for time step 6, subcase 7. (run position 1, case position 2)
title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
0 .terminated logical unit no. 71 with zero flag record.
1 * normal termination of execution *

```
1          primary module access and input record ( scale driver - 95/03/29 - 09:06:37 )
-    module sas2h     will be called
       SAS2H: Far-Field Crit based on B&W 15x15, 3.00wt%, 20gwd/mtu 40% H2O/ 8% UO2
       44group    latticecell
       '
       '  mixtures of tuff infinite slabs:
       arbm-ftuff  2.6344 14 0 0 0 1001 1.055 8016 40.755 11023 0.570 12000 0.354
                              13027 4.434 14000 20.193 19000 1.370 20000 1.439
                              26000 0.494 92235 0.567 92234 0.007 92236 0.136
                              92238 28.593 93237 0.033 1 1.0 538   end
       kr-83      1 0 1-20 538 end
       kr-85      1 0 1-20 538 end
       sr-90      1 0 1-20 538 end
        y-89      1 0 1-20 538 end
       mo-95      1 0 1-20 538 end
       zr-93      1 0 1-20 538 end
       zr-94      1 0 1-20 538 end
       zr-95      1 0 1-20 538 end
       nb-94      1 0 1-20 538 end
       tc-99      1 0 1-20 538 end
       rh-103     1 0 1-20 538 end
       rh-105     1 0 1-20 538 end
       ru-101     1 0 1-20 538 end
       ru-106     1 0 1-20 538 end
       pd-105     1 0 1-20 538 end
       pd-108     1 0 1-20 538 end
       ag-109     1 0 1-20 538 end
       sb-124     1 0 1-20 538 end
       xe-131     1 0 1-20 538 end
       xe-132     1 0 1-20 538 end
       xe-135     1 0 1-20 538 end
       xe-136     1 0 1-20 538 end
       cs-134     1 0 1-20 538 end
       cs-135     1 0 1-20 538 end
       cs-137     1 0 1-20 538 end
       ba-136     1 0 1-20 538 end
       la-139     1 0 1-20 538 end
       pr-141     1 0 1-20 538 end
       pr-143     1 0 1-20 538 end
       ce-144     1 0 1-20 538 end
       nd-143     1 0 1-20 538 end
       nd-145     1 0 1-20 538 end
       pm-147     1 0 1-20 538 end
       pm-148     1 0 1-20 538 end
       nd-147     1 0 1-20 538 end
       sm-147     1 0 1-20 538 end
       sm-149     1 0 1-20 538 end
       sm-150     1 0 1-20 538 end
       sm-151     1 0 1-20 538 end
       sm-152     1 0 1-20 538 end
       gd-155     1 0 1-20 538 end
       eu-153     1 0 1-20 538 end
       eu-154     1 0 1-20 538 end
       eu-155     1 0 1-20 538 end
       arbm-tuff1  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                              13027 6.130 14000 27.919 19000 1.894 20000 1.989
                              26000 0.683 2 1.0 323.   end
       arbm-tuff2  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                              13027 6.130 14000 27.919 19000 1.894 20000 1.989
                              26000 0.683 3 1.0 323.   end
```

```
      '
      ' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
      end comp
      '
      ' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
      '
      '  fuel-pin-cell geometry:
      '
      symmslabcell  340.  280. 1 3 281. 2 end
      '
      ' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
      '
      '
      '  assembly and cycle parameters:
      '
      npin/assm=1 fuelngth=280. ncycles=1 nlib/cyc=5 volfueltot=1.1494E7
      printlevel=6 inplevel=0 end
      power=0.004 burn=3.6525e4 down=1.82625e3
         end
```






```
**********************************************************************************
**********************************************************************************
**********************************************************************************
*****                                                                        *****
*****                  program verification information                   *****
*****                                                                        *****
*****                 code system:    scale  version:    4.3              *****
*****                                                                        *****
**********************************************************************************
**********************************************************************************
*****                                                                        *****
*****                                                                        *****
*****              program:  o0o004                                          *****
*****                                                                        *****
*****         creation date:  03/13/96                                       *****
*****                                                                        *****
*****              library:  /usr1/ornl/Scale/bin                            *****
*****                                                                        *****
*****                                                                        *****
*****            test code:  origens                                         *****
*****                                                                        *****
*****              version:  3.0                                             *****
*****                                                                        *****
*****              jobname:  davis                                           *****
*****                                                                        *****
*****     date of execution:  08/28/96                                       *****
*****                                                                        *****
*****     time of execution:  18:23:21                                       *****
```

```
                        *****                                                                *****
                        *****                                                                *****
                        ********************************************************************************
                        ********************************************************************************
                        ********************************************************************************
1
0       -1q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0         dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0             short-lived split test fraction, qxn =    9.1188E-04
0             half-norm of matrix used, axn =    7.0000E+00
0             4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
0        1q array has     20 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        4q array has      1 entries.
0       54q array has     12 entries.
1library information...

         cross-section data taken from position number  1 of library on unit 33.

         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         ********************************************************************************
         *                                                                              *
         *            prelim lwr origen-s binary working library--id = 1143             *
         *         made from modified card-image origen-s libraries of scale 4.2        *
         *      data from the light element, actinide, and fission product libraries    *
         *        decay data, including gamma and total energy, are from endf/b-vi      *
         *                                                                              *
         *      neutron flux spectrum factors and cross sections were produced from     *
         *     the "presas2" case updating all nuclides on the scale "burnup" library   *
         *                                                                              *
         *                  fission product yields are from endf/b-v                    *
         *                                                                              *
         *              photon libraries use an 18-energy-group structure               *
         *             the photon data are from the master photon data base,            *
         *              produced to include bremsstrahlung from uo2 matrix              *
         *                                                                              *
         *        see information above this box (if present) for later updates         *
         *                                                                              *
         ********************************************************************************
         *                                                                              *
```

```
0        ********************************************************************************
0                 .other identification and sizes of library.
0                  data set name:  ft33f001
0               8/28/1996    date library was produced
0                    1697    total number of nuclides in library
                      689    number of light-element nuclides
                      129    number of actinide nuclides
                      879    number of fission product nuclides
0                    7993    number of nonzero off-diagonal matrix elements
0        ********************************************************************************
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              light elements          page    1
0                                        nuclide concentrations, grams
                                         basis =single reactor assembly
              initial  1E-18 d
    na 23   1.73E+05  1.73E+05
    al 27   1.35E+06  1.35E+06
   total    1.52E+06  1.52E+06
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                  actinides          page    2
0                                        nuclide concentrations, grams
                                         basis =single reactor assembly
              initial  1E-18 d
     u234   2.12E+03  2.12E+03
     u235   1.72E+05  1.72E+05
     u236   4.12E+04  4.12E+04
     u238   8.66E+06  8.66E+06
    np237   9.99E+03  9.99E+03
   total    8.88E+06  8.88E+06
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                          page    3
        power=    .00mw, burnup=     29.mwd, flux= 3.00E+08n/cm**2-sec
0                                        basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial       1826.3 d       3652.5 d       5478.8 d       7305.0 d       7305.1 d
     productions  1.023168E+06  1.023204E+06  1.023241E+06  1.023278E+06  1.023315E+06  1.023315E+06
     absorptions  8.460999E+05  8.461583E+05  8.462148E+05  8.462709E+05  8.463270E+05  8.463269E+05
     k infinity   1.209275E+00  1.209235E+00  1.209198E+00  1.209161E+00  1.209125E+00  1.209125E+00
0                    initial       1826.3 d       3652.5 d       5478.8 d       7305.0 d       7305.1 d
     actinide
     absorptions  8.423347E+05  8.423564E+05  8.423781E+05  8.423998E+05  8.424216E+05  8.424216E+05
     non-actinide
     abs. fracs.  4.450142E-03  4.493117E-03  4.533887E-03  4.574358E-03  4.614592E-03  4.614472E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                  fission products   page    4
0                                fraction of total absorption rate
        power=    .00mw, burnup=     29.mwd, flux= 3.00E+08n/cm**2-sec
0              initial  1826.3 d  3652.5 d  5478.8 d  7305.0 d  7305.1 d

     sm149      .00E+00  3.63E-05  7.24E-05  1.08E-04  1.44E-04  1.44E-04
     sm151      .00E+00  1.51E-06  2.96E-06  4.36E-06  5.70E-06  5.70E-06
     nd143      .00E+00  7.23E-07  1.45E-06  2.19E-06  2.92E-06  2.92E-06
     xe135      .00E+00  2.28E-06  2.28E-06  2.28E-06  2.28E-06  2.24E-06
     gd157      .00E+00  3.72E-07  7.41E-07  1.11E-06  1.47E-06  1.47E-06
     rh103      .00E+00  3.35E-07  6.81E-07  1.03E-06  1.37E-06  1.37E-06
     gd155      .00E+00  1.44E-07  4.69E-07  8.80E-07  1.33E-06  1.33E-06
     cd113      .00E+00  3.17E-07  6.34E-07  9.49E-07  1.26E-06  1.26E-06
     xe131      .00E+00  2.35E-07  4.72E-07  7.09E-07  9.46E-07  9.46E-07
     cs133      .00E+00  1.83E-07  3.67E-07  5.51E-07  7.35E-07  7.35E-07
     tc 99      .00E+00  1.36E-07  2.71E-07  4.07E-07  5.43E-07  5.43E-07
     sm147      .00E+00  6.04E-08  1.77E-07  3.08E-07  4.43E-07  4.43E-07
     nd145      .00E+00  1.04E-07  2.08E-07  3.12E-07  4.16E-07  4.16E-07
```

eu151	.00E+00	2.17E-08	8.55E-08	1.90E-07	3.33E-07	3.33E-07
mo 95	.00E+00	6.69E-08	1.39E-07	2.12E-07	2.85E-07	2.85E-07
pm147	.00E+00	2.00E-07	2.54E-07	2.69E-07	2.73E-07	2.73E-07
sm152	.00E+00	5.55E-08	1.11E-07	1.67E-07	2.22E-07	2.22E-07
kr 83	.00E+00	4.45E-08	8.91E-08	1.34E-07	1.78E-07	1.78E-07
cs135	.00E+00	4.12E-08	8.24E-08	1.24E-07	1.65E-07	1.65E-07
eu155	.00E+00	8.33E-08	1.23E-07	1.42E-07	1.51E-07	1.51E-07
ru101	.00E+00	3.25E-08	6.50E-08	9.74E-08	1.30E-07	1.30E-07
pr141	.00E+00	2.97E-08	6.01E-08	9.05E-08	1.21E-07	1.21E-07
eu153	.00E+00	2.78E-08	5.57E-08	8.35E-08	1.11E-07	1.11E-07
la139	.00E+00	2.48E-08	4.96E-08	7.45E-08	9.93E-08	9.93E-08
pd105	.00E+00	1.06E-08	2.13E-08	3.20E-08	4.26E-08	4.26E-08
zr 93	.00E+00	1.03E-08	2.06E-08	3.08E-08	4.11E-08	4.11E-08
i129	.00E+00	7.63E-09	1.53E-08	2.30E-08	3.06E-08	3.06E-08
nd144	.00E+00	5.77E-09	1.32E-08	2.06E-08	2.80E-08	2.80E-08
mo 97	.00E+00	5.64E-09	1.13E-08	1.69E-08	2.26E-08	2.26E-08
ag109	.00E+00	4.03E-09	8.06E-09	1.21E-08	1.62E-08	1.62E-08
zr 91	.00E+00	2.54E-09	5.20E-09	7.86E-09	1.05E-08	1.05E-08
y 89	.00E+00	2.44E-09	4.98E-09	7.52E-09	1.01E-08	1.01E-08
ba137	.00E+00	6.58E-10	2.53E-09	5.49E-09	9.41E-09	9.41E-09
ru102	.00E+00	2.29E-09	4.58E-09	6.87E-09	9.16E-09	9.16E-09
rh105	.00E+00	8.28E-09	8.28E-09	8.28E-09	8.28E-09	8.25E-09
ce142	.00E+00	2.05E-09	4.11E-09	6.16E-09	8.21E-09	8.21E-09
nd148	.00E+00	1.99E-09	3.99E-09	5.98E-09	7.98E-09	7.98E-09
nd146	.00E+00	1.66E-09	3.32E-09	4.98E-09	6.65E-09	6.65E-09
sr 90	.00E+00	1.97E-09	3.71E-09	5.24E-09	6.60E-09	6.60E-09
ba138	.00E+00	1.42E-09	2.83E-09	4.25E-09	5.66E-09	5.66E-09
in115	.00E+00	1.38E-09	2.76E-09	4.15E-09	5.53E-09	5.53E-09
pd108	.00E+00	1.38E-09	2.75E-09	4.13E-09	5.51E-09	5.51E-09
ce140	.00E+00	1.31E-09	2.64E-09	3.96E-09	5.29E-09	5.29E-09
xe132	.00E+00	1.21E-09	2.42E-09	3.62E-09	4.83E-09	4.83E-09
mo 98	.00E+00	8.46E-10	1.69E-09	2.54E-09	3.38E-09	3.38E-09
mo100	.00E+00	8.09E-10	1.62E-09	2.43E-09	3.24E-09	3.24E-09
pd107	.00E+00	7.97E-10	1.59E-09	2.39E-09	3.19E-09	3.19E-09
xe134	.00E+00	7.85E-10	1.57E-09	2.35E-09	3.14E-09	3.14E-09
sm150	.00E+00	1.93E-10	7.70E-10	1.73E-09	3.06E-09	3.06E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 5
0 fraction of total absorption rate
power= .00mw, burnup= 29.mwd, flux= 3.00E+08n/cm**2-sec
0 initial 1826.3 d 3652.5 d 5478.8 d 7305.0 d 7305.1 d

pr143	.00E+00	2.66E-09	2.66E-09	2.66E-09	2.66E-09	2.66E-09
zr 92	.00E+00	6.38E-10	1.28E-09	1.91E-09	2.55E-09	2.55E-09
i127	.00E+00	5.14E-10	1.04E-09	1.56E-09	2.09E-09	2.09E-09
zr 96	.00E+00	5.21E-10	1.04E-09	1.56E-09	2.08E-09	2.08E-09
xe133	.00E+00	1.99E-09	1.99E-09	1.99E-09	1.99E-09	1.99E-09
ru104	.00E+00	4.96E-10	9.93E-10	1.49E-09	1.99E-09	1.99E-09
nd150	.00E+00	4.44E-10	8.88E-10	1.33E-09	1.78E-09	1.78E-09
xe136	.00E+00	4.25E-10	8.49E-10	1.27E-09	1.70E-09	1.70E-09
ce141	.00E+00	1.58E-09	1.58E-09	1.58E-09	1.58E-09	1.58E-09
cs137	.00E+00	4.13E-10	7.81E-10	1.11E-09	1.40E-09	1.40E-09
br 81	.00E+00	3.23E-10	6.46E-10	9.68E-10	1.29E-09	1.29E-09
rb 85	.00E+00	2.57E-10	5.30E-10	8.14E-10	1.11E-09	1.11E-09
zr 94	.00E+00	2.76E-10	5.51E-10	8.26E-10	1.10E-09	1.10E-09
pm149	.00E+00	9.62E-10	9.62E-10	9.62E-10	9.62E-10	9.55E-10
nd147	.00E+00	9.44E-10	9.44E-10	9.44E-10	9.44E-10	9.40E-10
cd111	.00E+00	2.04E-10	4.10E-10	6.16E-10	8.23E-10	8.23E-10
te130	.00E+00	1.92E-10	3.85E-10	5.77E-10	7.69E-10	7.69E-10
sm154	.00E+00	1.88E-10	3.75E-10	5.63E-10	7.50E-10	7.50E-10
rb 87	.00E+00	1.82E-10	3.65E-10	5.47E-10	7.29E-10	7.29E-10

ce144	.00E+00	5.93E-10	6.00E-10	6.00E-10	6.00E-10	5.99E-10
se 77	.00E+00	1.27E-10	2.54E-10	3.82E-10	5.09E-10	5.09E-10
kr 85	.00E+00	1.57E-10	2.71E-10	3.53E-10	4.13E-10	4.13E-10
ru103	.00E+00	3.56E-10	3.56E-10	3.56E-10	3.56E-10	3.56E-10
kr 84	.00E+00	8.70E-11	1.74E-10	2.61E-10	3.48E-10	3.48E-10
pd106	.00E+00	6.65E-11	1.59E-10	2.52E-10	3.45E-10	3.45E-10
se 79	.00E+00	6.52E-11	1.30E-10	1.96E-10	2.61E-10	2.61E-10
sb121	.00E+00	6.31E-11	1.26E-10	1.89E-10	2.53E-10	2.53E-10
zr 90	.00E+00	1.48E-11	5.70E-11	1.23E-10	2.11E-10	2.11E-10
sb123	.00E+00	5.10E-11	1.03E-10	1.54E-10	2.06E-10	2.06E-10
kr 86	.00E+00	4.73E-11	9.47E-11	1.42E-10	1.89E-10	1.89E-10
te128	.00E+00	4.26E-11	8.53E-11	1.28E-10	1.71E-10	1.71E-10
zr 95	.00E+00	1.68E-10	1.68E-10	1.68E-10	1.68E-10	1.68E-10
nb 95	.00E+00	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10
y 91	.00E+00	1.42E-10	1.42E-10	1.42E-10	1.42E-10	1.42E-10
gd156	.00E+00	3.28E-11	6.62E-11	9.98E-11	1.34E-10	1.34E-10
se 80	.00E+00	3.05E-11	6.10E-11	9.14E-11	1.22E-10	1.22E-10
dy161	.00E+00	2.64E-11	5.31E-11	7.98E-11	1.07E-10	1.07E-10
pm151	.00E+00	1.09E-10	1.09E-10	1.09E-10	1.09E-10	1.05E-10
te125	.00E+00	1.16E-11	3.43E-11	6.02E-11	8.69E-11	8.69E-11
tb159	.00E+00	1.82E-11	3.65E-11	5.48E-11	7.31E-11	7.31E-11
cd112	.00E+00	1.74E-11	3.48E-11	5.22E-11	6.96E-11	6.96E-11
li 6	.00E+00	1.73E-11	3.46E-11	5.19E-11	6.92E-11	6.92E-11
sn117	.00E+00	1.38E-11	2.76E-11	4.14E-11	5.52E-11	5.52E-11
ba140	.00E+00	4.72E-11	4.72E-11	4.72E-11	4.72E-11	4.70E-11
sn119	.00E+00	1.13E-11	2.25E-11	3.38E-11	4.51E-11	4.51E-11
sn115	.00E+00	1.03E-11	2.06E-11	3.09E-11	4.12E-11	4.12E-11
sm153	.00E+00	3.80E-11	3.80E-11	3.80E-11	3.80E-11	3.70E-11
sr 88	.00E+00	8.72E-12	1.74E-11	2.61E-11	3.49E-11	3.49E-11
eu154	.00E+00	4.71E-12	1.26E-11	2.26E-11	3.40E-11	3.40E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 6
0 fraction of total absorption rate
power= .00mw, burnup= 29.mwd, flux= 3.00E+08n/cm**2-sec
0

	initial	1826.3 d	3652.5 d	5478.8 d	7305.0 d	7305.1 d
eu156	.00E+00	3.38E-11	3.39E-11	3.39E-11	3.39E-11	3.39E-11
sr 89	.00E+00	3.04E-11	3.04E-11	3.04E-11	3.04E-11	3.03E-11
ru106	.00E+00	2.50E-11	2.58E-11	2.58E-11	2.59E-11	2.58E-11
pd110	.00E+00	6.32E-12	1.26E-11	1.90E-11	2.53E-11	2.53E-11
cd114	.00E+00	6.18E-12	1.24E-11	1.86E-11	2.49E-11	2.49E-11
eu152	.00E+00	4.70E-13	3.46E-12	1.09E-11	2.41E-11	2.41E-11
gd158	.00E+00	5.76E-12	1.16E-11	1.77E-11	2.38E-11	2.38E-11
se 82	.00E+00	5.91E-12	1.18E-11	1.77E-11	2.36E-11	2.36E-11
sn126	.00E+00	4.71E-12	9.42E-12	1.41E-11	1.88E-11	1.88E-11
se 78	.00E+00	4.52E-12	9.03E-12	1.35E-11	1.81E-11	1.81E-11
ce143	.00E+00	1.74E-11	1.74E-11	1.74E-11	1.74E-11	1.68E-11
la140	.00E+00	1.54E-11	1.54E-11	1.54E-11	1.54E-11	1.54E-11
sb125	.00E+00	1.08E-11	1.38E-11	1.46E-11	1.49E-11	1.49E-11
sn124	.00E+00	3.68E-12	7.37E-12	1.11E-11	1.47E-11	1.47E-11
dy162	.00E+00	3.49E-12	7.01E-12	1.05E-11	1.41E-11	1.41E-11
mo 99	.00E+00	1.32E-11	1.32E-11	1.32E-11	1.32E-11	1.29E-11
dy164	.00E+00	3.13E-12	6.27E-12	9.44E-12	1.26E-11	1.26E-11
as 75	.00E+00	2.69E-12	5.39E-12	8.08E-12	1.08E-11	1.08E-11
pm148m	.00E+00	7.01E-12	8.99E-12	9.52E-12	9.66E-12	9.65E-12
kr 87	.00E+00	2.26E-11	2.26E-11	2.26E-11	2.26E-11	8.03E-12
te127m	.00E+00	7.36E-12	7.36E-12	7.36E-12	7.36E-12	7.36E-12
i131	.00E+00	6.77E-12	6.77E-12	6.77E-12	6.77E-12	6.75E-12
y 90	.00E+00	1.87E-12	3.52E-12	4.98E-12	6.27E-12	6.27E-12
sn118	.00E+00	1.51E-12	3.03E-12	4.54E-12	6.05E-12	6.05E-12
ba136	.00E+00	1.42E-12	2.87E-12	4.32E-12	5.77E-12	5.77E-12

ru 99	.00E+00	8.61E-13	2.07E-12	3.63E-12	5.54E-12	5.54E-12
cs134	.00E+00	1.07E-12	2.39E-12	3.76E-12	5.13E-12	5.13E-12
cd116	.00E+00	1.28E-12	2.55E-12	3.83E-12	5.10E-12	5.10E-12
sn122	.00E+00	1.25E-12	2.49E-12	3.74E-12	4.98E-12	4.98E-12
sn120	.00E+00	9.38E-13	1.88E-12	2.81E-12	3.75E-12	3.75E-12
kr 82	.00E+00	7.81E-13	1.57E-12	2.36E-12	3.15E-12	3.15E-12
dy163	.00E+00	7.69E-13	1.54E-12	2.32E-12	3.11E-12	3.11E-12
in113	.00E+00	2.30E-13	8.51E-13	1.78E-12	2.95E-12	2.95E-12
ge 73	.00E+00	7.28E-13	1.46E-12	2.18E-12	2.91E-12	2.91E-12
xe130	.00E+00	4.78E-13	9.60E-13	1.45E-12	1.94E-12	1.94E-12
te129m	.00E+00	1.78E-12	1.78E-12	1.78E-12	1.78E-12	1.78E-12
gd152	.00E+00	2.62E-14	2.11E-13	7.25E-13	1.75E-12	1.75E-12
mo 96	.00E+00	3.45E-13	7.00E-13	1.06E-12	1.44E-12	1.44E-12
ge 76	.00E+00	2.66E-13	5.32E-13	7.99E-13	1.06E-12	1.06E-12
ru100	.00E+00	9.50E-14	2.51E-13	4.67E-13	7.45E-13	7.45E-13
gd154	.00E+00	2.69E-14	1.39E-13	3.69E-13	7.43E-13	7.43E-13
gd160	.00E+00	1.69E-13	3.38E-13	5.07E-13	6.77E-13	6.77E-13
te126	.00E+00	1.29E-13	2.60E-13	3.91E-13	5.24E-13	5.24E-13
sm148	.00E+00	3.96E-14	1.37E-13	2.79E-13	4.60E-13	4.60E-13
pm148	.00E+00	2.80E-13	3.56E-13	3.77E-13	3.82E-13	3.78E-13
nd142	.00E+00	2.10E-14	8.38E-14	1.88E-13	3.35E-13	3.35E-13
ag111	.00E+00	3.20E-13	3.21E-13	3.21E-13	3.21E-13	3.20E-13
ba134	.00E+00	1.50E-14	6.69E-14	1.59E-13	2.93E-13	2.93E-13
ba135	.00E+00	1.99E-14	7.28E-14	1.59E-13	2.78E-13	2.78E-13

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 7
0 fraction of total absorption rate
power= .00mw, burnup= 29.mwd, flux= 3.00E+08n/cm**2-sec
0

	initial	1826.3 d	3652.5 d	5478.8 d	7305.0 d	7305.1 d
eu157	.00E+00	2.95E-13	2.96E-13	2.96E-13	2.96E-13	2.74E-13
cd115m	.00E+00	2.35E-13	2.35E-13	2.35E-13	2.35E-13	2.35E-13
pd104	.00E+00	1.39E-14	5.63E-14	1.27E-13	2.27E-13	2.27E-13
ho165	.00E+00	5.28E-14	1.06E-13	1.59E-13	2.13E-13	2.13E-13
te124	.00E+00	2.93E-14	6.00E-14	9.08E-14	1.22E-13	1.22E-13
sr 87	.00E+00	3.04E-14	6.08E-14	9.12E-14	1.22E-13	1.22E-13
nb 94	.00E+00	1.75E-14	3.51E-14	5.26E-14	7.01E-14	7.01E-14
ge 74	.00E+00	1.47E-14	2.93E-14	4.40E-14	5.86E-14	5.86E-14
cs136	.00E+00	5.60E-14	5.61E-14	5.63E-14	5.64E-14	5.62E-14
ge 72	.00E+00	9.81E-15	1.96E-14	2.95E-14	3.93E-14	3.93E-14
sr 86	.00E+00	8.48E-15	1.71E-14	2.59E-14	3.47E-14	3.47E-14
cd110	.00E+00	2.77E-15	9.38E-15	1.97E-14	3.37E-14	3.37E-14
sn125	.00E+00	2.94E-14	2.94E-14	2.94E-14	2.94E-14	2.92E-14
ru105	.00E+00	3.00E-14	3.00E-14	3.00E-14	3.00E-14	2.30E-14
se 76	.00E+00	5.69E-15	1.14E-14	1.71E-14	2.29E-14	2.29E-14
br 79	.00E+00	1.37E-15	5.44E-15	1.22E-14	2.16E-14	2.16E-14
xe129	.00E+00	7.62E-16	3.05E-15	6.86E-15	1.22E-14	1.22E-14
ag107	.00E+00	7.08E-16	2.83E-15	6.37E-15	1.13E-14	1.13E-14
sn123	.00E+00	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14
nb 93	.00E+00	2.00E-16	1.42E-15	4.49E-15	1.01E-14	1.01E-14
te132	.00E+00	9.49E-15	9.49E-15	9.49E-15	9.49E-15	9.34E-15
rb 88	.00E+00	1.27E-14	1.27E-14	1.27E-14	1.27E-14	8.70E-15
i135	.00E+00	1.00E-14	1.00E-14	1.00E-14	1.00E-14	8.18E-15
xe128	.00E+00	1.43E-15	3.02E-15	4.75E-15	6.63E-15	6.63E-15
dy160	.00E+00	1.16E-15	2.58E-15	4.19E-15	6.01E-15	6.01E-15
er166	.00E+00	1.37E-15	2.77E-15	4.19E-15	5.64E-15	5.64E-15
sb126	.00E+00	2.99E-15	3.00E-15	3.01E-15	3.02E-15	3.01E-15
sb124	.00E+00	2.10E-15	2.11E-15	2.11E-15	2.11E-15	2.11E-15
in117m	.00E+00	2.07E-15	2.07E-15	2.07E-15	2.07E-15	1.82E-15
kr 80	.00E+00	4.12E-16	8.25E-16	1.24E-15	1.65E-15	1.65E-15
te134	.00E+00	5.77E-15	5.77E-15	5.77E-15	5.77E-15	8.55E-16

i130	.00E+00	7.17E-16	7.23E-16	7.30E-16	7.36E-16	6.63E-16
sn116	.00E+00	4.53E-17	1.51E-16	3.17E-16	5.43E-16	5.43E-16
in117	.00E+00	6.07E-16	6.07E-16	6.08E-16	6.08E-16	5.40E-16
tb160	.00E+00	3.46E-16	3.98E-16	4.49E-16	5.01E-16	5.01E-16
te122	.00E+00	6.63E-17	1.57E-16	2.73E-16	4.14E-16	4.14E-16
rb 86	.00E+00	2.41E-16	2.43E-16	2.45E-16	2.47E-16	2.46E-16
be 9	.00E+00	3.42E-17	6.84E-17	1.03E-16	1.37E-16	1.37E-16
pr142	.00E+00	3.44E-17	6.91E-17	1.04E-16	1.38E-16	1.29E-16
dy165	.00E+00	2.10E-16	2.11E-16	2.12E-16	2.14E-16	1.24E-16
te123	.00E+00	2.75E-17	5.73E-17	8.73E-17	1.17E-16	1.17E-16
li 7	.00E+00	1.33E-17	2.66E-17	4.00E-17	5.33E-17	5.33E-17
ge 75	.00E+00	8.51E-17	8.51E-17	8.51E-17	8.51E-17	3.34E-17
cd118	.00E+00	1.19E-16	1.19E-16	1.19E-16	1.19E-16	2.44E-17
er167	.00E+00	5.52E-18	1.14E-17	1.76E-17	2.41E-17	2.41E-17
cd108	.00E+00	2.76E-19	5.55E-19	8.45E-19	1.14E-18	1.14E-18
cs134m	.00E+00	2.56E-19	5.12E-19	7.68E-19	1.02E-18	6.49E-19
in119m	.00E+00	2.97E-17	2.97E-17	2.97E-17	2.97E-17	4.16E-19
cd109	.00E+00	1.76E-19	1.96E-19	2.06E-19	2.13E-19	2.13E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 8
0 fraction of total absorption rate
power= .00mw, burnup= 29.mwd, flux= 3.00E+08n/cm**2-sec

	initial	1826.3 d	3652.5 d	5478.8 d	7305.0 d	7305.1 d
sn114	.00E+00	3.33E-21	1.33E-20	2.66E-20	4.66E-20	4.66E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 9
power= 4.000E-03mw, burnup=2.9220E+01mwd, flux= 3.00E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	1826.3 d	3652.5 d	5478.8 d	7305.0 d	7305.1 d
h 1	.00E+00	4.41E-07	8.81E-07	1.32E-06	1.76E-06	1.76E-06
h 2	.00E+00	1.31E-09	2.61E-09	3.92E-09	5.22E-09	5.22E-09
h 3	.00E+00	8.35E-12	1.47E-11	1.94E-11	2.30E-11	2.30E-11
h 4	.00E+00	3.38E-35	5.93E-35	7.85E-35	9.30E-35	.00E+00
he 3	.00E+00	1.23E-12	4.50E-12	9.32E-12	1.53E-11	1.53E-11
he 4	.00E+00	7.28E-08	1.46E-07	2.18E-07	2.91E-07	2.91E-07
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	.00E+00	8.74E-09	1.75E-08	2.62E-08	3.50E-08	3.50E-08
ne 21	.00E+00	1.58E-15	6.32E-15	1.42E-14	2.53E-14	2.53E-14
ne 22	.00E+00	2.56E-11	7.43E-11	1.29E-10	1.85E-10	1.86E-10
ne 23	.00E+00	7.28E-15	7.28E-15	7.28E-15	7.28E-15	7.28E-30
na 22	.00E+00	3.15E-11	3.98E-11	4.20E-11	4.26E-11	4.26E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	.00E+00	3.64E-08	3.64E-08	3.64E-08	3.64E-08	3.33E-08
na 24m	.00E+00	5.99E-15	5.99E-15	5.99E-15	5.99E-15	5.99E-30
na 25	.00E+00	2.93E-28	5.94E-28	9.05E-28	1.22E-27	1.21E-42
mg 24	.00E+00	7.55E-05	1.51E-04	2.27E-04	3.02E-04	3.02E-04
mg 25	.00E+00	9.73E-12	1.98E-11	3.01E-11	4.07E-11	4.07E-11
mg 26	.00E+00	1.31E-09	2.61E-09	3.92E-09	5.22E-09	5.22E-09
mg 27	.00E+00	2.18E-12	2.18E-12	2.18E-12	2.18E-12	4.70E-16
mg 28	.00E+00	4.41E-24	4.41E-24	4.41E-24	4.41E-24	4.14E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	.00E+00	2.70E-10	2.70E-10	2.70E-10	2.70E-10	3.67E-25
al 29	.00E+00	3.80E-28	1.52E-27	3.42E-27	6.08E-27	3.18E-32
al 30	.00E+00	3.49E-41	2.79E-40	9.42E-40	2.23E-39	.00E+00
si 28	.00E+00	2.20E-04	4.40E-04	6.59E-04	8.79E-04	8.79E-04
si 29	.00E+00	1.41E-12	5.64E-12	1.27E-11	2.26E-11	2.26E-11
si 30	.00E+00	9.70E-21	7.76E-20	2.62E-19	6.21E-19	6.21E-19
si 31	.00E+00	6.95E-33	5.56E-32	1.88E-31	4.45E-31	2.68E-31
si 32	.00E+00	6.12E-41	9.75E-40	4.92E-39	1.55E-38	1.55E-38

totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		3.00E+08	3.00E+08	3.00E+08	3.00E+08	3.00E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 10

power= 4.000E-03mw, burnup=2.9220E+01mwd, flux= 3.00E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	1826.3 d	3652.5 d	5478.8 d	7305.0 d	7305.1 d
he 4	.00E+00	2.74E-04	5.87E-04	9.39E-04	1.33E-03	1.33E-03
pb206	.00E+00	7.11E-14	1.14E-12	5.75E-12	1.79E-11	1.79E-11
pb207	.00E+00	9.49E-12	7.37E-11	2.41E-10	5.52E-10	5.52E-10
pb208	.00E+00	3.81E-12	3.76E-11	1.26E-10	2.81E-10	2.81E-10
pb209	.00E+00	3.42E-17	1.38E-16	3.12E-16	5.56E-16	5.60E-16
pb210	.00E+00	2.03E-12	1.57E-11	5.10E-11	1.17E-10	1.17E-10
pb211	.00E+00	5.69E-16	2.16E-15	4.64E-15	7.85E-15	7.85E-15
pb212	.00E+00	4.63E-15	2.05E-14	4.22E-14	6.61E-14	6.61E-14
pb214	.00E+00	9.34E-17	3.73E-16	8.40E-16	1.49E-15	1.45E-15
ra222	.00E+00	1.76E-28	5.20E-28	9.13E-28	1.32E-27	1.32E-27
ra223	.00E+00	2.59E-13	9.87E-13	2.11E-12	3.58E-12	3.58E-12
ra224	.00E+00	3.82E-14	1.69E-13	3.49E-13	5.46E-13	5.46E-13
ra225	.00E+00	3.74E-15	1.51E-14	3.41E-14	6.08E-14	6.08E-14
ra226	.00E+00	2.93E-09	1.17E-08	2.64E-08	4.68E-08	4.68E-08
ra228	.00E+00	2.63E-15	8.85E-15	1.70E-14	2.63E-14	2.63E-14
ac225	.00E+00	2.53E-15	1.02E-14	2.31E-14	4.11E-14	4.11E-14
ac227	.00E+00	1.80E-10	6.86E-10	1.47E-09	2.49E-09	2.49E-09
ac228	.00E+00	3.21E-19	1.08E-18	2.08E-18	3.21E-18	3.21E-18
th226	.00E+00	8.59E-27	2.54E-26	4.45E-26	6.43E-26	6.42E-26
th227	.00E+00	4.19E-13	1.59E-12	3.41E-12	5.78E-12	5.78E-12
th228	.00E+00	7.29E-12	3.23E-11	6.66E-11	1.04E-10	1.04E-10
th229	.00E+00	7.27E-10	2.94E-09	6.64E-09	1.18E-08	1.18E-08
th230	.00E+00	1.28E-04	2.55E-04	3.83E-04	5.11E-04	5.11E-04
th231	.00E+00	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09
th232	.00E+00	2.58E-05	5.16E-05	7.74E-05	1.03E-04	1.03E-04
th233	.00E+00	2.39E-16	4.78E-16	7.17E-16	9.57E-16	2.66E-17
th234	.00E+00	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	.00E+00	3.59E-06	7.19E-06	1.08E-05	1.44E-05	1.44E-05
pa232	.00E+00	6.18E-14	1.24E-13	1.85E-13	2.47E-13	2.37E-13
pa233	.00E+00	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	.00E+00	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	.00E+00	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	8.33E-24	2.46E-23	4.32E-23	6.23E-23	6.21E-23
u231	.00E+00	5.33E-20	1.08E-19	1.62E-19	2.17E-19	2.14E-19
u232	.00E+00	6.11E-10	1.80E-09	3.16E-09	4.57E-09	4.57E-09
u233	.00E+00	6.68E-05	1.35E-04	2.03E-04	2.72E-04	2.72E-04
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02
u237	.00E+00	3.24E-06	3.24E-06	3.24E-06	3.24E-06	3.21E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	.00E+00	3.29E-07	3.29E-07	3.29E-07	3.29E-07	1.09E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	8.71E-12	9.06E-12	9.08E-12	9.08E-12	9.07E-12
np236m	.00E+00	2.16E-12	2.16E-12	2.16E-12	2.16E-12	2.03E-12
np236	.00E+00	1.02E-09	2.05E-09	3.07E-09	4.10E-09	4.10E-09
np237	4.22E+01	4.22E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	.00E+00	1.58E-06	1.58E-06	1.58E-06	1.58E-06	1.54E-06

1

```
      power= 4.000E-03mw, burnup=2.9220E+01mwd, flux= 3.00E+08n/cm**2-sec
0                                                nuclide concentrations, gram atoms
                                                 basis = single reactor assembly
             charge  1826.3 d  3652.5 d  5478.8 d  7305.0 d  7305.1 d
     np239    .00E+00  4.75E-05  4.75E-05  4.75E-05  4.75E-05  4.67E-05
     np240m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     np240    .00E+00  9.74E-15  9.74E-15  9.74E-15  9.74E-15  2.68E-15
     np241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu236    .00E+00  8.16E-10  1.06E-09  1.14E-09  1.16E-09  1.16E-09
     pu237    .00E+00  9.61E-15  1.89E-14  2.78E-14  3.64E-14  3.63E-14
     pu238    .00E+00  9.24E-04  1.81E-03  2.67E-03  3.49E-03  3.49E-03
     pu239    .00E+00  2.55E-02  5.11E-02  7.66E-02  1.02E-01  1.02E-01
     pu240    .00E+00  6.28E-07  2.51E-06  5.66E-06  1.01E-05  1.01E-05
     pu241    .00E+00  2.03E-11  1.53E-10  4.90E-10  1.10E-09  1.10E-09
     pu242    .00E+00  2.03E-16  3.15E-15  1.55E-14  4.75E-14  4.75E-14
     pu243    .00E+00  4.46E-25  6.91E-24  3.39E-23  1.04E-22  7.97E-23
     pu244    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239    .00E+00  3.56E-28  5.43E-27  2.63E-26  7.94E-26  7.10E-26
     am240    .00E+00  1.63E-25  2.49E-24  1.20E-23  3.64E-23  3.54E-23
     am241    .00E+00  1.24E-12  1.89E-11  9.13E-11  2.76E-10  2.76E-10
     am242m   .00E+00  3.20E-18  9.80E-17  7.13E-16  2.88E-15  2.88E-15
     am242    .00E+00  4.35E-20  6.65E-19  3.22E-18  9.73E-18  8.96E-18
     am243    .00E+00  6.23E-22  2.16E-20  1.76E-19  7.89E-19  7.89E-19
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244    .00E+00  4.90E-30  1.70E-28  1.39E-27  6.21E-27  5.44E-27
     am245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               3.00E+08  3.00E+08  3.00E+08  3.00E+08  3.00E-07
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

         cross-section data taken from position number  2 of library on unit 33.

         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         ********************************************************************************
         *                                                                              *
         *            prelim lwr origen-s binary working library--id = 1143             *
         *          made from modified card-image origen-s libraries of scale 4.2       *
         *       data from the light element, actinide, and fission product libraries   *
```

```
          *        decay data, including gamma and total energy, are from endf/b-vi      *
          *                                                                              *
          *      neutron flux spectrum factors and cross sections were produced from     *
          *     the "presas2" case updating all nuclides on the scale "burnup" library   *
          *                                                                              *
          *                  fission product yields are from endf/b-v                    *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *        see information above this box (if present) for later updates         *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/28/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   12
        power=    .00mw, burnup=     58.mwd, flux= 2.81E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial       9131.3 d      10957.6 d      12783.8 d      14610.1 d      14610.2 d
     productions   1.090805E+06   1.090842E+06   1.090879E+06   1.090916E+06   1.090953E+06   1.090953E+06
     absorptions   8.937227E+05   8.937811E+05   8.938394E+05   8.938971E+05   8.939546E+05   8.939546E+05
     k infinity    1.220518E+00   1.220480E+00   1.220441E+00   1.220404E+00   1.220367E+00   1.220367E+00
0                   initial       9131.3 d      10957.6 d      12783.8 d      14610.1 d      14610.2 d
     actinide
     absorptions   8.901883E+05   8.902102E+05   8.902321E+05   8.902540E+05   8.902759E+05   8.902759E+05
     non-actinide
     abs. fracs.   3.954649E-03   3.995299E-03   4.035652E-03   4.075527E-03   4.115045E-03   4.115045E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products    page   13
0                                  fraction of total absorption rate
        power=    .00mw, burnup=     58.mwd, flux= 2.81E+08n/cm**2-sec
0                initial  9131.3 d 10957.6 d 12783.8 d 14610.1 d 14610.2 d

     sm149     1.46E-04  1.82E-04  2.17E-04  2.53E-04  2.88E-04  2.88E-04
     sm151     5.78E-06  7.08E-06  8.34E-06  9.55E-06  1.07E-05  1.07E-05
     nd143     2.95E-06  3.69E-06  4.43E-06  5.17E-06  5.91E-06  5.91E-06
     gd155     1.35E-06  1.83E-06  2.31E-06  2.79E-06  3.28E-06  3.28E-06
     gd157     1.49E-06  1.85E-06  2.21E-06  2.56E-06  2.91E-06  2.91E-06
     rh103     1.37E-06  1.71E-06  2.06E-06  2.40E-06  2.75E-06  2.75E-06
     cd113     1.28E-06  1.60E-06  1.91E-06  2.23E-06  2.54E-06  2.54E-06
     xe135     2.27E-06  2.31E-06  2.31E-06  2.31E-06  2.31E-06  2.28E-06
     xe131     9.39E-07  1.17E-06  1.41E-06  1.64E-06  1.88E-06  1.88E-06
     cs133     7.29E-07  9.11E-07  1.09E-06  1.28E-06  1.46E-06  1.46E-06
     eu151     3.37E-07  5.21E-07  7.40E-07  9.94E-07  1.28E-06  1.28E-06
     tc 99     5.37E-07  6.72E-07  8.06E-07  9.40E-07  1.07E-06  1.07E-06
     sm147     4.40E-07  5.75E-07  7.10E-07  8.46E-07  9.81E-07  9.81E-07
     nd145     4.16E-07  5.20E-07  6.24E-07  7.28E-07  8.32E-07  8.32E-07
     mo 95     2.83E-07  3.55E-07  4.27E-07  5.00E-07  5.72E-07  5.72E-07
     sm152     2.20E-07  2.76E-07  3.31E-07  3.86E-07  4.41E-07  4.41E-07
     kr 83     1.80E-07  2.25E-07  2.70E-07  3.15E-07  3.60E-07  3.60E-07
```

cs135	1.64E-07	2.05E-07	2.46E-07	2.87E-07	3.28E-07	3.28E-07
pm147	2.70E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07
ru101	1.28E-07	1.60E-07	1.92E-07	2.24E-07	2.56E-07	2.56E-07
pr141	1.22E-07	1.52E-07	1.83E-07	2.14E-07	2.44E-07	2.44E-07
eu153	1.11E-07	1.39E-07	1.67E-07	1.95E-07	2.22E-07	2.22E-07
la139	1.00E-07	1.25E-07	1.50E-07	1.75E-07	2.00E-07	2.00E-07
eu155	1.51E-07	1.55E-07	1.57E-07	1.58E-07	1.58E-07	1.58E-07
pd105	4.25E-08	5.31E-08	6.37E-08	7.43E-08	8.49E-08	8.49E-08
zr 93	4.07E-08	5.09E-08	6.11E-08	7.13E-08	8.15E-08	8.15E-08
i129	3.10E-08	3.87E-08	4.65E-08	5.42E-08	6.20E-08	6.20E-08
nd144	2.83E-08	3.58E-08	4.33E-08	5.08E-08	5.83E-08	5.83E-08
mo 97	2.27E-08	2.84E-08	3.40E-08	3.97E-08	4.54E-08	4.54E-08
ba137	9.52E-09	1.44E-08	2.00E-08	2.63E-08	3.32E-08	3.32E-08
ag109	1.60E-08	2.00E-08	2.41E-08	2.81E-08	3.22E-08	3.22E-08
zr 91	1.06E-08	1.33E-08	1.59E-08	1.86E-08	2.13E-08	2.13E-08
y 89	1.02E-08	1.27E-08	1.53E-08	1.79E-08	2.04E-08	2.04E-08
ru102	9.23E-09	1.15E-08	1.39E-08	1.62E-08	1.85E-08	1.85E-08
ce142	8.31E-09	1.04E-08	1.25E-08	1.45E-08	1.66E-08	1.66E-08
nd148	8.01E-09	1.00E-08	1.20E-08	1.40E-08	1.60E-08	1.60E-08
nd146	6.71E-09	8.38E-09	1.01E-08	1.17E-08	1.34E-08	1.34E-08
sm150	3.07E-09	4.79E-09	6.88E-09	9.35E-09	1.22E-08	1.22E-08
ba138	5.73E-09	7.16E-09	8.59E-09	1.00E-08	1.15E-08	1.15E-08
in115	5.54E-09	6.92E-09	8.30E-09	9.69E-09	1.11E-08	1.11E-08
pd108	5.45E-09	6.81E-09	8.17E-09	9.53E-09	1.09E-08	1.09E-08
sr 90	6.67E-09	7.88E-09	8.96E-09	9.91E-09	1.07E-08	1.07E-08
ce140	5.35E-09	6.69E-09	8.03E-09	9.37E-09	1.07E-08	1.07E-08
xe132	4.83E-09	6.03E-09	7.24E-09	8.45E-09	9.65E-09	9.65E-09
rh105	8.32E-09	8.34E-09	8.34E-09	8.34E-09	8.34E-09	8.31E-09
mo 98	3.34E-09	4.18E-09	5.01E-09	5.85E-09	6.69E-09	6.69E-09
mo100	3.22E-09	4.03E-09	4.84E-09	5.64E-09	6.45E-09	6.45E-09
pd107	3.21E-09	4.01E-09	4.81E-09	5.61E-09	6.42E-09	6.42E-09
xe134	3.17E-09	3.96E-09	4.75E-09	5.54E-09	6.33E-09	6.33E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 14
0 fraction of total absorption rate
power= .00mw, burnup= 58.mwd, flux= 2.81E+08n/cm**2-sec
0 initial 9131.3 d 10957.6 d 12783.8 d 14610.1 d 14610.2 d

zr 92	2.57E-09	3.22E-09	3.86E-09	4.50E-09	5.15E-09	5.15E-09
i127	2.08E-09	2.60E-09	3.12E-09	3.65E-09	4.17E-09	4.17E-09
zr 96	2.04E-09	2.55E-09	3.06E-09	3.57E-09	4.08E-09	4.08E-09
ru104	1.98E-09	2.48E-09	2.97E-09	3.47E-09	3.96E-09	3.96E-09
nd150	1.78E-09	2.22E-09	2.66E-09	3.11E-09	3.55E-09	3.55E-09
xe136	1.71E-09	2.14E-09	2.57E-09	3.00E-09	3.42E-09	3.42E-09
pr143	2.67E-09	2.67E-09	2.67E-09	2.67E-09	2.67E-09	2.67E-09
br 81	1.29E-09	1.61E-09	1.93E-09	2.26E-09	2.58E-09	2.58E-09
rb 85	1.11E-09	1.41E-09	1.71E-09	2.02E-09	2.32E-09	2.32E-09
cs137	1.40E-09	1.66E-09	1.89E-09	2.10E-09	2.28E-09	2.28E-09
zr 94	1.09E-09	1.37E-09	1.64E-09	1.91E-09	2.19E-09	2.19E-09
xe133	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09
cd111	8.31E-10	1.04E-09	1.25E-09	1.46E-09	1.66E-09	1.66E-09
ce141	1.59E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09
te130	7.77E-10	9.72E-10	1.17E-09	1.36E-09	1.56E-09	1.56E-09
sm154	7.55E-10	9.44E-10	1.13E-09	1.32E-09	1.51E-09	1.51E-09
rb 87	7.28E-10	9.10E-10	1.09E-09	1.27E-09	1.46E-09	1.46E-09
se 77	5.15E-10	6.44E-10	7.73E-10	9.02E-10	1.03E-09	1.03E-09
pm149	9.67E-10	9.74E-10	9.74E-10	9.74E-10	9.74E-10	9.67E-10
nd147	9.32E-10	9.36E-10	9.36E-10	9.36E-10	9.36E-10	9.32E-10
zr 90	2.13E-10	3.20E-10	4.44E-10	5.84E-10	7.36E-10	7.36E-10
pd106	3.42E-10	4.34E-10	5.26E-10	6.18E-10	7.10E-10	7.10E-10
kr 84	3.44E-10	4.30E-10	5.17E-10	6.03E-10	6.89E-10	6.89E-10

ce144	6.02E-10	6.02E-10	6.02E-10	6.02E-10	6.02E-10	6.02E-10
kr 85	4.16E-10	4.60E-10	4.91E-10	5.14E-10	5.31E-10	5.31E-10
se 79	2.64E-10	3.30E-10	3.96E-10	4.62E-10	5.28E-10	5.28E-10
sb121	2.51E-10	3.14E-10	3.77E-10	4.40E-10	5.02E-10	5.02E-10
sb123	2.05E-10	2.56E-10	3.07E-10	3.58E-10	4.10E-10	4.10E-10
kr 86	1.91E-10	2.39E-10	2.87E-10	3.34E-10	3.82E-10	3.82E-10
ru103	3.57E-10	3.57E-10	3.57E-10	3.57E-10	3.57E-10	3.57E-10
te128	1.71E-10	2.13E-10	2.56E-10	2.99E-10	3.41E-10	3.41E-10
gd156	1.32E-10	1.65E-10	1.99E-10	2.33E-10	2.67E-10	2.67E-10
se 80	1.23E-10	1.54E-10	1.85E-10	2.16E-10	2.46E-10	2.46E-10
dy161	1.08E-10	1.35E-10	1.61E-10	1.88E-10	2.16E-10	2.16E-10
te125	8.69E-11	1.14E-10	1.41E-10	1.68E-10	1.95E-10	1.95E-10
zr 95	1.66E-10	1.66E-10	1.66E-10	1.66E-10	1.66E-10	1.66E-10
nb 95	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10
eu152	2.43E-11	4.46E-11	7.23E-11	1.08E-10	1.52E-10	1.52E-10
tb159	7.30E-11	9.13E-11	1.09E-10	1.28E-10	1.46E-10	1.46E-10
y 91	1.43E-10	1.44E-10	1.44E-10	1.44E-10	1.43E-10	1.43E-10
li 6	7.00E-11	8.76E-11	1.05E-10	1.23E-10	1.40E-10	1.40E-10
cd112	7.00E-11	8.74E-11	1.05E-10	1.22E-10	1.40E-10	1.40E-10
sn117	5.54E-11	6.93E-11	8.31E-11	9.70E-11	1.11E-10	1.11E-10
pm151	1.06E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.06E-10
sn119	4.56E-11	5.70E-11	6.84E-11	7.98E-11	9.11E-11	9.11E-11
eu154	3.43E-11	4.66E-11	5.95E-11	7.29E-11	8.65E-11	8.65E-11
sn115	4.17E-11	5.21E-11	6.26E-11	7.30E-11	8.34E-11	8.34E-11
sr 88	3.51E-11	4.39E-11	5.27E-11	6.15E-11	7.03E-11	7.03E-11
pd110	2.51E-11	3.14E-11	3.77E-11	4.40E-11	5.03E-11	5.03E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 15
0 fraction of total absorption rate
power= .00mw, burnup= 58.mwd, flux= 2.81E+08n/cm**2-sec
0

	initial	9131.3 d	10957.6 d	12783.8 d	14610.1 d	14610.2 d
cd114	2.46E-11	3.07E-11	3.70E-11	4.32E-11	4.95E-11	4.95E-11
gd158	2.37E-11	3.00E-11	3.63E-11	4.28E-11	4.94E-11	4.94E-11
se 82	2.38E-11	2.98E-11	3.58E-11	4.17E-11	4.77E-11	4.77E-11
ba140	4.72E-11	4.74E-11	4.74E-11	4.74E-11	4.74E-11	4.72E-11
sn126	1.91E-11	2.38E-11	2.86E-11	3.34E-11	3.82E-11	3.82E-11
sm153	3.72E-11	3.81E-11	3.82E-11	3.82E-11	3.82E-11	3.72E-11
se 78	1.81E-11	2.26E-11	2.71E-11	3.17E-11	3.62E-11	3.62E-11
eu156	3.42E-11	3.41E-11	3.42E-11	3.42E-11	3.42E-11	3.42E-11
sr 89	3.07E-11	3.07E-11	3.07E-11	3.07E-11	3.07E-11	3.07E-11
sn124	1.46E-11	1.82E-11	2.19E-11	2.55E-11	2.92E-11	2.92E-11
dy162	1.41E-11	1.77E-11	2.12E-11	2.48E-11	2.83E-11	2.83E-11
dy164	1.28E-11	1.60E-11	1.93E-11	2.25E-11	2.58E-11	2.58E-11
ru106	2.55E-11	2.55E-11	2.55E-11	2.55E-11	2.55E-11	2.55E-11
as 75	1.08E-11	1.35E-11	1.62E-11	1.89E-11	2.16E-11	2.16E-11
ce143	1.69E-11	1.75E-11	1.75E-11	1.75E-11	1.75E-11	1.69E-11
ru 99	5.51E-12	7.76E-12	1.03E-11	1.33E-11	1.66E-11	1.66E-11
la140	1.54E-11	1.54E-11	1.54E-11	1.54E-11	1.54E-11	1.54E-11
sb125	1.48E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11
gd152	1.77E-12	3.52E-12	6.17E-12	9.91E-12	1.49E-11	1.49E-11
mo 99	1.29E-11	1.32E-11	1.32E-11	1.32E-11	1.32E-11	1.29E-11
sn118	5.96E-12	7.45E-12	8.94E-12	1.04E-11	1.19E-11	1.19E-11
ba136	5.75E-12	7.20E-12	8.66E-12	1.01E-11	1.16E-11	1.16E-11
cs134	5.17E-12	6.47E-12	7.82E-12	9.18E-12	1.05E-11	1.05E-11
y 90	6.34E-12	7.49E-12	8.51E-12	9.41E-12	1.02E-11	1.02E-11
cd116	5.05E-12	6.32E-12	7.58E-12	8.84E-12	1.01E-11	1.01E-11
sn122	5.02E-12	6.27E-12	7.52E-12	8.77E-12	1.00E-11	1.00E-11
pm148m	9.75E-12	9.64E-12	9.65E-12	9.66E-12	9.66E-12	9.64E-12
in113	2.94E-12	4.29E-12	5.79E-12	7.40E-12	9.10E-12	9.10E-12
kr 87	8.14E-12	2.30E-11	2.30E-11	2.29E-11	2.29E-11	8.14E-12

sn120	3.76E-12	4.70E-12	5.63E-12	6.57E-12	7.51E-12	7.51E-12
te127m	7.42E-12	7.43E-12	7.43E-12	7.43E-12	7.43E-12	7.43E-12
i131	6.76E-12	6.78E-12	6.78E-12	6.78E-12	6.78E-12	6.76E-12
kr 82	3.17E-12	3.98E-12	4.78E-12	5.59E-12	6.41E-12	6.41E-12
dy163	3.12E-12	3.90E-12	4.69E-12	5.48E-12	6.27E-12	6.27E-12
ge 73	2.93E-12	3.67E-12	4.40E-12	5.14E-12	5.87E-12	5.87E-12
xe130	1.96E-12	2.46E-12	2.97E-12	3.48E-12	4.00E-12	4.00E-12
gd154	7.50E-13	1.28E-12	1.99E-12	2.86E-12	3.92E-12	3.92E-12
mo 96	1.43E-12	1.82E-12	2.21E-12	2.61E-12	3.02E-12	3.02E-12
ru100	7.53E-13	1.09E-12	1.49E-12	1.94E-12	2.46E-12	2.46E-12
ge 76	1.07E-12	1.33E-12	1.60E-12	1.87E-12	2.14E-12	2.14E-12
te129m	1.79E-12	1.79E-12	1.79E-12	1.79E-12	1.79E-12	1.79E-12
sm148	4.61E-13	6.76E-13	9.30E-13	1.22E-12	1.55E-12	1.55E-12
gd160	6.78E-13	8.47E-13	1.02E-12	1.19E-12	1.36E-12	1.36E-12
nd142	3.39E-13	5.29E-13	7.61E-13	1.03E-12	1.35E-12	1.35E-12
ba134	2.94E-13	4.68E-13	6.81E-13	9.35E-13	1.23E-12	1.23E-12
ba135	2.78E-13	4.30E-13	6.15E-13	8.33E-13	1.08E-12	1.08E-12
te126	5.25E-13	6.59E-13	7.94E-13	9.29E-13	1.07E-12	1.07E-12
pd104	2.24E-13	3.50E-13	5.03E-13	6.84E-13	8.93E-13	8.93E-13
ho165	2.14E-13	2.68E-13	3.22E-13	3.77E-13	4.32E-13	4.32E-13

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 16
0 fraction of total absorption rate
power= .00mw, burnup= 58.mwd, flux= 2.81E+08n/cm**2-sec
0 initial 9131.3 d 10957.6 d 12783.8 d 14610.1 d 14610.2 d

pm148	3.74E-13	3.73E-13	3.73E-13	3.73E-13	3.73E-13	3.70E-13
ag111	3.17E-13	3.18E-13	3.19E-13	3.19E-13	3.19E-13	3.18E-13
eu157	2.76E-13	2.97E-13	2.97E-13	2.97E-13	2.97E-13	2.75E-13
te124	1.23E-13	1.54E-13	1.85E-13	2.17E-13	2.48E-13	2.48E-13
sr 87	1.22E-13	1.53E-13	1.84E-13	2.14E-13	2.45E-13	2.45E-13
cd115m	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.36E-13
nb 94	6.97E-14	8.72E-14	1.05E-13	1.22E-13	1.40E-13	1.40E-13
cd110	3.40E-14	5.16E-14	7.28E-14	9.77E-14	1.26E-13	1.26E-13
ge 74	5.92E-14	7.40E-14	8.89E-14	1.04E-13	1.19E-13	1.19E-13
br 79	2.17E-14	3.39E-14	4.87E-14	6.63E-14	8.65E-14	8.65E-14
ge 72	3.98E-14	4.97E-14	5.97E-14	6.96E-14	7.96E-14	7.96E-14
sr 86	3.50E-14	4.40E-14	5.31E-14	6.22E-14	7.14E-14	7.14E-14
nb 93	1.01E-14	1.88E-14	3.11E-14	4.72E-14	6.75E-14	6.75E-14
cs136	5.58E-14	5.63E-14	5.64E-14	5.66E-14	5.67E-14	5.65E-14
xe129	1.22E-14	1.91E-14	2.75E-14	3.74E-14	4.89E-14	4.89E-14
se 76	2.32E-14	2.90E-14	3.49E-14	4.07E-14	4.66E-14	4.66E-14
ag107	1.14E-14	1.79E-14	2.57E-14	3.50E-14	4.58E-14	4.58E-14
sn125	2.91E-14	2.93E-14	2.93E-14	2.93E-14	2.93E-14	2.91E-14
ru105	2.27E-14	2.97E-14	2.97E-14	2.97E-14	2.97E-14	2.27E-14
xe128	6.69E-15	8.73E-15	1.09E-14	1.33E-14	1.57E-14	1.57E-14
dy160	5.98E-15	7.98E-15	1.02E-14	1.26E-14	1.51E-14	1.51E-14
er166	5.69E-15	7.17E-15	8.68E-15	1.02E-14	1.18E-14	1.18E-14
sn123	1.02E-14	1.02E-14	1.02E-14	1.02E-14	1.02E-14	1.02E-14
te132	9.40E-15	9.56E-15	9.56E-15	9.56E-15	9.56E-15	9.40E-15
rb 88	8.81E-15	1.29E-14	1.29E-14	1.29E-14	1.29E-14	8.82E-15
i135	8.28E-15	1.01E-14	1.01E-14	1.01E-14	1.01E-14	8.28E-15
kr 80	1.66E-15	2.08E-15	2.50E-15	2.92E-15	3.34E-15	3.34E-15
sb126	3.02E-15	3.05E-15	3.06E-15	3.06E-15	3.07E-15	3.06E-15
sb124	2.11E-15	2.12E-15	2.12E-15	2.12E-15	2.12E-15	2.12E-15
sn116	5.34E-16	8.14E-16	1.15E-15	1.55E-15	2.01E-15	2.01E-15
in117m	1.84E-15	2.09E-15	2.09E-15	2.09E-15	2.09E-15	1.84E-15
te122	4.12E-16	5.75E-16	7.63E-16	9.75E-16	1.21E-15	1.21E-15
te134	8.66E-16	5.85E-15	5.85E-15	5.85E-15	5.85E-15	8.66E-16
tb160	5.06E-16	5.57E-16	6.08E-16	6.60E-16	7.11E-16	7.11E-16
i130	6.65E-16	7.46E-16	7.52E-16	7.59E-16	7.65E-16	6.89E-16

in117	5.47E-16	6.15E-16	6.15E-16	6.15E-16	6.15E-16	5.47E-16
be 9	1.34E-16	1.68E-16	2.01E-16	2.35E-16	2.69E-16	2.69E-16
pr142	1.30E-16	1.74E-16	2.08E-16	2.43E-16	2.78E-16	2.59E-16
rb 86	2.48E-16	2.51E-16	2.53E-16	2.55E-16	2.57E-16	2.56E-16
te123	1.18E-16	1.48E-16	1.78E-16	2.09E-16	2.39E-16	2.39E-16
dy165	1.26E-16	2.16E-16	2.18E-16	2.19E-16	2.20E-16	1.28E-16
li 7	5.40E-17	6.74E-17	8.09E-17	9.44E-17	1.08E-16	1.08E-16
er167	2.43E-17	3.13E-17	3.86E-17	4.63E-17	5.43E-17	5.43E-17
ge 75	3.38E-17	8.63E-17	8.63E-17	8.63E-17	8.63E-17	3.38E-17
cd118	2.47E-17	1.20E-16	1.20E-16	1.20E-16	1.20E-16	2.46E-17
cd108	1.15E-18	1.45E-18	1.77E-18	2.09E-18	2.42E-18	2.42E-18
cs134m	6.58E-19	1.28E-18	1.53E-18	1.79E-18	2.04E-18	1.29E-18
in119m	4.20E-19	3.01E-17	3.01E-17	3.01E-17	3.01E-17	4.19E-19
cd109	2.18E-19	2.25E-19	2.35E-19	2.42E-19	2.52E-19	2.52E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 17
0 fraction of total absorption rate
power= .00mw, burnup= 58.mwd, flux= 2.81E+08n/cm**2-sec
0 initial 9131.3 d 10957.6 d 12783.8 d 14610.1 d 14610.2 d

sn114	4.70E-20	7.72E-20	1.17E-19	1.68E-19	2.32E-19	2.32E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 18
power= 4.000E-03mw, burnup=5.8440E+01mwd, flux= 2.81E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	9131.3 d	10957.6 d	12783.8 d	14610.1 d	14610.2 d
h 1	1.76E-06	2.19E-06	2.62E-06	3.05E-06	3.48E-06	3.48E-06
h 2	5.22E-09	6.50E-09	7.77E-09	9.05E-09	1.03E-08	1.03E-08
h 3	2.30E-11	2.55E-11	2.74E-11	2.89E-11	2.99E-11	2.99E-11
h 4	.00E+00	1.04E-34	1.11E-34	1.17E-34	1.22E-34	.00E+00
he 3	1.53E-11	2.21E-11	2.96E-11	3.75E-11	4.57E-11	4.57E-11
he 4	2.91E-07	3.62E-07	4.33E-07	5.04E-07	5.75E-07	5.75E-07
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	3.50E-08	4.35E-08	5.20E-08	6.06E-08	6.91E-08	6.91E-08
ne 21	2.53E-14	3.88E-14	5.49E-14	7.36E-14	9.49E-14	9.49E-14
ne 22	1.86E-10	2.42E-10	2.97E-10	3.53E-10	4.09E-10	4.09E-10
ne 23	7.28E-30	7.10E-15	7.10E-15	7.10E-15	7.10E-15	7.10E-30
na 22	4.26E-11	4.19E-11	4.18E-11	4.17E-11	4.17E-11	4.17E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.33E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08	2.81E-08
na 24m	5.99E-30	5.05E-15	5.05E-15	5.05E-15	5.05E-15	5.05E-30
na 25	1.21E-42	1.50E-27	1.81E-27	2.14E-27	2.47E-27	2.53E-42
mg 24	3.02E-04	3.66E-04	4.30E-04	4.93E-04	5.57E-04	5.57E-04
mg 25	4.07E-11	5.14E-11	6.24E-11	7.36E-11	8.50E-11	8.50E-11
mg 26	5.22E-09	6.50E-09	7.77E-09	9.05E-09	1.03E-08	1.03E-08
mg 27	4.70E-16	2.12E-12	2.12E-12	2.12E-12	2.12E-12	4.59E-16
mg 28	4.14E-24	4.32E-24	4.32E-24	4.32E-24	4.32E-24	4.05E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	3.67E-25	2.28E-10	2.28E-10	2.28E-10	2.28E-10	3.10E-25
al 29	3.18E-32	9.14E-27	1.30E-26	1.75E-26	2.27E-26	1.19E-31
al 30	.00E+00	4.23E-39	7.28E-39	1.15E-38	1.70E-38	.00E+00
si 28	8.79E-04	1.06E-03	1.25E-03	1.44E-03	1.62E-03	1.62E-03
si 29	2.26E-11	3.51E-11	5.00E-11	6.73E-11	8.69E-11	8.69E-11
si 30	6.21E-19	1.21E-18	2.09E-18	3.30E-18	4.89E-18	4.89E-18
si 31	2.68E-31	8.71E-31	1.50E-30	2.37E-30	3.51E-30	2.11E-30
si 32	1.55E-38	3.78E-38	7.81E-38	1.44E-37	2.44E-37	2.44E-37
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.81E+08	2.81E+08	2.81E+08	2.81E+08	2.81E-07

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 19

power= 4.000E-03mw, burnup=5.8440E+01mwd, flux= 2.81E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	9131.3 d	10957.6 d	12783.8 d	14610.1 d	14610.2 d
he 4	1.33E-03	1.75E-03	2.21E-03	2.70E-03	3.22E-03	3.22E-03
pb206	1.79E-11	4.28E-11	8.69E-11	1.57E-10	2.62E-10	2.62E-10
pb207	5.52E-10	1.04E-09	1.74E-09	2.67E-09	3.86E-09	3.86E-09
pb208	2.81E-10	5.05E-10	7.97E-10	1.16E-09	1.59E-09	1.59E-09
pb209	5.60E-16	8.70E-16	1.25E-15	1.71E-15	2.23E-15	2.24E-15
pb210	1.17E-10	2.20E-10	3.67E-10	5.63E-10	8.13E-10	8.13E-10
pb211	7.85E-15	1.17E-14	1.61E-14	2.10E-14	2.62E-14	2.62E-14
pb212	6.61E-14	9.03E-14	1.14E-13	1.38E-13	1.62E-13	1.62E-13
pb214	1.45E-15	2.33E-15	3.35E-15	4.56E-15	5.95E-15	5.77E-15
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	6.87E-12	1.35E-11	2.33E-11	3.70E-11	5.53E-11	5.53E-11
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	7.17E-14	1.35E-13	2.26E-13	3.46E-13	5.00E-13	5.00E-13
bi211	4.69E-16	6.94E-16	9.55E-16	1.24E-15	1.56E-15	1.56E-15
bi212	6.27E-15	8.57E-15	1.08E-14	1.31E-14	1.53E-14	1.53E-14
bi213	1.26E-16	2.03E-16	2.93E-16	3.99E-16	5.21E-16	5.05E-16
bi214	1.09E-15	1.73E-15	2.49E-15	3.38E-15	4.42E-15	4.34E-15
ra222	1.32E-27	1.66E-27	2.05E-27	2.42E-27	2.80E-27	2.80E-27
ra223	3.58E-12	5.34E-12	7.35E-12	9.57E-12	1.20E-11	1.20E-11
ra224	5.46E-13	7.46E-13	9.44E-13	1.14E-12	1.33E-12	1.33E-12
ra225	6.08E-14	9.51E-14	1.37E-13	1.86E-13	2.44E-13	2.44E-13
ra226	4.68E-08	7.31E-08	1.05E-07	1.43E-07	1.87E-07	1.87E-07
ra228	2.63E-14	3.62E-14	4.63E-14	5.67E-14	6.71E-14	6.71E-14
ac225	4.11E-14	6.42E-14	9.25E-14	1.26E-13	1.65E-13	1.65E-13
ac227	2.49E-09	3.71E-09	5.10E-09	6.64E-09	8.31E-09	8.31E-09
ac228	3.21E-18	4.41E-18	5.65E-18	6.92E-18	8.19E-18	8.19E-18
th226	6.42E-26	8.12E-26	9.98E-26	1.18E-25	1.37E-25	1.36E-25
th227	5.78E-12	8.62E-12	1.19E-11	1.54E-11	1.93E-11	1.93E-11
th228	1.04E-10	1.42E-10	1.80E-10	2.17E-10	2.55E-10	2.55E-10
th229	1.18E-08	1.85E-08	2.66E-08	3.63E-08	4.74E-08	4.74E-08
th230	5.11E-04	6.39E-04	7.66E-04	8.94E-04	1.02E-03	1.02E-03
th231	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09
th232	1.03E-04	1.29E-04	1.55E-04	1.81E-04	2.07E-04	2.07E-04
th233	2.66E-17	1.19E-15	1.43E-15	1.66E-15	1.90E-15	5.29E-17
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	1.44E-05	1.80E-05	2.16E-05	2.52E-05	2.88E-05	2.88E-05
pa232	2.37E-13	3.09E-13	3.71E-13	4.33E-13	4.95E-13	4.74E-13
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	6.21E-23	7.87E-23	9.67E-23	1.15E-22	1.32E-22	1.32E-22
u231	2.14E-19	2.63E-19	3.16E-19	3.68E-19	4.21E-19	4.16E-19
u232	4.57E-09	5.96E-09	7.33E-09	8.68E-09	1.00E-08	1.00E-08
u233	2.72E-04	3.40E-04	4.08E-04	4.76E-04	5.45E-04	5.45E-04
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02	1.74E+02
u237	3.21E-06	3.15E-06	3.15E-06	3.15E-06	3.15E-06	3.12E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 20

power= 4.000E-03mw, burnup=5.8440E+01mwd, flux= 2.81E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	9131.3 d	10957.6 d	12783.8 d	14610.1 d	14610.2 d

```
      u239   1.09E-08  3.22E-07  3.22E-07  3.22E-07  3.22E-07  1.07E-08
      u240    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      u241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     np235   9.07E-12  8.80E-12  8.79E-12  8.79E-12  8.79E-12  8.79E-12
    np236m   2.03E-12  2.09E-12  2.09E-12  2.09E-12  2.09E-12  1.97E-12
     np236   4.10E-09  5.09E-09  6.08E-09  7.07E-09  8.06E-09  8.06E-09
     np237   4.21E+01  4.21E+01  4.21E+01  4.21E+01  4.21E+01  4.21E+01
     np238   1.54E-06  1.56E-06  1.56E-06  1.56E-06  1.56E-06  1.52E-06
     np239   4.67E-05  4.65E-05  4.65E-05  4.65E-05  4.65E-05  4.57E-05
    np240m    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     np240   2.68E-15  9.48E-15  9.48E-15  9.48E-15  9.48E-15  2.61E-15
     np241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu236   1.16E-09  1.14E-09  1.14E-09  1.13E-09  1.13E-09  1.13E-09
     pu237   3.63E-14  4.31E-14  5.08E-14  5.81E-14  6.51E-14  6.50E-14
     pu238   3.49E-03  4.27E-03  5.02E-03  5.75E-03  6.44E-03  6.44E-03
     pu239   1.02E-01  1.27E-01  1.52E-01  1.77E-01  2.02E-01  2.02E-01
     pu240   1.01E-05  1.57E-05  2.25E-05  3.06E-05  3.98E-05  3.98E-05
     pu241   1.10E-09  2.02E-09  3.29E-09  4.96E-09  7.05E-09  7.05E-09
     pu242   4.75E-14  1.12E-13  2.25E-13  4.04E-13  6.71E-13  6.71E-13
     pu243   7.97E-23  2.40E-22  4.81E-22  8.65E-22  1.43E-21  1.10E-21
     pu244    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239   7.10E-26  1.79E-25  3.53E-25  6.25E-25  1.02E-24  9.12E-25
     am240   3.54E-23  8.19E-23  1.62E-22  2.86E-22  4.67E-22  4.55E-22
     am241   2.76E-10  6.42E-10  1.27E-09  2.24E-09  3.66E-09  3.66E-09
    am242m   2.88E-15  8.38E-15  1.99E-14  4.12E-14  7.70E-14  7.70E-14
     am242   8.96E-18  2.25E-17  4.45E-17  7.88E-17  1.29E-16  1.19E-16
     am243   7.89E-19  2.51E-18  6.50E-18  1.46E-17  2.94E-17  2.94E-17
    am244m    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   5.44E-27  1.93E-26  5.00E-26  1.12E-25  2.26E-25  1.98E-25
     am245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals   3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              2.81E+08  2.81E+08  2.81E+08  2.81E+08  2.81E-07
0       1q array has     20 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       4q array has      1 entries.
0      54q array has     12 entries.
1library information...

          cross-section data taken from position number  3 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
```

```
         *                                                                          *
         *          prelim lwr origen-s binary working library--id = 1143           *
         *       made from modified card-image origen-s libraries of scale 4.2      *
         *     data from the light element, actinide, and fission product libraries *
         *       decay data, including gamma and total energy, are from endf/b-vi   *
         *                                                                          *
         *     neutron flux spectrum factors and cross sections were produced from  *
         *    the "presas2" case updating all nuclides on the scale "burnup" library *
         *                                                                          *
         *                fission product yields are from endf/b-v                  *
         *                                                                          *
         *            photon libraries use an 18-energy-group structure             *
         *           the photon data are from the master photon data base,          *
         *            produced to include bremsstrahlung from uo2 matrix            *
         *                                                                          *
         *       see information above this box (if present) for later updates      *
         *                                                                          *
         ****************************************************************************
         *                                                                          *
0        ****************************************************************************
0                .other identification and sizes of library.
0                 data set name:  ft33f001
0              8/28/1996    date library was produced
0                   1697    total number of nuclides in library
                     689    number of light-element nuclides
                     129    number of actinide nuclides
                     879    number of fission product nuclides
0                   7993    number of nonzero off-diagonal matrix elements
0        ****************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   21
        power=    .00mw, burnup=     88.mwd, flux= 2.74E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                  initial      16436.4 d      18262.7 d      20088.9 d      21915.2 d      21915.2 d
     productions  1.122645E+06  1.122682E+06  1.122719E+06  1.122756E+06  1.122793E+06  1.122793E+06
     absorptions  9.163268E+05  9.163854E+05  9.164438E+05  9.165019E+05  9.165596E+05  9.165596E+05
     k infinity   1.225158E+00  1.225120E+00  1.225083E+00  1.225045E+00  1.225009E+00  1.225009E+00
0                  initial      16436.4 d      18262.7 d      20088.9 d      21915.2 d      21915.2 d
     actinide
     absorptions  9.127919E+05  9.128138E+05  9.128357E+05  9.128577E+05  9.128795E+05  9.128795E+05
     non-actinide
     abs. fracs.  3.857672E-03  3.897429E-03  3.937006E-03  3.976166E-03  4.015088E-03  4.015088E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products    page   22
0                                 fraction of total absorption rate
        power=    .00mw, burnup=     88.mwd, flux= 2.74E+08n/cm**2-sec
0              initial 16436.4 d 18262.7 d 20088.9 d 21915.2 d 21915.2 d

     sm149     2.89E-04  3.25E-04  3.59E-04  3.94E-04  4.28E-04  4.28E-04
     sm151     1.08E-05  1.19E-05  1.30E-05  1.40E-05  1.50E-05  1.50E-05
     nd143     5.93E-06  6.68E-06  7.42E-06  8.16E-06  8.90E-06  8.90E-06
     gd155     3.30E-06  3.79E-06  4.28E-06  4.77E-06  5.25E-06  5.25E-06
     gd157     2.93E-06  3.27E-06  3.62E-06  3.96E-06  4.30E-06  4.30E-06
     rh103     2.75E-06  3.09E-06  3.43E-06  3.78E-06  4.12E-06  4.12E-06
     cd113     2.55E-06  2.87E-06  3.18E-06  3.49E-06  3.80E-06  3.80E-06
     xe131     1.87E-06  2.11E-06  2.34E-06  2.58E-06  2.81E-06  2.81E-06
     eu151     1.29E-06  1.61E-06  1.96E-06  2.35E-06  2.76E-06  2.76E-06
     xe135     2.29E-06  2.33E-06  2.33E-06  2.33E-06  2.33E-06  2.29E-06
     cs133     1.45E-06  1.64E-06  1.82E-06  2.00E-06  2.18E-06  2.18E-06
     tc 99     1.07E-06  1.20E-06  1.34E-06  1.47E-06  1.60E-06  1.60E-06
     sm147     9.78E-07  1.11E-06  1.25E-06  1.38E-06  1.52E-06  1.52E-06
```

nd145	8.31E-07	9.35E-07	1.04E-06	1.14E-06	1.25E-06	1.25E-06
mo 95	5.70E-07	6.42E-07	7.14E-07	7.86E-07	8.58E-07	8.58E-07
sm152	4.40E-07	4.95E-07	5.50E-07	6.05E-07	6.61E-07	6.61E-07
kr 83	3.61E-07	4.06E-07	4.51E-07	4.96E-07	5.41E-07	5.41E-07
cs135	3.28E-07	3.69E-07	4.10E-07	4.51E-07	4.92E-07	4.92E-07
ru101	2.54E-07	2.86E-07	3.17E-07	3.49E-07	3.81E-07	3.81E-07
pr141	2.45E-07	2.76E-07	3.06E-07	3.37E-07	3.68E-07	3.68E-07
eu153	2.22E-07	2.50E-07	2.78E-07	3.06E-07	3.33E-07	3.33E-07
la139	2.01E-07	2.26E-07	2.51E-07	2.76E-07	3.01E-07	3.01E-07
pm147	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07
eu155	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07
pd105	8.47E-08	9.53E-08	1.06E-07	1.16E-07	1.27E-07	1.27E-07
zr 93	8.12E-08	9.13E-08	1.01E-07	1.12E-07	1.22E-07	1.22E-07
i129	6.23E-08	7.00E-08	7.78E-08	8.56E-08	9.34E-08	9.34E-08
nd144	5.86E-08	6.61E-08	7.37E-08	8.12E-08	8.87E-08	8.87E-08
mo 97	4.55E-08	5.12E-08	5.68E-08	6.25E-08	6.82E-08	6.82E-08
ba137	3.34E-08	4.09E-08	4.88E-08	5.73E-08	6.61E-08	6.61E-08
ag109	3.20E-08	3.61E-08	4.01E-08	4.42E-08	4.82E-08	4.82E-08
zr 91	2.13E-08	2.40E-08	2.67E-08	2.94E-08	3.21E-08	3.21E-08
y 89	2.05E-08	2.31E-08	2.56E-08	2.82E-08	3.08E-08	3.08E-08
ru102	1.85E-08	2.08E-08	2.32E-08	2.55E-08	2.78E-08	2.78E-08
sm150	1.22E-08	1.54E-08	1.90E-08	2.29E-08	2.72E-08	2.72E-08
ce142	1.67E-08	1.88E-08	2.09E-08	2.30E-08	2.51E-08	2.51E-08
nd148	1.60E-08	1.80E-08	2.01E-08	2.21E-08	2.41E-08	2.41E-08
nd146	1.35E-08	1.51E-08	1.68E-08	1.85E-08	2.02E-08	2.02E-08
ba138	1.15E-08	1.30E-08	1.44E-08	1.58E-08	1.73E-08	1.73E-08
in115	1.11E-08	1.25E-08	1.38E-08	1.52E-08	1.66E-08	1.66E-08
pd108	1.08E-08	1.22E-08	1.36E-08	1.49E-08	1.63E-08	1.63E-08
ce140	1.08E-08	1.21E-08	1.35E-08	1.48E-08	1.62E-08	1.62E-08
xe132	9.64E-09	1.09E-08	1.21E-08	1.33E-08	1.45E-08	1.45E-08
sr 90	1.08E-08	1.15E-08	1.22E-08	1.28E-08	1.33E-08	1.33E-08
mo 98	6.65E-09	7.48E-09	8.31E-09	9.15E-09	9.98E-09	9.98E-09
mo100	6.44E-09	7.25E-09	8.05E-09	8.85E-09	9.66E-09	9.66E-09
pd107	6.43E-09	7.24E-09	8.04E-09	8.84E-09	9.65E-09	9.65E-09
xe134	6.36E-09	7.15E-09	7.95E-09	8.74E-09	9.54E-09	9.54E-09
rh105	8.34E-09	8.37E-09	8.37E-09	8.37E-09	8.38E-09	8.34E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 23
0 fraction of total absorption rate
power= .00mw, burnup= 88.mwd, flux= 2.74E+08n/cm**2-sec
0 initial 16436.4 d 18262.7 d 20088.9 d 21915.2 d 21915.2 d

zr 92	5.16E-09	5.81E-09	6.46E-09	7.10E-09	7.75E-09	7.75E-09
i127	4.16E-09	4.68E-09	5.20E-09	5.73E-09	6.25E-09	6.25E-09
zr 96	4.04E-09	4.55E-09	5.05E-09	5.56E-09	6.06E-09	6.06E-09
ru104	3.96E-09	4.46E-09	4.95E-09	5.45E-09	5.94E-09	5.94E-09
nd150	3.55E-09	4.00E-09	4.44E-09	4.88E-09	5.33E-09	5.33E-09
xe136	3.44E-09	3.87E-09	4.30E-09	4.73E-09	5.15E-09	5.15E-09
br 81	2.57E-09	2.90E-09	3.22E-09	3.54E-09	3.86E-09	3.86E-09
rb 85	2.32E-09	2.64E-09	2.95E-09	3.26E-09	3.57E-09	3.57E-09
zr 94	2.18E-09	2.45E-09	2.73E-09	3.00E-09	3.27E-09	3.27E-09
cs137	2.28E-09	2.44E-09	2.59E-09	2.72E-09	2.83E-09	2.83E-09
pr143	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09
cd111	1.67E-09	1.88E-09	2.09E-09	2.30E-09	2.51E-09	2.51E-09
te130	1.56E-09	1.76E-09	1.95E-09	2.15E-09	2.34E-09	2.34E-09
sm154	1.51E-09	1.70E-09	1.89E-09	2.08E-09	2.27E-09	2.27E-09
rb 87	1.46E-09	1.64E-09	1.82E-09	2.00E-09	2.18E-09	2.18E-09
xe133	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.02E-09
ce141	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09
se 77	1.04E-09	1.17E-09	1.29E-09	1.42E-09	1.55E-09	1.55E-09
zr 90	7.38E-10	9.03E-10	1.08E-09	1.26E-09	1.45E-09	1.45E-09

pd106	7.08E-10	8.00E-10	8.92E-10	9.83E-10	1.08E-09	1.08E-09
kr 84	6.86E-10	7.71E-10	8.57E-10	9.43E-10	1.03E-09	1.03E-09
pm149	9.72E-10	9.79E-10	9.79E-10	9.79E-10	9.79E-10	9.72E-10
nd147	9.28E-10	9.32E-10	9.32E-10	9.32E-10	9.32E-10	9.28E-10
se 79	5.31E-10	5.97E-10	6.64E-10	7.30E-10	7.96E-10	7.96E-10
sb121	5.01E-10	5.64E-10	6.27E-10	6.89E-10	7.52E-10	7.52E-10
sb123	4.09E-10	4.60E-10	5.11E-10	5.62E-10	6.13E-10	6.13E-10
ce144	6.03E-10	6.03E-10	6.03E-10	6.03E-10	6.03E-10	6.03E-10
kr 86	3.84E-10	4.32E-10	4.80E-10	5.28E-10	5.76E-10	5.76E-10
kr 85	5.32E-10	5.44E-10	5.53E-10	5.59E-10	5.64E-10	5.64E-10
te128	3.41E-10	3.84E-10	4.26E-10	4.69E-10	5.12E-10	5.12E-10
eu152	1.53E-10	2.05E-10	2.66E-10	3.35E-10	4.12E-10	4.12E-10
gd156	2.65E-10	2.99E-10	3.33E-10	3.68E-10	4.03E-10	4.03E-10
se 80	2.47E-10	2.78E-10	3.09E-10	3.40E-10	3.71E-10	3.71E-10
ru103	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.57E-10
dy161	2.17E-10	2.44E-10	2.71E-10	2.98E-10	3.26E-10	3.26E-10
te125	1.95E-10	2.22E-10	2.49E-10	2.76E-10	3.03E-10	3.03E-10
tb159	1.46E-10	1.64E-10	1.82E-10	2.01E-10	2.19E-10	2.19E-10
li 6	1.41E-10	1.58E-10	1.76E-10	1.94E-10	2.11E-10	2.11E-10
cd112	1.40E-10	1.58E-10	1.75E-10	1.93E-10	2.10E-10	2.10E-10
sn117	1.11E-10	1.25E-10	1.39E-10	1.53E-10	1.67E-10	1.67E-10
zr 95	1.65E-10	1.66E-10	1.65E-10	1.65E-10	1.65E-10	1.65E-10
nb 95	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10
y 91	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10
eu154	8.69E-11	1.01E-10	1.14E-10	1.28E-10	1.43E-10	1.43E-10
sn119	9.16E-11	1.03E-10	1.14E-10	1.26E-10	1.37E-10	1.37E-10
sn115	8.38E-11	9.43E-11	1.05E-10	1.15E-10	1.26E-10	1.26E-10
pm151	1.06E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.06E-10
sr 88	7.05E-11	7.93E-11	8.81E-11	9.69E-11	1.06E-10	1.06E-10
gd158	4.93E-11	5.60E-11	6.28E-11	6.98E-11	7.68E-11	7.68E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 24
0 fraction of total absorption rate
power= .00mw, burnup= 88.mwd, flux= 2.74E+08n/cm**2-sec
0 initial 16436.4 d 18262.7 d 20088.9 d 21915.2 d 21915.2 d

pd110	5.01E-11	5.64E-11	6.26E-11	6.89E-11	7.52E-11	7.52E-11
cd114	4.92E-11	5.55E-11	6.18E-11	6.81E-11	7.44E-11	7.44E-11
se 82	4.78E-11	5.38E-11	5.98E-11	6.58E-11	7.18E-11	7.18E-11
sn126	3.84E-11	4.32E-11	4.80E-11	5.28E-11	5.76E-11	5.76E-11
se 78	3.62E-11	4.07E-11	4.53E-11	4.98E-11	5.43E-11	5.43E-11
gd152	1.50E-11	2.15E-11	2.97E-11	3.98E-11	5.18E-11	5.18E-11
ba140	4.73E-11	4.75E-11	4.75E-11	4.75E-11	4.75E-11	4.73E-11
sn124	2.90E-11	3.26E-11	3.63E-11	3.99E-11	4.35E-11	4.35E-11
dy162	2.84E-11	3.19E-11	3.55E-11	3.92E-11	4.28E-11	4.28E-11
dy164	2.60E-11	2.93E-11	3.26E-11	3.60E-11	3.94E-11	3.94E-11
sm153	3.73E-11	3.82E-11	3.82E-11	3.82E-11	3.82E-11	3.72E-11
eu156	3.43E-11	3.43E-11	3.43E-11	3.43E-11	3.43E-11	3.43E-11
ru 99	1.65E-11	2.02E-11	2.41E-11	2.84E-11	3.31E-11	3.31E-11
as 75	2.16E-11	2.43E-11	2.70E-11	2.97E-11	3.24E-11	3.24E-11
sr 89	3.08E-11	3.09E-11	3.09E-11	3.09E-11	3.09E-11	3.08E-11
ru106	2.54E-11	2.53E-11	2.53E-11	2.53E-11	2.54E-11	2.54E-11
sn118	1.18E-11	1.33E-11	1.48E-11	1.63E-11	1.78E-11	1.78E-11
ba136	1.16E-11	1.30E-11	1.45E-11	1.60E-11	1.75E-11	1.75E-11
ce143	1.70E-11	1.75E-11	1.75E-11	1.75E-11	1.75E-11	1.70E-11
in113	9.10E-12	1.09E-11	1.27E-11	1.46E-11	1.65E-11	1.65E-11
cs134	1.06E-11	1.19E-11	1.32E-11	1.46E-11	1.59E-11	1.59E-11
la140	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11
cd116	1.01E-11	1.13E-11	1.26E-11	1.38E-11	1.51E-11	1.51E-11
sn122	1.01E-11	1.13E-11	1.26E-11	1.38E-11	1.51E-11	1.51E-11
sb125	1.49E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11

mo 99	1.29E-11	1.32E-11	1.32E-11	1.32E-11	1.32E-11	1.29E-11
y 90	1.03E-11	1.10E-11	1.16E-11	1.21E-11	1.26E-11	1.26E-11
sn120	7.52E-12	8.45E-12	9.39E-12	1.03E-11	1.13E-11	1.13E-11
gd154	3.93E-12	5.17E-12	6.60E-12	8.20E-12	1.00E-11	1.00E-11
kr 82	6.43E-12	7.25E-12	8.07E-12	8.90E-12	9.74E-12	9.74E-12
pm148m	9.69E-12	9.63E-12	9.64E-12	9.63E-12	9.63E-12	9.62E-12
dy163	6.28E-12	7.08E-12	7.88E-12	8.69E-12	9.51E-12	9.51E-12
ge 73	5.89E-12	6.63E-12	7.36E-12	8.10E-12	8.84E-12	8.84E-12
kr 87	8.19E-12	2.31E-11	2.31E-11	2.31E-11	2.31E-11	8.19E-12
te127m	7.45E-12	7.46E-12	7.46E-12	7.46E-12	7.46E-12	7.46E-12
i131	6.76E-12	6.78E-12	6.78E-12	6.78E-12	6.78E-12	6.76E-12
xe130	4.02E-12	4.54E-12	5.07E-12	5.60E-12	6.13E-12	6.13E-12
ru100	2.47E-12	3.05E-12	3.68E-12	4.38E-12	5.13E-12	5.13E-12
mo 96	3.01E-12	3.43E-12	3.86E-12	4.29E-12	4.74E-12	4.74E-12
sm148	1.55E-12	1.91E-12	2.31E-12	2.75E-12	3.23E-12	3.23E-12
ge 76	2.14E-12	2.41E-12	2.67E-12	2.94E-12	3.21E-12	3.21E-12
nd142	1.36E-12	1.72E-12	2.12E-12	2.56E-12	3.05E-12	3.05E-12
ba134	1.23E-12	1.57E-12	1.94E-12	2.35E-12	2.81E-12	2.81E-12
ba135	1.08E-12	1.37E-12	1.68E-12	2.03E-12	2.42E-12	2.42E-12
gd160	1.36E-12	1.53E-12	1.69E-12	1.86E-12	2.04E-12	2.04E-12
pd104	8.89E-13	1.12E-12	1.39E-12	1.68E-12	1.99E-12	1.99E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
te126	1.07E-12	1.20E-12	1.34E-12	1.48E-12	1.62E-12	1.62E-12
ho165	4.32E-13	4.87E-13	5.43E-13	5.99E-13	6.55E-13	6.55E-13

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 25
0 fraction of total absorption rate
power= .00mw, burnup= 88.mwd, flux= 2.74E+08n/cm**2-sec
0 initial 16436.4 d 18262.7 d 20088.9 d 21915.2 d 21915.2 d

te124	2.49E-13	2.81E-13	3.12E-13	3.44E-13	3.76E-13	3.76E-13
sr 87	2.46E-13	2.77E-13	3.07E-13	3.38E-13	3.69E-13	3.69E-13
pm148	3.68E-13	3.69E-13	3.69E-13	3.69E-13	3.69E-13	3.65E-13
ag111	3.16E-13	3.18E-13	3.18E-13	3.19E-13	3.19E-13	3.17E-13
cd110	1.27E-13	1.59E-13	1.95E-13	2.34E-13	2.78E-13	2.78E-13
eu157	2.76E-13	2.98E-13	2.98E-13	2.98E-13	2.99E-13	2.76E-13
cd115m	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.37E-13
nb 94	1.39E-13	1.57E-13	1.74E-13	1.92E-13	2.09E-13	2.09E-13
br 79	8.66E-14	1.10E-13	1.35E-13	1.64E-13	1.95E-13	1.95E-13
nb 93	6.76E-14	9.23E-14	1.22E-13	1.56E-13	1.95E-13	1.95E-13
ge 74	1.19E-13	1.34E-13	1.49E-13	1.64E-13	1.79E-13	1.79E-13
ge 72	8.00E-14	9.00E-14	1.00E-13	1.10E-13	1.20E-13	1.20E-13
xe129	4.89E-14	6.19E-14	7.65E-14	9.25E-14	1.10E-13	1.10E-13
sr 86	7.17E-14	8.10E-14	9.04E-14	9.98E-14	1.09E-13	1.09E-13
ag107	4.60E-14	5.82E-14	7.18E-14	8.69E-14	1.03E-13	1.03E-13
se 76	4.69E-14	5.28E-14	5.88E-14	6.48E-14	7.08E-14	7.08E-14
cs136	5.63E-14	5.67E-14	5.68E-14	5.70E-14	5.71E-14	5.69E-14
sn125	2.90E-14	2.92E-14	2.92E-14	2.92E-14	2.92E-14	2.90E-14
dy160	1.51E-14	1.79E-14	2.08E-14	2.40E-14	2.73E-14	2.73E-14
xe128	1.58E-14	1.84E-14	2.12E-14	2.42E-14	2.72E-14	2.72E-14
ru105	2.26E-14	2.96E-14	2.96E-14	2.96E-14	2.96E-14	2.26E-14
er166	1.18E-14	1.34E-14	1.50E-14	1.66E-14	1.83E-14	1.83E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.43E-15	9.59E-15	9.59E-15	9.59E-15	9.59E-15	9.43E-15
rb 88	8.86E-15	1.30E-14	1.30E-14	1.30E-14	1.30E-14	8.86E-15
i135	8.32E-15	1.02E-14	1.02E-14	1.02E-14	1.02E-14	8.32E-15
kr 80	3.35E-15	3.77E-15	4.20E-15	4.62E-15	5.04E-15	5.04E-15
sn116	1.99E-15	2.50E-15	3.07E-15	3.69E-15	4.38E-15	4.38E-15
sb126	3.07E-15	3.09E-15	3.10E-15	3.11E-15	3.12E-15	3.10E-15
te122	1.21E-15	1.47E-15	1.75E-15	2.06E-15	2.39E-15	2.39E-15
sb124	2.12E-15	2.13E-15	2.13E-15	2.13E-15	2.13E-15	2.13E-15

in117m	1.85E-15	2.10E-15	2.10E-15	2.10E-15	2.11E-15	1.85E-15
tb160	7.14E-16	7.65E-16	8.16E-16	8.68E-16	9.19E-16	9.19E-16
te134	8.71E-16	5.88E-15	5.88E-15	5.88E-15	5.88E-15	8.71E-16
i130	6.90E-16	7.73E-16	7.79E-16	7.86E-16	7.92E-16	7.14E-16
in117	5.50E-16	6.18E-16	6.18E-16	6.19E-16	6.19E-16	5.50E-16
be 9	2.66E-16	3.00E-16	3.33E-16	3.66E-16	4.00E-16	4.00E-16
pr142	2.60E-16	3.13E-16	3.48E-16	3.83E-16	4.18E-16	3.90E-16
te123	2.40E-16	2.70E-16	3.01E-16	3.32E-16	3.63E-16	3.63E-16
rb 86	2.57E-16	2.59E-16	2.61E-16	2.64E-16	2.66E-16	2.65E-16
li 7	1.08E-16	1.22E-16	1.36E-16	1.49E-16	1.63E-16	1.63E-16
dy165	1.28E-16	2.22E-16	2.23E-16	2.25E-16	2.26E-16	1.31E-16
er167	5.45E-17	6.29E-17	7.16E-17	8.08E-17	9.02E-17	9.02E-17
ge 75	3.40E-17	8.68E-17	8.68E-17	8.68E-17	8.68E-17	3.40E-17
cd118	2.48E-17	1.21E-16	1.21E-16	1.21E-16	1.21E-16	2.48E-17
cd108	2.42E-18	2.76E-18	3.10E-18	3.46E-18	3.82E-18	3.82E-18
cs134m	1.30E-18	2.29E-18	2.55E-18	2.81E-18	3.06E-18	1.94E-18
sn114	2.32E-19	3.07E-19	3.94E-19	4.95E-19	6.10E-19	6.10E-19
in119m	4.21E-19	3.02E-17	3.02E-17	3.02E-17	3.02E-17	4.21E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 26
0 fraction of total absorption rate
power= .00mw, burnup= 88.mwd, flux= 2.74E+08n/cm**2-sec
0 initial 16436.4 d 18262.7 d 20088.9 d 21915.2 d 21915.2 d

cd109	2.53E-19	2.63E-19	2.69E-19	2.80E-19	2.90E-19	2.90E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 27
power= 4.000E-03mw, burnup=8.7659E+01mwd, flux= 2.74E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	16436.4 d	18262.7 d	20088.9 d	21915.2 d	21915.2 d
h 1	3.48E-06	3.91E-06	4.33E-06	4.76E-06	5.18E-06	5.18E-06
h 2	1.03E-08	1.16E-08	1.28E-08	1.41E-08	1.54E-08	1.54E-08
h 3	2.99E-11	3.07E-11	3.13E-11	3.17E-11	3.21E-11	3.21E-11
h 4	.00E+00	1.25E-34	1.27E-34	1.29E-34	1.30E-34	.00E+00
he 3	4.57E-11	5.42E-11	6.29E-11	7.18E-11	8.07E-11	8.07E-11
he 4	5.75E-07	6.46E-07	7.16E-07	7.86E-07	8.57E-07	8.57E-07
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	6.91E-08	7.75E-08	8.60E-08	9.45E-08	1.03E-07	1.03E-07
ne 21	9.49E-14	1.18E-13	1.44E-13	1.72E-13	2.03E-13	2.03E-13
ne 22	4.09E-10	4.64E-10	5.19E-10	5.74E-10	6.30E-10	6.30E-10
ne 23	7.10E-30	7.05E-15	7.05E-15	7.05E-15	7.05E-15	7.05E-30
na 22	4.17E-11	4.15E-11	4.14E-11	4.14E-11	4.14E-11	4.14E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.81E-08	2.85E-08	2.85E-08	2.85E-08	2.85E-08	2.60E-08
na 24m	5.05E-30	4.68E-15	4.68E-15	4.68E-15	4.68E-15	4.68E-30
na 25	2.53E-42	2.77E-27	3.11E-27	3.46E-27	3.81E-27	3.85E-42
mg 24	5.57E-04	6.16E-04	6.75E-04	7.34E-04	7.94E-04	7.94E-04
mg 25	8.50E-11	9.66E-11	1.09E-10	1.21E-10	1.33E-10	1.33E-10
mg 26	1.03E-08	1.16E-08	1.28E-08	1.41E-08	1.54E-08	1.54E-08
mg 27	4.59E-16	2.10E-12	2.10E-12	2.10E-12	2.10E-12	4.55E-16
mg 28	4.05E-24	4.29E-24	4.29E-24	4.29E-24	4.29E-24	4.03E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	3.10E-25	2.11E-10	2.11E-10	2.11E-10	2.11E-10	2.88E-25
al 29	1.19E-31	2.80E-26	3.42E-26	4.10E-26	4.84E-26	2.53E-31
al 30	.00E+00	2.38E-38	3.24E-38	4.28E-38	5.52E-38	.00E+00
si 28	1.62E-03	1.79E-03	1.96E-03	2.14E-03	2.31E-03	2.31E-03
si 29	8.69E-11	1.09E-10	1.33E-10	1.60E-10	1.88E-10	1.88E-10
si 30	4.89E-18	6.92E-18	9.43E-18	1.25E-17	1.61E-17	1.61E-17
si 31	2.11E-30	4.97E-30	6.77E-30	8.95E-30	1.15E-29	6.95E-30
si 32	2.44E-37	3.87E-37	5.86E-37	8.50E-37	1.19E-36	1.19E-36

totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.74E+08	2.74E+08	2.74E+08	2.74E+08	2.74E-07

1

power= 4.000E-03mw, burnup=8.7659E+01mwd, flux= 2.74E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge 16436.4 d	18262.7 d	20088.9 d	21915.2 d	21915.2 d	
he 4	3.22E-03	3.77E-03	4.35E-03	4.96E-03	5.60E-03	5.60E-03
pb206	2.62E-10	4.10E-10	6.10E-10	8.72E-10	1.21E-09	1.21E-09
pb207	3.86E-09	5.32E-09	7.07E-09	9.13E-09	1.15E-08	1.15E-08
pb208	1.59E-09	2.08E-09	2.64E-09	3.27E-09	3.96E-09	3.96E-09
pb209	2.24E-15	2.82E-15	3.49E-15	4.22E-15	5.02E-15	5.05E-15
pb210	8.13E-10	1.12E-09	1.49E-09	1.92E-09	2.42E-09	2.42E-09
pb211	2.62E-14	3.18E-14	3.77E-14	4.38E-14	5.02E-14	5.02E-14
pb212	1.62E-13	1.85E-13	2.08E-13	2.31E-13	2.54E-13	2.54E-13
pb214	5.77E-15	7.52E-15	9.28E-15	1.12E-14	1.33E-14	1.29E-14
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	5.53E-11	7.88E-11	1.08E-10	1.44E-10	1.87E-10	1.87E-10
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	5.00E-13	6.90E-13	9.16E-13	1.18E-12	1.49E-12	1.49E-12
bi211	1.56E-15	1.89E-15	2.24E-15	2.60E-15	2.97E-15	2.99E-15
bi212	1.53E-14	1.75E-14	1.97E-14	2.19E-14	2.41E-14	2.41E-14
bi213	5.05E-16	6.59E-16	8.14E-16	9.85E-16	1.17E-15	1.14E-15
bi214	4.34E-15	5.59E-15	6.89E-15	8.33E-15	9.91E-15	9.75E-15
ra222	2.80E-27	3.13E-27	3.49E-27	3.85E-27	4.21E-27	4.21E-27
ra223	1.20E-11	1.45E-11	1.72E-11	2.00E-11	2.29E-11	2.29E-11
ra224	1.33E-12	1.53E-12	1.72E-12	1.91E-12	2.09E-12	2.09E-12
ra225	2.44E-13	3.08E-13	3.81E-13	4.61E-13	5.48E-13	5.48E-13
ra226	1.87E-07	2.36E-07	2.91E-07	3.52E-07	4.19E-07	4.19E-07
ra228	6.71E-14	7.76E-14	8.81E-14	9.87E-14	1.09E-13	1.09E-13
ac225	1.65E-13	2.08E-13	2.57E-13	3.11E-13	3.70E-13	3.70E-13
ac227	8.31E-09	1.01E-08	1.19E-08	1.39E-08	1.59E-08	1.59E-08
ac228	8.19E-18	9.47E-18	1.08E-17	1.20E-17	1.33E-17	1.33E-17
th226	1.36E-25	1.53E-25	1.70E-25	1.88E-25	2.06E-25	2.05E-25
th227	1.93E-11	2.34E-11	2.78E-11	3.23E-11	3.69E-11	3.69E-11
th228	2.55E-10	2.91E-10	3.28E-10	3.64E-10	4.00E-10	4.00E-10
th229	4.74E-08	6.00E-08	7.40E-08	8.96E-08	1.07E-07	1.07E-07
th230	1.02E-03	1.15E-03	1.28E-03	1.40E-03	1.53E-03	1.53E-03
th231	3.02E-09	3.03E-09	3.03E-09	3.03E-09	3.03E-09	3.03E-09
th232	2.07E-04	2.32E-04	2.58E-04	2.84E-04	3.10E-04	3.10E-04
th233	5.29E-17	2.13E-15	2.37E-15	2.61E-15	2.84E-15	7.92E-17
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	2.88E-05	3.24E-05	3.60E-05	3.96E-05	4.32E-05	4.32E-05
pa232	4.74E-13	5.56E-13	6.18E-13	6.80E-13	7.42E-13	7.11E-13
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.32E-22	1.48E-22	1.65E-22	1.82E-22	1.99E-22	1.99E-22
u231	4.16E-19	4.67E-19	5.19E-19	5.71E-19	6.23E-19	6.15E-19
u232	1.00E-08	1.14E-08	1.27E-08	1.40E-08	1.53E-08	1.53E-08
u233	5.45E-04	6.13E-04	6.81E-04	7.49E-04	8.17E-04	8.17E-04
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.74E+02	1.74E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.12E-06	3.11E-06	3.11E-06	3.11E-06	3.11E-06	3.09E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04

1

power= 4.000E-03mw, burnup=8.7659E+01mwd, flux= 2.74E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 16436.4 d	18262.7 d	20088.9 d	21915.2 d	21915.2 d	
u239	1.07E-08	3.19E-07	3.19E-07	3.19E-07	3.19E-07	1.06E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.79E-12	8.68E-12	8.67E-12	8.67E-12	8.67E-12	8.67E-12
np236m	1.97E-12	2.06E-12	2.06E-12	2.06E-12	2.06E-12	1.94E-12
np236	8.06E-09	9.04E-09	1.00E-08	1.10E-08	1.20E-08	1.20E-08
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.52E-06	1.56E-06	1.56E-06	1.56E-06	1.56E-06	1.52E-06
np239	4.57E-05	4.61E-05	4.61E-05	4.61E-05	4.61E-05	4.53E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.61E-15	9.37E-15	9.37E-15	9.37E-15	9.37E-15	2.58E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.12E-09	1.12E-09	1.12E-09	1.12E-09	1.12E-09
pu237	6.50E-14	7.09E-14	7.73E-14	8.34E-14	8.94E-14	8.93E-14
pu238	6.44E-03	7.10E-03	7.74E-03	8.35E-03	8.94E-03	8.94E-03
pu239	2.02E-01	2.27E-01	2.52E-01	2.76E-01	3.01E-01	3.01E-01
pu240	3.98E-05	5.03E-05	6.20E-05	7.49E-05	8.90E-05	8.90E-05
pu241	7.05E-09	9.54E-09	1.25E-08	1.59E-08	1.97E-08	1.97E-08
pu242	6.71E-13	1.05E-12	1.55E-12	2.22E-12	3.06E-12	3.06E-12
pu243	1.10E-21	2.21E-21	3.28E-21	4.69E-21	6.48E-21	4.95E-21
pu244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	9.12E-25	1.54E-24	2.26E-24	3.17E-24	4.32E-24	3.87E-24
am240	4.55E-22	7.07E-22	1.03E-21	1.45E-21	1.98E-21	1.93E-21
am241	3.66E-09	5.62E-09	8.22E-09	1.16E-08	1.57E-08	1.57E-08
am242m	7.70E-14	1.33E-13	2.16E-13	3.34E-13	4.97E-13	4.97E-13
am242	1.19E-16	1.97E-16	2.88E-16	4.06E-16	5.53E-16	5.10E-16
am243	2.94E-17	5.44E-17	9.46E-17	1.56E-16	2.46E-16	2.46E-16
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.98E-25	4.15E-25	7.21E-25	1.19E-24	1.88E-24	1.64E-24
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.74E+08	2.74E+08	2.74E+08	2.74E+08	2.74E-07

```
0        1q array has     20 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        4q array has      1 entries.
0       54q array has     12 entries.
1library information...

          cross-section data taken from position number  4 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
```

```
          pass 0 applies start-up fuel densiities
          pass n applies mid time densities of nth library interval
        first library updated was...
        ******************************************************************************
        *                                                                            *
        *            prelim lwr origen-s binary working library--id = 1143           *
        *         made from modified card-image origen-s libraries of scale 4.2      *
        *      data from the light element, actinide, and fission product libraries  *
        *        decay data, including gamma and total energy, are from endf/b-vi    *
        *                                                                            *
        *      neutron flux spectrum factors and cross sections were produced from   *
        *     the "presas2" case updating all nuclides on the scale "burnup" library *
        *                                                                            *
        *                  fission product yields are from endf/b-v                  *
        *                                                                            *
        *              photon libraries use an 18-energy-group structure             *
        *             the photon data are from the master photon data base,          *
        *              produced to include bremsstrahlung from uo2 matrix            *
        *                                                                            *
        *        see information above this box (if present) for later updates       *
        *                                                                            *
        ******************************************************************************
        *                                                                            *
0       ******************************************************************************
0                .other identification and sizes of library.
0                 data set name:  ft33f001
0              8/28/1996    date library was produced
0                  1697    total number of nuclides in library
                    689    number of light-element nuclides
                    129    number of actinide nuclides
                    879    number of fission product nuclides
0                  7993    number of nonzero off-diagonal matrix elements
0       ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   30
        power=    .00mw, burnup=    117.mwd, flux= 2.71E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                  initial      23741.5 d      25567.7 d      27394.0 d      29220.2 d      29220.3 d
     productions   1.135003E+06   1.135040E+06   1.135077E+06   1.135114E+06   1.135151E+06   1.135151E+06
     absorptions   9.251454E+05   9.252036E+05   9.252616E+05   9.253189E+05   9.253764E+05   9.253763E+05
     k infinity    1.226838E+00   1.226801E+00   1.226764E+00   1.226728E+00   1.226692E+00   1.226692E+00
0                  initial      23741.5 d      25567.7 d      27394.0 d      29220.2 d      29220.3 d
     actinide
     absorptions   9.215212E+05   9.215431E+05   9.215651E+05   9.215869E+05   9.216088E+05   9.216088E+05
     non-actinide
     abs. fracs.   3.917515E-03   3.956497E-03   3.995001E-03   4.033267E-03   4.071355E-03   4.071295E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products    page   31
0                                fraction of total absorption rate
        power=    .00mw, burnup=    117.mwd, flux= 2.71E+08n/cm**2-sec
0              initial 23741.5 d 25567.7 d 27394.0 d 29220.2 d 29220.3 d

     sm149     4.29E-04  4.63E-04  4.97E-04  5.31E-04  5.64E-04  5.64E-04
     sm151     1.50E-05  1.60E-05  1.69E-05  1.78E-05  1.87E-05  1.87E-05
     nd143     8.92E-06  9.66E-06  1.04E-05  1.12E-05  1.19E-05  1.19E-05
     gd155     5.27E-06  5.75E-06  6.24E-06  6.72E-06  7.20E-06  7.20E-06
     gd157     4.31E-06  4.64E-06  4.97E-06  5.30E-06  5.63E-06  5.63E-06
     rh103     4.12E-06  4.46E-06  4.81E-06  5.15E-06  5.50E-06  5.50E-06
     cd113     3.81E-06  4.12E-06  4.42E-06  4.73E-06  5.04E-06  5.04E-06
     eu151     2.76E-06  3.20E-06  3.67E-06  4.16E-06  4.68E-06  4.68E-06
     xe131     2.81E-06  3.04E-06  3.27E-06  3.51E-06  3.74E-06  3.74E-06
```

cs133	2.18E-06	2.36E-06	2.54E-06	2.72E-06	2.90E-06	2.90E-06
xe135	2.29E-06	2.33E-06	2.33E-06	2.33E-06	2.33E-06	2.29E-06
tc 99	1.60E-06	1.74E-06	1.87E-06	2.00E-06	2.14E-06	2.14E-06
sm147	1.52E-06	1.65E-06	1.79E-06	1.92E-06	2.05E-06	2.05E-06
nd145	1.25E-06	1.35E-06	1.45E-06	1.56E-06	1.66E-06	1.66E-06
mo 95	8.58E-07	9.30E-07	1.00E-06	1.07E-06	1.15E-06	1.15E-06
sm152	6.60E-07	7.15E-07	7.70E-07	8.26E-07	8.81E-07	8.81E-07
kr 83	5.42E-07	5.87E-07	6.32E-07	6.78E-07	7.23E-07	7.23E-07
cs135	4.91E-07	5.32E-07	5.73E-07	6.14E-07	6.55E-07	6.55E-07
ru101	3.80E-07	4.12E-07	4.43E-07	4.75E-07	5.06E-07	5.06E-07
pr141	3.68E-07	3.99E-07	4.29E-07	4.60E-07	4.91E-07	4.91E-07
eu153	3.33E-07	3.61E-07	3.89E-07	4.17E-07	4.44E-07	4.44E-07
la139	3.01E-07	3.26E-07	3.52E-07	3.77E-07	4.02E-07	4.02E-07
pm147	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07
pd105	1.27E-07	1.38E-07	1.48E-07	1.59E-07	1.69E-07	1.69E-07
zr 93	1.22E-07	1.32E-07	1.42E-07	1.52E-07	1.62E-07	1.62E-07
eu155	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07
i129	9.36E-08	1.01E-07	1.09E-07	1.17E-07	1.25E-07	1.25E-07
nd144	8.89E-08	9.64E-08	1.04E-07	1.12E-07	1.19E-07	1.19E-07
ba137	6.62E-08	7.54E-08	8.49E-08	9.46E-08	1.05E-07	1.05E-07
mo 97	6.83E-08	7.39E-08	7.96E-08	8.53E-08	9.10E-08	9.10E-08
ag109	4.82E-08	5.22E-08	5.63E-08	6.04E-08	6.45E-08	6.45E-08
sm150	2.72E-08	3.19E-08	3.69E-08	4.23E-08	4.80E-08	4.80E-08
zr 91	3.21E-08	3.48E-08	3.75E-08	4.02E-08	4.28E-08	4.28E-08
y 89	3.08E-08	3.34E-08	3.60E-08	3.86E-08	4.11E-08	4.11E-08
ru102	2.78E-08	3.01E-08	3.25E-08	3.48E-08	3.71E-08	3.71E-08
ce142	2.51E-08	2.72E-08	2.93E-08	3.14E-08	3.35E-08	3.35E-08
nd148	2.41E-08	2.61E-08	2.81E-08	3.01E-08	3.21E-08	3.21E-08
nd146	2.02E-08	2.19E-08	2.36E-08	2.53E-08	2.70E-08	2.70E-08
ba138	1.73E-08	1.87E-08	2.02E-08	2.16E-08	2.31E-08	2.31E-08
in115	1.66E-08	1.80E-08	1.94E-08	2.08E-08	2.21E-08	2.21E-08
pd108	1.62E-08	1.76E-08	1.90E-08	2.03E-08	2.17E-08	2.17E-08
ce140	1.62E-08	1.75E-08	1.89E-08	2.02E-08	2.16E-08	2.16E-08
xe132	1.45E-08	1.57E-08	1.69E-08	1.81E-08	1.93E-08	1.93E-08
sr 90	1.33E-08	1.38E-08	1.42E-08	1.45E-08	1.48E-08	1.48E-08
mo 98	9.96E-09	1.08E-08	1.16E-08	1.24E-08	1.33E-08	1.33E-08
pd107	9.66E-09	1.05E-08	1.13E-08	1.21E-08	1.29E-08	1.29E-08
mo100	9.65E-09	1.05E-08	1.13E-08	1.21E-08	1.29E-08	1.29E-08
xe134	9.55E-09	1.03E-08	1.11E-08	1.19E-08	1.27E-08	1.27E-08
zr 92	7.76E-09	8.40E-09	9.05E-09	9.69E-09	1.03E-08	1.03E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 32
0 fraction of total absorption rate
power= .00mw, burnup= 117.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 23741.5 d 25567.7 d 27394.0 d 29220.2 d 29220.3 d

rh105	8.35E-09	8.39E-09	8.39E-09	8.39E-09	8.39E-09	8.36E-09
i127	6.24E-09	6.77E-09	7.29E-09	7.81E-09	8.33E-09	8.33E-09
zr 96	6.04E-09	6.55E-09	7.05E-09	7.55E-09	8.06E-09	8.06E-09
ru104	5.94E-09	6.43E-09	6.93E-09	7.42E-09	7.92E-09	7.92E-09
nd150	5.33E-09	5.77E-09	6.21E-09	6.66E-09	7.10E-09	7.10E-09
xe136	5.16E-09	5.59E-09	6.02E-09	6.45E-09	6.88E-09	6.88E-09
br 81	3.86E-09	4.18E-09	4.50E-09	4.83E-09	5.15E-09	5.15E-09
rb 85	3.57E-09	3.89E-09	4.20E-09	4.51E-09	4.83E-09	4.83E-09
zr 94	3.27E-09	3.54E-09	3.81E-09	4.08E-09	4.35E-09	4.35E-09
cd111	2.51E-09	2.72E-09	2.93E-09	3.15E-09	3.36E-09	3.36E-09
cs137	2.83E-09	2.93E-09	3.03E-09	3.11E-09	3.18E-09	3.18E-09
te130	2.35E-09	2.54E-09	2.74E-09	2.93E-09	3.13E-09	3.13E-09
sm154	2.27E-09	2.46E-09	2.65E-09	2.84E-09	3.03E-09	3.03E-09
rb 87	2.18E-09	2.36E-09	2.55E-09	2.73E-09	2.91E-09	2.91E-09
pr143	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09

zr 90	1.45E-09	1.65E-09	1.86E-09	2.07E-09	2.29E-09	2.29E-09
se 77	1.56E-09	1.69E-09	1.82E-09	1.95E-09	2.08E-09	2.08E-09
xe133	2.03E-09	2.03E-09	2.03E-09	2.03E-09	2.03E-09	2.03E-09
ce141	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09
pd106	1.07E-09	1.17E-09	1.26E-09	1.35E-09	1.44E-09	1.44E-09
kr 84	1.03E-09	1.11E-09	1.20E-09	1.28E-09	1.37E-09	1.37E-09
se 79	7.98E-10	8.64E-10	9.31E-10	9.97E-10	1.06E-09	1.06E-09
sb121	7.51E-10	8.14E-10	8.77E-10	9.39E-10	1.00E-09	1.00E-09
pm149	9.74E-10	9.81E-10	9.81E-10	9.81E-10	9.80E-10	9.73E-10
nd147	9.27E-10	9.31E-10	9.31E-10	9.30E-10	9.30E-10	9.27E-10
sb123	6.13E-10	6.64E-10	7.15E-10	7.66E-10	8.17E-10	8.17E-10
eu152	4.13E-10	4.98E-10	5.91E-10	6.91E-10	7.99E-10	7.99E-10
kr 86	5.76E-10	6.24E-10	6.72E-10	7.20E-10	7.68E-10	7.68E-10
te128	5.12E-10	5.54E-10	5.97E-10	6.40E-10	6.82E-10	6.82E-10
ce144	6.04E-10	6.04E-10	6.04E-10	6.04E-10	6.04E-10	6.03E-10
kr 85	5.65E-10	5.68E-10	5.70E-10	5.72E-10	5.73E-10	5.73E-10
gd156	4.02E-10	4.36E-10	4.72E-10	5.07E-10	5.42E-10	5.42E-10
se 80	3.72E-10	4.03E-10	4.34E-10	4.65E-10	4.96E-10	4.96E-10
dy161	3.26E-10	3.54E-10	3.81E-10	4.09E-10	4.36E-10	4.36E-10
te125	3.03E-10	3.30E-10	3.57E-10	3.84E-10	4.11E-10	4.11E-10
ru103	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10
tb159	2.19E-10	2.37E-10	2.56E-10	2.74E-10	2.92E-10	2.92E-10
li 6	2.12E-10	2.29E-10	2.47E-10	2.64E-10	2.82E-10	2.82E-10
cd112	2.10E-10	2.28E-10	2.46E-10	2.63E-10	2.81E-10	2.81E-10
sn117	1.67E-10	1.81E-10	1.94E-10	2.08E-10	2.22E-10	2.22E-10
eu154	1.43E-10	1.57E-10	1.71E-10	1.85E-10	1.99E-10	1.99E-10
sn119	1.38E-10	1.49E-10	1.60E-10	1.72E-10	1.83E-10	1.83E-10
sn115	1.26E-10	1.36E-10	1.47E-10	1.57E-10	1.68E-10	1.68E-10
zr 95	1.65E-10	1.65E-10	1.65E-10	1.65E-10	1.65E-10	1.65E-10
nb 95	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10
y 91	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10
sr 88	1.06E-10	1.15E-10	1.23E-10	1.32E-10	1.41E-10	1.41E-10
gd152	5.19E-11	6.62E-11	8.28E-11	1.02E-10	1.24E-10	1.24E-10
pm151	1.06E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.06E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 33
0 fraction of total absorption rate
power= .00mw, burnup= 117.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 23741.5 d 25567.7 d 27394.0 d 29220.2 d 29220.3 d

gd158	7.68E-11	8.39E-11	9.12E-11	9.86E-11	1.06E-10	1.06E-10
pd110	7.51E-11	8.14E-11	8.77E-11	9.40E-11	1.00E-10	1.00E-10
cd114	7.43E-11	8.06E-11	8.70E-11	9.34E-11	9.99E-11	9.99E-11
se 82	7.19E-11	7.78E-11	8.38E-11	8.98E-11	9.58E-11	9.58E-11
sn126	5.77E-11	6.25E-11	6.73E-11	7.21E-11	7.70E-11	7.70E-11
se 78	5.43E-11	5.89E-11	6.34E-11	6.79E-11	7.24E-11	7.24E-11
sn124	4.34E-11	4.71E-11	5.07E-11	5.43E-11	5.79E-11	5.79E-11
dy162	4.28E-11	4.64E-11	5.01E-11	5.38E-11	5.75E-11	5.75E-11
ru 99	3.31E-11	3.81E-11	4.34E-11	4.91E-11	5.51E-11	5.51E-11
dy164	3.94E-11	4.28E-11	4.63E-11	4.97E-11	5.32E-11	5.32E-11
ba140	4.73E-11	4.75E-11	4.75E-11	4.75E-11	4.75E-11	4.73E-11
as 75	3.24E-11	3.51E-11	3.78E-11	4.05E-11	4.32E-11	4.32E-11
sm153	3.73E-11	3.83E-11	3.83E-11	3.83E-11	3.83E-11	3.73E-11
eu156	3.44E-11	3.44E-11	3.44E-11	3.44E-11	3.44E-11	3.44E-11
sr 89	3.09E-11	3.09E-11	3.09E-11	3.09E-11	3.09E-11	3.09E-11
ru106	2.53E-11	2.53E-11	2.53E-11	2.53E-11	2.53E-11	2.53E-11
in113	1.65E-11	1.84E-11	2.03E-11	2.23E-11	2.43E-11	2.43E-11
sn118	1.77E-11	1.92E-11	2.07E-11	2.21E-11	2.36E-11	2.36E-11
ba136	1.74E-11	1.89E-11	2.04E-11	2.19E-11	2.34E-11	2.34E-11
cs134	1.59E-11	1.73E-11	1.86E-11	1.99E-11	2.13E-11	2.13E-11
sn122	1.51E-11	1.64E-11	1.76E-11	1.89E-11	2.01E-11	2.01E-11

cd116	1.51E-11	1.63E-11	1.76E-11	1.88E-11	2.01E-11	2.01E-11
gd154	1.00E-11	1.20E-11	1.42E-11	1.65E-11	1.91E-11	1.91E-11
ce143	1.70E-11	1.76E-11	1.76E-11	1.76E-11	1.76E-11	1.70E-11
la140	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11
sn120	1.13E-11	1.22E-11	1.31E-11	1.41E-11	1.50E-11	1.50E-11
sb125	1.49E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11
y 90	1.27E-11	1.31E-11	1.35E-11	1.38E-11	1.41E-11	1.41E-11
kr 82	9.75E-12	1.06E-11	1.14E-11	1.23E-11	1.31E-11	1.31E-11
mo 99	1.29E-11	1.32E-11	1.31E-11	1.31E-11	1.31E-11	1.29E-11
dy163	9.51E-12	1.03E-11	1.11E-11	1.20E-11	1.28E-11	1.28E-11
ge 73	8.85E-12	9.59E-12	1.03E-11	1.11E-11	1.18E-11	1.18E-11
pm148m	9.64E-12	9.63E-12	9.63E-12	9.62E-12	9.62E-12	9.61E-12
ru100	5.14E-12	5.96E-12	6.83E-12	7.77E-12	8.76E-12	8.76E-12
xe130	6.14E-12	6.69E-12	7.23E-12	7.78E-12	8.34E-12	8.34E-12
kr 87	8.20E-12	2.31E-11	2.31E-11	2.31E-11	2.31E-11	8.20E-12
te127m	7.47E-12	7.47E-12	7.47E-12	7.47E-12	7.47E-12	7.47E-12
i131	6.76E-12	6.78E-12	6.78E-12	6.78E-12	6.78E-12	6.76E-12
mo 96	4.74E-12	5.19E-12	5.66E-12	6.13E-12	6.61E-12	6.61E-12
sm148	3.23E-12	3.74E-12	4.28E-12	4.87E-12	5.49E-12	5.49E-12
nd142	3.06E-12	3.59E-12	4.16E-12	4.77E-12	5.43E-12	5.43E-12
ba134	2.81E-12	3.31E-12	3.84E-12	4.41E-12	5.03E-12	5.03E-12
ge 76	3.21E-12	3.48E-12	3.75E-12	4.01E-12	4.28E-12	4.28E-12
ba135	2.42E-12	2.83E-12	3.28E-12	3.76E-12	4.28E-12	4.28E-12
pd104	1.99E-12	2.33E-12	2.70E-12	3.10E-12	3.53E-12	3.53E-12
gd160	2.04E-12	2.21E-12	2.38E-12	2.55E-12	2.72E-12	2.72E-12
te126	1.62E-12	1.77E-12	1.91E-12	2.05E-12	2.20E-12	2.20E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
ho165	6.55E-13	7.11E-13	7.68E-13	8.25E-13	8.83E-13	8.83E-13

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 34
0 fraction of total absorption rate
power= .00mw, burnup= 117.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 23741.5 d 25567.7 d 27394.0 d 29220.2 d 29220.3 d

te124	3.76E-13	4.08E-13	4.40E-13	4.72E-13	5.04E-13	5.04E-13
sr 87	3.69E-13	4.00E-13	4.31E-13	4.62E-13	4.93E-13	4.93E-13
cd110	2.78E-13	3.25E-13	3.76E-13	4.30E-13	4.88E-13	4.88E-13
nb 93	1.95E-13	2.39E-13	2.88E-13	3.42E-13	4.01E-13	4.01E-13
pm148	3.65E-13	3.67E-13	3.67E-13	3.67E-13	3.67E-13	3.63E-13
br 79	1.95E-13	2.29E-13	2.65E-13	3.04E-13	3.46E-13	3.46E-13
ag111	3.17E-13	3.19E-13	3.19E-13	3.19E-13	3.19E-13	3.18E-13
nb 94	2.09E-13	2.26E-13	2.44E-13	2.61E-13	2.78E-13	2.78E-13
eu157	2.76E-13	2.99E-13	2.99E-13	2.99E-13	2.99E-13	2.77E-13
ge 74	1.79E-13	1.94E-13	2.09E-13	2.24E-13	2.39E-13	2.39E-13
cd115m	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.38E-13	2.37E-13
xe129	1.10E-13	1.29E-13	1.50E-13	1.72E-13	1.96E-13	1.96E-13
ag107	1.04E-13	1.22E-13	1.41E-13	1.62E-13	1.84E-13	1.84E-13
ge 72	1.20E-13	1.30E-13	1.40E-13	1.50E-13	1.60E-13	1.60E-13
sr 86	1.10E-13	1.19E-13	1.29E-13	1.39E-13	1.48E-13	1.48E-13
se 76	7.09E-14	7.69E-14	8.30E-14	8.90E-14	9.51E-14	9.51E-14
cs136	5.68E-14	5.72E-14	5.73E-14	5.75E-14	5.76E-14	5.74E-14
dy160	2.73E-14	3.08E-14	3.46E-14	3.85E-14	4.26E-14	4.26E-14
xe128	2.73E-14	3.05E-14	3.39E-14	3.74E-14	4.11E-14	4.11E-14
sn125	2.90E-14	2.92E-14	2.92E-14	2.92E-14	2.92E-14	2.90E-14
er166	1.83E-14	2.00E-14	2.17E-14	2.34E-14	2.52E-14	2.52E-14
ru105	2.26E-14	2.95E-14	2.95E-14	2.95E-14	2.95E-14	2.26E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.44E-15	9.60E-15	9.60E-15	9.60E-15	9.60E-15	9.44E-15
rb 88	8.88E-15	1.30E-14	1.30E-14	1.30E-14	1.30E-14	8.88E-15
i135	8.34E-15	1.02E-14	1.02E-14	1.02E-14	1.02E-14	8.34E-15
sn116	4.37E-15	5.11E-15	5.90E-15	6.76E-15	7.67E-15	7.67E-15

kr 80	5.05E-15	5.48E-15	5.90E-15	6.33E-15	6.75E-15	6.75E-15
te122	2.39E-15	2.74E-15	3.12E-15	3.52E-15	3.95E-15	3.95E-15
sb126	3.10E-15	3.13E-15	3.14E-15	3.14E-15	3.15E-15	3.14E-15
sb124	2.13E-15	2.14E-15	2.14E-15	2.14E-15	2.14E-15	2.14E-15
in117m	1.85E-15	2.11E-15	2.11E-15	2.11E-15	2.11E-15	1.85E-15
tb160	9.20E-16	9.72E-16	1.02E-15	1.08E-15	1.13E-15	1.13E-15
te134	8.72E-16	5.89E-15	5.89E-15	5.89E-15	5.89E-15	8.72E-16
i130	7.14E-16	7.99E-16	8.06E-16	8.12E-16	8.18E-16	7.37E-16
in117	5.51E-16	6.20E-16	6.20E-16	6.20E-16	6.20E-16	5.51E-16
be 9	3.99E-16	4.32E-16	4.65E-16	4.98E-16	5.31E-16	5.31E-16
pr142	3.90E-16	4.53E-16	4.87E-16	5.22E-16	5.57E-16	5.20E-16
te123	3.64E-16	3.95E-16	4.26E-16	4.58E-16	4.90E-16	4.90E-16
rb 86	2.65E-16	2.68E-16	2.70E-16	2.72E-16	2.74E-16	2.73E-16
li 7	1.63E-16	1.77E-16	1.90E-16	2.04E-16	2.17E-16	2.17E-16
dy165	1.31E-16	2.28E-16	2.29E-16	2.30E-16	2.32E-16	1.34E-16
er167	9.04E-17	1.00E-16	1.10E-16	1.21E-16	1.32E-16	1.32E-16
ge 75	3.41E-17	8.70E-17	8.70E-17	8.70E-17	8.70E-17	3.41E-17
cd118	2.48E-17	1.21E-16	1.21E-16	1.21E-16	1.21E-16	2.48E-17
cd108	3.82E-18	4.19E-18	4.57E-18	4.95E-18	5.35E-18	5.35E-18
cs134m	1.94E-18	3.31E-18	3.56E-18	3.82E-18	4.08E-18	2.58E-18
sn114	6.14E-19	7.42E-19	8.84E-19	1.04E-18	1.21E-18	1.21E-18
in119m	4.22E-19	3.03E-17	3.03E-17	3.03E-17	3.03E-17	4.22E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 35
0 fraction of total absorption rate
power= .00mw, burnup= 117.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 23741.5 d 25567.7 d 27394.0 d 29220.2 d 29220.3 d

cd109	2.90E-19	2.97E-19	3.07E-19	3.14E-19	3.24E-19	3.24E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 36
power= 4.000E-03mw, burnup=1.1688E+02mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	23741.5 d	25567.7 d	27394.0 d	29220.2 d	29220.3 d
h 1	5.18E-06	5.61E-06	6.04E-06	6.46E-06	6.89E-06	6.89E-06
h 2	1.54E-08	1.66E-08	1.79E-08	1.92E-08	2.04E-08	2.04E-08
h 3	3.21E-11	3.23E-11	3.25E-11	3.26E-11	3.28E-11	3.28E-11
h 4	.00E+00	1.31E-34	1.32E-34	1.33E-34	1.33E-34	.00E+00
he 3	8.07E-11	8.97E-11	9.88E-11	1.08E-10	1.17E-10	1.17E-10
he 4	8.57E-07	9.27E-07	9.98E-07	1.07E-06	1.14E-06	1.14E-06
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.03E-07	1.11E-07	1.20E-07	1.28E-07	1.37E-07	1.37E-07
ne 21	2.03E-13	2.35E-13	2.70E-13	3.08E-13	3.47E-13	3.47E-13
ne 22	6.30E-10	6.85E-10	7.40E-10	7.95E-10	8.50E-10	8.50E-10
ne 23	7.05E-30	7.04E-15	7.04E-15	7.04E-15	7.04E-15	7.04E-30
na 22	4.14E-11	4.14E-11	4.14E-11	4.14E-11	4.14E-11	4.14E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.60E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.53E-08
na 24m	4.68E-30	4.55E-15	4.55E-15	4.55E-15	4.55E-15	4.55E-30
na 25	3.85E-42	4.15E-27	4.52E-27	4.89E-27	5.27E-27	5.30E-42
mg 24	7.94E-04	8.51E-04	9.08E-04	9.66E-04	1.02E-03	1.02E-03
mg 25	1.33E-10	1.46E-10	1.58E-10	1.71E-10	1.85E-10	1.85E-10
mg 26	1.54E-08	1.66E-08	1.79E-08	1.92E-08	2.04E-08	2.04E-08
mg 27	4.55E-16	2.10E-12	2.10E-12	2.10E-12	2.10E-12	4.54E-16
mg 28	4.03E-24	4.29E-24	4.29E-24	4.29E-24	4.29E-24	4.03E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.88E-25	2.05E-10	2.05E-10	2.05E-10	2.05E-10	2.80E-25
al 29	2.53E-31	5.60E-26	6.44E-26	7.34E-26	8.29E-26	4.34E-31
al 30	.00E+00	6.93E-38	8.60E-38	1.05E-37	1.27E-37	.00E+00
si 28	2.31E-03	2.48E-03	2.64E-03	2.81E-03	2.98E-03	2.98E-03

si 29	1.88E-10	2.19E-10	2.52E-10	2.87E-10	3.25E-10	3.25E-10
si 30	1.61E-17	2.03E-17	2.52E-17	3.08E-17	3.71E-17	3.71E-17
si 31	6.95E-30	1.46E-29	1.81E-29	2.21E-29	2.67E-29	1.61E-29
si 32	1.19E-36	1.63E-36	2.17E-36	2.83E-36	3.64E-36	3.64E-36
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.71E+08	2.71E+08	2.71E+08	2.71E+08	2.71E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 37

power= 4.000E-03mw, burnup=1.1688E+02mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge 23741.5 d	25567.7 d	27394.0 d	29220.2 d	29220.3 d	
he 4	5.60E-03	6.26E-03	6.95E-03	7.67E-03	8.40E-03	8.40E-03
pb206	1.21E-09	1.62E-09	2.13E-09	2.75E-09	3.48E-09	3.48E-09
pb207	1.15E-08	1.42E-08	1.72E-08	2.06E-08	2.43E-08	2.43E-08
pb208	3.96E-09	4.72E-09	5.54E-09	6.43E-09	7.38E-09	7.38E-09
pb209	5.05E-15	5.89E-15	6.83E-15	7.84E-15	8.92E-15	8.98E-15
pb210	2.42E-09	2.98E-09	3.62E-09	4.32E-09	5.10E-09	5.10E-09
pb211	5.02E-14	5.67E-14	6.34E-14	7.02E-14	7.71E-14	7.70E-14
pb212	2.54E-13	2.76E-13	2.99E-13	3.21E-13	3.44E-13	3.44E-13
pb214	1.29E-14	1.56E-14	1.81E-14	2.08E-14	2.37E-14	2.29E-14
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.87E-10	2.38E-10	2.97E-10	3.65E-10	4.44E-10	4.44E-10
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.49E-12	1.84E-12	2.23E-12	2.66E-12	3.14E-12	3.14E-12
bi211	2.99E-15	3.36E-15	3.76E-15	4.16E-15	4.57E-15	4.60E-15
bi212	2.41E-14	2.62E-14	2.84E-14	3.05E-14	3.26E-14	3.26E-14
bi213	1.14E-15	1.38E-15	1.60E-15	1.83E-15	2.08E-15	2.02E-15
bi214	9.75E-15	1.16E-14	1.35E-14	1.54E-14	1.76E-14	1.73E-14
po210	4.11E-11	5.07E-11	6.15E-11	7.35E-11	8.68E-11	8.68E-11
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.31E-20	3.71E-20	4.15E-20	4.60E-20	5.05E-20	5.08E-20
po212	1.27E-24	1.38E-24	1.49E-24	1.60E-24	1.71E-24	1.71E-24
po213	1.71E-24	2.07E-24	2.40E-24	2.75E-24	3.13E-24	3.04E-24
po214	1.34E-21	1.60E-21	1.85E-21	2.13E-21	2.42E-21	2.38E-21
po215	4.12E-20	4.66E-20	5.21E-20	5.77E-20	6.33E-20	6.33E-20
po216	9.61E-19	1.05E-18	1.13E-18	1.22E-18	1.30E-18	1.30E-18
po218	1.54E-15	1.81E-15	2.10E-15	2.41E-15	2.74E-15	2.74E-15
ra222	4.21E-27	4.55E-27	4.90E-27	5.25E-27	5.60E-27	5.60E-27
ra223	2.29E-11	2.59E-11	2.89E-11	3.20E-11	3.52E-11	3.52E-11
ra224	2.09E-12	2.28E-12	2.47E-12	2.65E-12	2.84E-12	2.84E-12
ra225	5.48E-13	6.43E-13	7.46E-13	8.56E-13	9.74E-13	9.74E-13
ra226	4.19E-07	4.91E-07	5.70E-07	6.53E-07	7.43E-07	7.43E-07
ra228	1.09E-13	1.20E-13	1.30E-13	1.41E-13	1.51E-13	1.51E-13
ac225	3.70E-13	4.35E-13	5.04E-13	5.79E-13	6.58E-13	6.58E-13
ac227	1.59E-08	1.80E-08	2.01E-08	2.22E-08	2.44E-08	2.44E-08
ac228	1.33E-17	1.46E-17	1.59E-17	1.72E-17	1.85E-17	1.85E-17
th226	2.05E-25	2.22E-25	2.39E-25	2.56E-25	2.73E-25	2.73E-25
th227	3.69E-11	4.17E-11	4.67E-11	5.17E-11	5.67E-11	5.67E-11
th228	4.00E-10	4.35E-10	4.71E-10	5.06E-10	5.41E-10	5.41E-10
th229	1.07E-07	1.25E-07	1.45E-07	1.67E-07	1.89E-07	1.89E-07
th230	1.53E-03	1.66E-03	1.79E-03	1.92E-03	2.04E-03	2.04E-03
th231	3.03E-09	3.03E-09	3.03E-09	3.03E-09	3.03E-09	3.03E-09
th232	3.10E-04	3.36E-04	3.61E-04	3.87E-04	4.13E-04	4.13E-04
th233	7.92E-17	3.08E-15	3.31E-15	3.55E-15	3.79E-15	1.05E-16
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	4.32E-05	4.68E-05	5.04E-05	5.40E-05	5.76E-05	5.76E-05
pa232	7.11E-13	8.04E-13	8.66E-13	9.27E-13	9.89E-13	9.48E-13
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11

pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 38
power= 4.000E-03mw, burnup=1.1688E+02mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	23741.5 d	25567.7 d	27394.0 d	29220.2 d	29220.3 d
u230	1.99E-22	2.15E-22	2.32E-22	2.48E-22	2.65E-22	2.64E-22
u231	6.15E-19	6.72E-19	7.24E-19	7.75E-19	8.27E-19	8.16E-19
u232	1.53E-08	1.66E-08	1.79E-08	1.92E-08	2.05E-08	2.05E-08
u233	8.17E-04	8.86E-04	9.54E-04	1.02E-03	1.09E-03	1.09E-03
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.09E-06	3.10E-06	3.10E-06	3.10E-06	3.10E-06	3.07E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.06E-08	3.18E-07	3.18E-07	3.18E-07	3.18E-07	1.06E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.67E-12	8.63E-12	8.63E-12	8.62E-12	8.62E-12	8.62E-12
np236m	1.94E-12	2.05E-12	2.05E-12	2.05E-12	2.05E-12	1.93E-12
np236	1.20E-08	1.29E-08	1.39E-08	1.49E-08	1.59E-08	1.59E-08
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.52E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.51E-06
np239	4.53E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.51E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.58E-15	9.33E-15	9.33E-15	9.33E-15	9.33E-15	2.57E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.12E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09
pu237	8.93E-14	9.46E-14	1.00E-13	1.05E-13	1.10E-13	1.10E-13
pu238	8.94E-03	9.50E-03	1.00E-02	1.06E-02	1.11E-02	1.11E-02
pu239	3.01E-01	3.26E-01	3.50E-01	3.75E-01	4.00E-01	4.00E-01
pu240	8.90E-05	1.04E-04	1.21E-04	1.38E-04	1.57E-04	1.57E-04
pu241	1.97E-08	2.40E-08	2.88E-08	3.41E-08	3.98E-08	3.98E-08
pu242	3.06E-12	4.13E-12	5.43E-12	7.01E-12	8.89E-12	8.89E-12
pu243	4.95E-21	8.69E-21	1.14E-20	1.48E-20	1.87E-20	1.43E-20
pu244	.00E+00	.00E+00	.00E+00	1.40E-45	4.20E-45	4.20E-45
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	3.87E-24	5.70E-24	7.39E-24	9.40E-24	1.18E-23	1.05E-23
am240	1.93E-21	2.61E-21	3.39E-21	4.30E-21	5.38E-21	5.24E-21
am241	1.57E-08	2.09E-08	2.70E-08	3.44E-08	4.30E-08	4.30E-08
am242m	4.97E-13	7.13E-13	9.96E-13	1.36E-12	1.81E-12	1.81E-12
am242	5.10E-16	7.34E-16	9.52E-16	1.21E-15	1.52E-15	1.40E-15
am243	2.46E-16	3.74E-16	5.51E-16	7.91E-16	1.11E-15	1.11E-15
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.64E-24	2.84E-24	4.19E-24	6.01E-24	8.42E-24	7.38E-24
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.71E+08	2.71E+08	2.71E+08	2.71E+08	2.71E-07

0 1q array has 20 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 4q array has 1 entries.
0 54q array has 12 entries.
1library information...

```
          cross-section data taken from position number  1 of library on unit 15.

          pass   5
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *          made from modified card-image origen-s libraries of scale 4.2       *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *         see information above this box (if present) for later updates        *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft15f001
0                  8/28/1996    date library was produced
0                       1697    total number of nuclides in library
                         689    number of light-element nuclides
                         129    number of actinide nuclides
                         879    number of fission product nuclides
0                       7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   39
         power=    .00mw, burnup=    146.mwd, flux= 2.70E+08n/cm**2-sec
0                                        basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial      31046.6 d      32872.8 d      34699.1 d      36525.3 d
     productions   1.138556E+06   1.138592E+06   1.138629E+06   1.138666E+06   1.138703E+06
     absorptions   9.278101E+05   9.278671E+05   9.279241E+05   9.279809E+05   9.280372E+05
     k infinity    1.227143E+00   1.227107E+00   1.227072E+00   1.227036E+00   1.227001E+00
0                    initial      31046.6 d      32872.8 d      34699.1 d      36525.3 d
     actinide
     absorptions   9.240538E+05   9.240755E+05   9.240974E+05   9.241194E+05   9.241413E+05
     non-actinide
     abs. fracs.   4.048586E-03   4.086375E-03   4.123926E-03   4.161179E-03   4.198015E-03
```

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 40
0 fraction of total absorption rate
power= .00mw, burnup= 146.mwd, flux= 2.70E+08n/cm**2-sec
0 initial 31046.6 d 32872.8 d 34699.1 d 36525.3 d

sm149	5.65E-04	5.98E-04	6.31E-04	6.64E-04	6.96E-04
sm151	1.87E-05	1.95E-05	2.03E-05	2.10E-05	2.18E-05
nd143	1.19E-05	1.26E-05	1.34E-05	1.41E-05	1.49E-05
gd155	7.20E-06	7.69E-06	8.17E-06	8.64E-06	9.12E-06
eu151	4.68E-06	5.22E-06	5.79E-06	6.37E-06	6.98E-06
gd157	5.63E-06	5.95E-06	6.27E-06	6.59E-06	6.90E-06
rh103	5.50E-06	5.84E-06	6.18E-06	6.53E-06	6.87E-06
cd113	5.04E-06	5.34E-06	5.65E-06	5.95E-06	6.25E-06
xe131	3.74E-06	3.97E-06	4.21E-06	4.44E-06	4.67E-06
cs133	2.90E-06	3.08E-06	3.26E-06	3.45E-06	3.63E-06
tc 99	2.13E-06	2.27E-06	2.40E-06	2.53E-06	2.67E-06
sm147	2.05E-06	2.19E-06	2.32E-06	2.46E-06	2.59E-06
xe135	2.29E-06	2.33E-06	2.33E-06	2.33E-06	2.33E-06
nd145	1.66E-06	1.76E-06	1.87E-06	1.97E-06	2.08E-06
mo 95	1.14E-06	1.22E-06	1.29E-06	1.36E-06	1.43E-06
sm152	8.81E-07	9.36E-07	9.91E-07	1.05E-06	1.10E-06
kr 83	7.23E-07	7.68E-07	8.13E-07	8.58E-07	9.04E-07
cs135	6.55E-07	6.96E-07	7.37E-07	7.78E-07	8.18E-07
ru101	5.06E-07	5.38E-07	5.69E-07	6.01E-07	6.32E-07
pr141	4.91E-07	5.22E-07	5.52E-07	5.83E-07	6.14E-07
eu153	4.44E-07	4.72E-07	5.00E-07	5.28E-07	5.55E-07
la139	4.02E-07	4.27E-07	4.52E-07	4.77E-07	5.02E-07
pm147	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07
pd105	1.69E-07	1.80E-07	1.90E-07	2.01E-07	2.12E-07
zr 93	1.62E-07	1.72E-07	1.82E-07	1.92E-07	2.03E-07
eu155	1.58E-07	1.58E-07	1.58E-07	1.59E-07	1.59E-07
i129	1.25E-07	1.33E-07	1.40E-07	1.48E-07	1.56E-07
nd144	1.19E-07	1.27E-07	1.34E-07	1.42E-07	1.49E-07
ba137	1.05E-07	1.15E-07	1.25E-07	1.36E-07	1.47E-07
mo 97	9.10E-08	9.67E-08	1.02E-07	1.08E-07	1.14E-07
ag109	6.45E-08	6.86E-08	7.28E-08	7.69E-08	8.11E-08
sm150	4.80E-08	5.41E-08	6.05E-08	6.72E-08	7.43E-08
zr 91	4.29E-08	4.55E-08	4.82E-08	5.09E-08	5.36E-08
y 89	4.12E-08	4.37E-08	4.63E-08	4.89E-08	5.15E-08
ru102	3.71E-08	3.94E-08	4.17E-08	4.41E-08	4.64E-08
ce142	3.35E-08	3.56E-08	3.77E-08	3.97E-08	4.18E-08
nd148	3.21E-08	3.41E-08	3.61E-08	3.81E-08	4.01E-08
nd146	2.70E-08	2.87E-08	3.03E-08	3.20E-08	3.37E-08
ba138	2.31E-08	2.45E-08	2.60E-08	2.74E-08	2.88E-08
in115	2.21E-08	2.35E-08	2.49E-08	2.63E-08	2.77E-08
pd108	2.17E-08	2.31E-08	2.44E-08	2.58E-08	2.72E-08
ce140	2.16E-08	2.29E-08	2.43E-08	2.56E-08	2.70E-08
xe132	1.93E-08	2.05E-08	2.17E-08	2.29E-08	2.41E-08
mo 98	1.33E-08	1.41E-08	1.49E-08	1.58E-08	1.66E-08
pd107	1.29E-08	1.37E-08	1.45E-08	1.53E-08	1.61E-08
mo100	1.29E-08	1.37E-08	1.45E-08	1.53E-08	1.61E-08
xe134	1.27E-08	1.35E-08	1.43E-08	1.51E-08	1.59E-08
sr 90	1.48E-08	1.51E-08	1.54E-08	1.56E-08	1.58E-08
zr 92	1.03E-08	1.10E-08	1.16E-08	1.23E-08	1.29E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 41
0 fraction of total absorption rate
power= .00mw, burnup= 146.mwd, flux= 2.70E+08n/cm**2-sec
0 initial 31046.6 d 32872.8 d 34699.1 d 36525.3 d

i127	8.33E-09	8.85E-09	9.37E-09	9.89E-09	1.04E-08

zr 96	8.05E-09	8.55E-09	9.05E-09	9.56E-09	1.01E-08
ru104	7.92E-09	8.41E-09	8.91E-09	9.40E-09	9.90E-09
nd150	7.10E-09	7.54E-09	7.99E-09	8.43E-09	8.87E-09
xe136	6.88E-09	7.31E-09	7.74E-09	8.17E-09	8.60E-09
rh105	8.36E-09	8.40E-09	8.40E-09	8.40E-09	8.40E-09
br 81	5.15E-09	5.47E-09	5.79E-09	6.11E-09	6.43E-09
rb 85	4.83E-09	5.14E-09	5.46E-09	5.77E-09	6.08E-09
zr 94	4.35E-09	4.62E-09	4.90E-09	5.17E-09	5.44E-09
cd111	3.36E-09	3.57E-09	3.78E-09	3.99E-09	4.20E-09
te130	3.13E-09	3.33E-09	3.52E-09	3.72E-09	3.91E-09
sm154	3.03E-09	3.22E-09	3.41E-09	3.60E-09	3.79E-09
rb 87	2.91E-09	3.09E-09	3.27E-09	3.45E-09	3.64E-09
cs137	3.18E-09	3.24E-09	3.30E-09	3.35E-09	3.40E-09
zr 90	2.29E-09	2.51E-09	2.73E-09	2.96E-09	3.19E-09
pr143	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09
se 77	2.08E-09	2.21E-09	2.34E-09	2.47E-09	2.60E-09
xe133	2.03E-09	2.03E-09	2.03E-09	2.03E-09	2.03E-09
pd106	1.44E-09	1.53E-09	1.62E-09	1.72E-09	1.81E-09
kr 84	1.37E-09	1.45E-09	1.54E-09	1.62E-09	1.71E-09
ce141	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09
se 79	1.06E-09	1.13E-09	1.20E-09	1.26E-09	1.33E-09
eu152	8.00E-10	9.15E-10	1.04E-09	1.16E-09	1.30E-09
sb121	1.00E-09	1.06E-09	1.13E-09	1.19E-09	1.25E-09
sb123	8.17E-10	8.68E-10	9.19E-10	9.70E-10	1.02E-09
pm149	9.74E-10	9.81E-10	9.81E-10	9.81E-10	9.81E-10
kr 86	7.69E-10	8.17E-10	8.65E-10	9.13E-10	9.61E-10
nd147	9.26E-10	9.30E-10	9.30E-10	9.30E-10	9.30E-10
te128	6.82E-10	7.25E-10	7.68E-10	8.10E-10	8.53E-10
gd156	5.42E-10	5.78E-10	6.14E-10	6.50E-10	6.86E-10
se 80	4.96E-10	5.27E-10	5.58E-10	5.89E-10	6.20E-10
ce144	6.04E-10	6.04E-10	6.04E-10	6.04E-10	6.03E-10
kr 85	5.73E-10	5.74E-10	5.75E-10	5.75E-10	5.76E-10
dy161	4.36E-10	4.64E-10	4.92E-10	5.20E-10	5.48E-10
te125	4.11E-10	4.39E-10	4.66E-10	4.93E-10	5.20E-10
tb159	2.92E-10	3.11E-10	3.29E-10	3.47E-10	3.66E-10
ru103	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10
li 6	2.82E-10	3.00E-10	3.17E-10	3.35E-10	3.53E-10
cd112	2.81E-10	2.98E-10	3.16E-10	3.34E-10	3.51E-10
sn117	2.22E-10	2.36E-10	2.50E-10	2.64E-10	2.78E-10
eu154	1.99E-10	2.13E-10	2.28E-10	2.42E-10	2.56E-10
gd152	1.24E-10	1.48E-10	1.76E-10	2.07E-10	2.41E-10
sn119	1.83E-10	1.95E-10	2.06E-10	2.18E-10	2.29E-10
sn115	1.68E-10	1.78E-10	1.89E-10	1.99E-10	2.10E-10
sr 88	1.41E-10	1.50E-10	1.59E-10	1.68E-10	1.76E-10
zr 95	1.65E-10	1.65E-10	1.65E-10	1.65E-10	1.65E-10
nb 95	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10
y 91	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10
gd158	1.06E-10	1.14E-10	1.21E-10	1.29E-10	1.37E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 42
0 fraction of total absorption rate
power= .00mw, burnup= 146.mwd, flux= 2.70E+08n/cm**2-sec
0 initial 31046.6 d 32872.8 d 34699.1 d 36525.3 d

cd114	9.98E-11	1.06E-10	1.13E-10	1.19E-10	1.26E-10
pd110	1.00E-10	1.07E-10	1.13E-10	1.19E-10	1.26E-10
se 82	9.58E-11	1.02E-10	1.08E-10	1.14E-10	1.20E-10
pm151	1.06E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10
sn126	7.70E-11	8.18E-11	8.66E-11	9.15E-11	9.63E-11
se 78	7.24E-11	7.70E-11	8.15E-11	8.60E-11	9.06E-11
ru 99	5.51E-11	6.15E-11	6.82E-11	7.53E-11	8.27E-11

dy162	5.75E-11	6.12E-11	6.49E-11	6.86E-11	7.24E-11
sn124	5.79E-11	6.15E-11	6.51E-11	6.88E-11	7.24E-11
dy164	5.32E-11	5.67E-11	6.02E-11	6.37E-11	6.73E-11
as 75	4.32E-11	4.59E-11	4.86E-11	5.13E-11	5.40E-11
ba140	4.73E-11	4.75E-11	4.75E-11	4.75E-11	4.75E-11
sm153	3.73E-11	3.83E-11	3.83E-11	3.83E-11	3.83E-11
eu156	3.44E-11	3.45E-11	3.45E-11	3.45E-11	3.45E-11
in113	2.43E-11	2.62E-11	2.82E-11	3.02E-11	3.22E-11
gd154	1.91E-11	2.18E-11	2.47E-11	2.78E-11	3.11E-11
sr 89	3.09E-11	3.09E-11	3.09E-11	3.09E-11	3.09E-11
sn118	2.36E-11	2.51E-11	2.65E-11	2.80E-11	2.95E-11
ba136	2.34E-11	2.49E-11	2.64E-11	2.79E-11	2.94E-11
cs134	2.13E-11	2.26E-11	2.40E-11	2.53E-11	2.67E-11
ru106	2.53E-11	2.53E-11	2.54E-11	2.54E-11	2.54E-11
sn122	2.01E-11	2.14E-11	2.26E-11	2.39E-11	2.52E-11
cd116	2.01E-11	2.13E-11	2.26E-11	2.38E-11	2.51E-11
kr 87	8.20E-12	2.31E-11	2.31E-11	2.31E-11	2.31E-11
sn120	1.50E-11	1.60E-11	1.69E-11	1.78E-11	1.88E-11
ce143	1.70E-11	1.76E-11	1.76E-11	1.76E-11	1.76E-11
kr 82	1.31E-11	1.40E-11	1.48E-11	1.57E-11	1.66E-11
dy163	1.28E-11	1.36E-11	1.45E-11	1.53E-11	1.62E-11
la140	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11
y 90	1.41E-11	1.44E-11	1.46E-11	1.48E-11	1.50E-11
sb125	1.49E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11
ge 73	1.18E-11	1.25E-11	1.33E-11	1.40E-11	1.48E-11
ru100	8.76E-12	9.82E-12	1.09E-11	1.21E-11	1.33E-11
mo 99	1.29E-11	1.31E-11	1.31E-11	1.31E-11	1.31E-11
xe130	8.34E-12	8.90E-12	9.46E-12	1.00E-11	1.06E-11
pm148m	9.62E-12	9.62E-12	9.62E-12	9.62E-12	9.62E-12
mo 96	6.61E-12	7.10E-12	7.60E-12	8.11E-12	8.63E-12
nd142	5.43E-12	6.13E-12	6.87E-12	7.66E-12	8.48E-12
sm148	5.49E-12	6.15E-12	6.84E-12	7.58E-12	8.34E-12
ba134	5.03E-12	5.69E-12	6.38E-12	7.12E-12	7.89E-12
te127m	7.48E-12	7.48E-12	7.48E-12	7.48E-12	7.48E-12
i131	6.76E-12	6.78E-12	6.78E-12	6.78E-12	6.78E-12
ba135	4.28E-12	4.83E-12	5.41E-12	6.02E-12	6.67E-12
pd104	3.53E-12	3.98E-12	4.46E-12	4.97E-12	5.50E-12
ge 76	4.28E-12	4.55E-12	4.82E-12	5.08E-12	5.35E-12
gd160	2.72E-12	2.89E-12	3.06E-12	3.23E-12	3.41E-12
te126	2.20E-12	2.34E-12	2.49E-12	2.63E-12	2.78E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
ho165	8.83E-13	9.40E-13	9.98E-13	1.06E-12	1.12E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 43
0 fraction of total absorption rate
power= .00mw, burnup= 146.mwd, flux= 2.70E+08n/cm**2-sec
0 Initial 31046.6 d 32872.8 d 34699.1 d 36525.3 d

cd110	4.89E-13	5.50E-13	6.16E-13	6.85E-13	7.59E-13
nb 93	4.01E-13	4.65E-13	5.35E-13	6.10E-13	6.90E-13
te124	5.04E-13	5.36E-13	5.68E-13	6.00E-13	6.32E-13
sr 87	4.93E-13	5.23E-13	5.54E-13	5.85E-13	6.16E-13
br 79	3.46E-13	3.91E-13	4.38E-13	4.88E-13	5.41E-13
pm148	3.63E-13	3.67E-13	3.67E-13	3.67E-13	3.67E-13
nb 94	2.78E-13	2.96E-13	3.13E-13	3.31E-13	3.48E-13
ag111	3.18E-13	3.20E-13	3.20E-13	3.20E-13	3.20E-13
xe129	1.96E-13	2.21E-13	2.48E-13	2.76E-13	3.06E-13
eu157	2.77E-13	3.00E-13	3.00E-13	3.00E-13	3.00E-13
ge 74	2.39E-13	2.54E-13	2.68E-13	2.83E-13	2.98E-13
ag107	1.84E-13	2.08E-13	2.33E-13	2.60E-13	2.88E-13
cd115m	2.37E-13	2.38E-13	2.38E-13	2.38E-13	2.38E-13

ge 72	1.60E-13	1.70E-13	1.81E-13	1.91E-13	2.01E-13
sr 86	1.48E-13	1.58E-13	1.68E-13	1.78E-13	1.89E-13
se 76	9.52E-14	1.01E-13	1.07E-13	1.14E-13	1.20E-13
dy160	4.26E-14	4.69E-14	5.14E-14	5.61E-14	6.09E-14
cs136	5.74E-14	5.77E-14	5.79E-14	5.80E-14	5.81E-14
xe128	4.11E-14	4.49E-14	4.89E-14	5.30E-14	5.72E-14
er166	2.52E-14	2.69E-14	2.87E-14	3.06E-14	3.24E-14
ru105	2.26E-14	2.95E-14	2.95E-14	2.96E-14	2.96E-14
sn125	2.90E-14	2.92E-14	2.92E-14	2.92E-14	2.92E-14
rb 88	8.88E-15	1.30E-14	1.30E-14	1.30E-14	1.30E-14
sn116	7.67E-15	8.63E-15	9.66E-15	1.07E-14	1.19E-14
i135	8.34E-15	1.02E-14	1.02E-14	1.02E-14	1.02E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.44E-15	9.60E-15	9.60E-15	9.60E-15	9.60E-15
kr 80	6.76E-15	7.18E-15	7.61E-15	8.04E-15	8.47E-15
te134	8.73E-16	5.89E-15	5.89E-15	5.89E-15	5.89E-15
te122	3.95E-15	4.40E-15	4.87E-15	5.37E-15	5.89E-15
sb126	3.14E-15	3.16E-15	3.17E-15	3.18E-15	3.19E-15
sb124	2.14E-15	2.15E-15	2.15E-15	2.15E-15	2.15E-15
in117m	1.86E-15	2.11E-15	2.11E-15	2.11E-15	2.11E-15
tb160	1.13E-15	1.18E-15	1.23E-15	1.28E-15	1.33E-15
i130	7.37E-16	8.25E-16	8.31E-16	8.38E-16	8.44E-16
pr142	5.20E-16	5.92E-16	6.27E-16	6.61E-16	6.96E-16
be 9	5.31E-16	5.64E-16	5.97E-16	6.30E-16	6.64E-16
in117	5.52E-16	6.21E-16	6.21E-16	6.21E-16	6.21E-16
te123	4.90E-16	5.22E-16	5.53E-16	5.86E-16	6.18E-16
rb 86	2.73E-16	2.76E-16	2.78E-16	2.80E-16	2.82E-16
li 7	2.17E-16	2.31E-16	2.45E-16	2.58E-16	2.72E-16
dy165	1.34E-16	2.33E-16	2.34E-16	2.36E-16	2.37E-16
er167	1.32E-16	1.43E-16	1.55E-16	1.67E-16	1.80E-16
cd118	2.48E-17	1.21E-16	1.21E-16	1.21E-16	1.21E-16
ge 75	3.41E-17	8.71E-17	8.70E-17	8.70E-17	8.70E-17
in119m	4.23E-19	3.03E-17	3.03E-17	3.03E-17	3.03E-17
cd108	5.35E-18	5.76E-18	6.17E-18	6.59E-18	7.02E-18
cs134m	2.58E-18	4.33E-18	4.58E-18	4.84E-18	5.09E-18
in119	1.63E-21	2.37E-18	2.37E-18	2.37E-18	2.37E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 44
0 fraction of total absorption rate
power= .00mw, burnup= 146.mwd, flux= 2.70E+08n/cm**2-sec
0 initial 31046.6 d 32872.8 d 34699.1 d 36525.3 d

sn114	1.21E-18	1.40E-18	1.60E-18	1.81E-18	2.04E-18
cd109	3.24E-19	3.32E-19	3.41E-19	3.50E-19	3.58E-19
ag110	6.39E-23	9.10E-20	9.64E-20	1.02E-19	1.07E-19
in120	.00E+00	3.99E-22	3.99E-22	3.99E-22	3.99E-22
in120m	.00E+00	4.33E-23	4.33E-23	4.33E-23	4.33E-23

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 45
power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	31046.6 d	32872.8 d	34699.1 d	36525.3 d
h 1	6.89E-06	7.31E-06	7.74E-06	8.17E-06	8.59E-06
h 2	2.04E-08	2.17E-08	2.30E-08	2.42E-08	2.55E-08
h 3	3.28E-11	3.28E-11	3.29E-11	3.30E-11	3.30E-11
h 4	.00E+00	1.34E-34	1.34E-34	1.34E-34	1.34E-34
he 3	1.17E-10	1.26E-10	1.35E-10	1.45E-10	1.54E-10
he 4	1.14E-06	1.21E-06	1.28E-06	1.35E-06	1.42E-06
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.37E-07	1.45E-07	1.54E-07	1.62E-07	1.71E-07

	ne 21	3.47E-13	3.89E-13	4.33E-13	4.79E-13	5.28E-13
	ne 22	8.50E-10	9.05E-10	9.60E-10	1.02E-09	1.07E-09
	ne 23	7.04E-30	7.04E-15	7.04E-15	7.04E-15	7.04E-15
	na 22	4.14E-11	4.14E-11	4.14E-11	4.14E-11	4.14E-11
	na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
	na 24	2.53E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08
	na 24m	4.55E-30	4.51E-15	4.51E-15	4.51E-15	4.51E-15
	na 25	5.30E-42	5.65E-27	6.04E-27	6.43E-27	6.84E-27
	mg 24	1.02E-03	1.08E-03	1.14E-03	1.19E-03	1.25E-03
	mg 25	1.85E-10	1.98E-10	2.12E-10	2.26E-10	2.40E-10
	mg 26	2.04E-08	2.17E-08	2.30E-08	2.42E-08	2.55E-08
	mg 27	4.54E-16	2.10E-12	2.10E-12	2.10E-12	2.10E-12
	mg 28	4.03E-24	4.29E-24	4.29E-24	4.29E-24	4.29E-24
	al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
	al 28	2.80E-25	2.04E-10	2.04E-10	2.04E-10	2.04E-10
	al 29	4.34E-31	9.29E-26	1.04E-25	1.15E-25	1.26E-25
	al 30	.00E+00	1.51E-37	1.78E-37	2.08E-37	2.42E-37
	si 28	2.98E-03	3.14E-03	3.31E-03	3.47E-03	3.64E-03
	si 29	3.25E-10	3.64E-10	4.06E-10	4.49E-10	4.95E-10
	si 30	3.71E-17	4.43E-17	5.22E-17	6.11E-17	7.09E-17
	si 31	1.61E-29	3.18E-29	3.75E-29	4.39E-29	5.10E-29
	si 32	3.64E-36	4.59E-36	5.72E-36	7.04E-36	8.57E-36
	totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0	flux		2.70E+08	2.70E+08	2.70E+08	2.70E+08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 46
power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	31046.6 d	32872.8 d	34699.1 d	36525.3 d
he 4	8.40E-03	9.16E-03	9.95E-03	1.07E-02	1.16E-02
pb206	3.48E-09	4.34E-09	5.33E-09	6.48E-09	7.78E-09
pb207	2.43E-08	2.84E-08	3.28E-08	3.76E-08	4.27E-08
pb208	7.38E-09	8.40E-09	9.47E-09	1.06E-08	1.18E-08
pb209	8.98E-15	1.01E-14	1.13E-14	1.26E-14	1.39E-14
pb210	5.10E-09	5.95E-09	6.88E-09	7.88E-09	8.96E-09
pb211	7.70E-14	8.41E-14	9.12E-14	9.83E-14	1.06E-13
pb212	3.44E-13	3.66E-13	3.88E-13	4.10E-13	4.32E-13
pb214	2.29E-14	2.67E-14	2.99E-14	3.33E-14	3.68E-14
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	4.44E-10	5.32E-10	6.32E-10	7.43E-10	8.66E-10
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	3.14E-12	3.67E-12	4.24E-12	4.85E-12	5.51E-12
bi211	4.60E-15	4.98E-15	5.40E-15	5.83E-15	6.26E-15
bi212	3.26E-14	3.47E-14	3.68E-14	3.89E-14	4.10E-14
bi213	2.02E-15	2.35E-15	2.64E-15	2.94E-15	3.25E-15
bi214	1.73E-14	1.98E-14	2.22E-14	2.47E-14	2.74E-14
po210	8.68E-11	1.01E-10	1.17E-10	1.34E-10	1.52E-10
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	5.08E-20	5.51E-20	5.97E-20	6.44E-20	6.91E-20
po212	1.71E-24	1.82E-24	1.93E-24	2.04E-24	2.15E-24
po213	3.04E-24	3.54E-24	3.96E-24	4.42E-24	4.89E-24
po214	2.38E-21	2.73E-21	3.05E-21	3.40E-21	3.76E-21
po215	6.33E-20	6.91E-20	7.49E-20	8.08E-20	8.67E-20
po216	1.30E-18	1.39E-18	1.47E-18	1.55E-18	1.64E-18
po218	2.74E-15	3.09E-15	3.46E-15	3.85E-15	4.26E-15
ra222	5.60E-27	5.94E-27	6.29E-27	6.64E-27	6.98E-27
ra223	3.52E-11	3.83E-11	4.16E-11	4.48E-11	4.81E-11
ra224	2.84E-12	3.02E-12	3.20E-12	3.39E-12	3.57E-12
ra225	9.74E-13	1.10E-12	1.23E-12	1.37E-12	1.52E-12

ra226	7.43E-07	8.38E-07	9.39E-07	1.05E-06	1.16E-06
ra228	1.51E-13	1.62E-13	1.73E-13	1.83E-13	1.94E-13
ac225	6.58E-13	7.43E-13	8.33E-13	9.28E-13	1.03E-12
ac227	2.44E-08	2.66E-08	2.89E-08	3.11E-08	3.34E-08
ac228	1.85E-17	1.98E-17	2.11E-17	2.24E-17	2.37E-17
th226	2.73E-25	2.90E-25	3.07E-25	3.24E-25	3.41E-25
th227	5.67E-11	6.19E-11	6.71E-11	7.24E-11	7.77E-11
th228	5.41E-10	5.76E-10	6.11E-10	6.46E-10	6.81E-10
th229	1.89E-07	2.14E-07	2.40E-07	2.67E-07	2.96E-07
th230	2.04E-03	2.17E-03	2.30E-03	2.43E-03	2.55E-03
th231	3.03E-09	3.03E-09	3.03E-09	3.03E-09	3.03E-09
th232	4.13E-04	4.39E-04	4.65E-04	4.91E-04	5.16E-04
th233	1.05E-16	4.02E-15	4.26E-15	4.50E-15	4.73E-15
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	5.76E-05	6.12E-05	6.48E-05	6.83E-05	7.19E-05
pa232	9.48E-13	1.05E-12	1.11E-12	1.17E-12	1.24E-12
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 47

power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge 31046.6 d	32872.8 d	34699.1 d	36525.3 d	
u230	2.64E-22	2.81E-22	2.97E-22	3.14E-22	3.30E-22
u231	8.16E-19	8.78E-19	9.29E-19	9.81E-19	1.03E-18
u232	2.05E-08	2.17E-08	2.30E-08	2.43E-08	2.55E-08
u233	1.09E-03	1.16E-03	1.23E-03	1.29E-03	1.36E-03
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.07E-06	3.10E-06	3.10E-06	3.10E-06	3.10E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.06E-08	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.62E-12	8.61E-12	8.61E-12	8.61E-12	8.61E-12
np236m	1.93E-12	2.05E-12	2.05E-12	2.05E-12	2.05E-12
np236	1.59E-08	1.68E-08	1.78E-08	1.88E-08	1.97E-08
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.51E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06
np239	4.51E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.57E-15	9.32E-15	9.32E-15	9.32E-15	9.32E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09
pu237	1.10E-13	1.15E-13	1.20E-13	1.24E-13	1.29E-13
pu238	1.11E-02	1.16E-02	1.20E-02	1.25E-02	1.29E-02
pu239	4.00E-01	4.24E-01	4.49E-01	4.73E-01	4.98E-01
pu240	1.57E-04	1.77E-04	1.99E-04	2.21E-04	2.45E-04
pu241	3.98E-08	4.61E-08	5.28E-08	5.99E-08	6.76E-08
pu242	8.89E-12	1.11E-11	1.37E-11	1.67E-11	2.02E-11
pu243	1.43E-20	2.34E-20	2.89E-20	3.52E-20	4.25E-20
pu244	4.20E-45	8.41E-45	1.54E-44	2.80E-44	4.90E-44
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.05E-23	1.45E-23	1.76E-23	2.11E-23	2.52E-23
am240	5.24E-21	6.62E-21	8.05E-21	9.68E-21	1.15E-20

```
     am241   4.30E-08  5.30E-08  6.44E-08  7.75E-08  9.22E-08
     am242m  1.81E-12  2.36E-12  3.04E-12  3.85E-12  4.82E-12
     am242   1.40E-15  1.87E-15  2.28E-15  2.74E-15  3.26E-15
     am243   1.11E-15  1.52E-15  2.05E-15  2.71E-15  3.54E-15
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   7.38E-24  1.15E-23  1.55E-23  2.06E-23  2.69E-23
     am245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              2.70E+08  2.70E+08  2.70E+08  2.70E+08
0  .results on logical unit no. 71, position  1, for time step  4, subcase 6. (run position 1, case position 1)
   title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              light elements          page   48
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0                                        nuclide concentrations, grams
                                         basis =single reactor assembly
              initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
     h  1   8.59E-06  8.59E-06  8.59E-06  8.59E-06  8.59E-06  8.59E-06  8.59E-06
    he  4   5.68E-06  5.68E-06  5.68E-06  5.68E-06  5.68E-06  5.68E-06  5.68E-06
    ne 20   3.41E-06  3.41E-06  3.41E-06  3.41E-06  3.41E-06  3.41E-06  3.41E-06
    na 23   1.73E+05  1.73E+05  1.73E+05  1.73E+05  1.73E+05  1.73E+05  1.73E+05
    mg 24   3.00E-02  3.00E-02  3.00E-02  3.00E-02  3.00E-02  3.00E-02  3.00E-02
    mg 26   6.63E-07  6.63E-07  6.63E-07  6.63E-07  6.63E-07  6.63E-07  6.63E-07
    al 27   1.35E+06  1.35E+06  1.35E+06  1.35E+06  1.35E+06  1.35E+06  1.35E+06
    si 28   1.02E-01  1.02E-01  1.02E-01  1.02E-01  1.02E-01  1.02E-01  1.02E-01
   total    1.52E+06  1.52E+06  1.52E+06  1.52E+06  1.52E+06  1.52E+06  1.52E+06
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              light elements          page   49
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0                                        element radioactivity, curies
                                         basis =single reactor assembly
              initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
      h     9.58E-07  9.14E-07  8.72E-07  8.33E-07  7.94E-07  7.58E-07  7.23E-07
     na     8.40E+00  4.56E-06  3.65E-06  2.92E-06  2.34E-06  1.87E-06  1.50E-06
   totals   2.55E+01  5.47E-06  4.52E-06  3.75E-06  3.13E-06  2.63E-06  2.22E-06
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              light elements          page   50
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0                                        element thermal power, watts
                                         basis =single reactor assembly
              initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
     na     1.70E-01  6.45E-08  5.16E-08  4.13E-08  3.31E-08  2.65E-08  2.12E-08
   totals   4.76E-01  6.45E-08  5.17E-08  4.14E-08  3.31E-08  2.65E-08  2.13E-08
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              light elements          page   51
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0                                        nuclide gamma power, watts
                                         basis =single reactor assembly
              initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
    na 22   7.39E-08  5.92E-08  4.74E-08  3.80E-08  3.04E-08  2.44E-08  1.95E-08
   total    3.31E-01  5.92E-08  4.74E-08  3.80E-08  3.04E-08  2.44E-08  1.95E-08
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                actinides             page   52
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0                                      nuclide concentrations, gram atoms
                                       basis = single reactor assembly
              initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
    he  4   1.16E-02  1.17E-02  1.19E-02  1.20E-02  1.21E-02  1.23E-02  1.24E-02
    ra226   1.16E-06  1.18E-06  1.20E-06  1.22E-06  1.24E-06  1.25E-06  1.27E-06
```

th230	2.55E-03	2.57E-03	2.60E-03	2.62E-03	2.64E-03	2.66E-03	2.68E-03
th232	5.16E-04	5.21E-04	5.25E-04	5.29E-04	5.34E-04	5.38E-04	5.42E-04
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	7.19E-05	7.25E-05	7.31E-05	7.37E-05	7.43E-05	7.49E-05	7.55E-05
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
u233	1.36E-03	1.38E-03	1.39E-03	1.40E-03	1.41E-03	1.43E-03	1.44E-03
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
pu238	1.29E-02	1.28E-02	1.27E-02	1.26E-02	1.26E-02	1.25E-02	1.24E-02
pu239	4.98E-01	4.98E-01	4.98E-01	4.98E-01	4.98E-01	4.98E-01	4.98E-01
pu240	2.45E-04	2.45E-04	2.44E-04	2.44E-04	2.44E-04	2.44E-04	2.44E-04
total	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 53
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0 element concentrations, gram atoms
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	1.16E-02	1.17E-02	1.19E-02	1.20E-02	1.21E-02	1.23E-02	1.24E-02
ra	1.16E-06	1.18E-06	1.20E-06	1.22E-06	1.24E-06	1.26E-06	1.28E-06
th	3.07E-03	3.10E-03	3.12E-03	3.15E-03	3.17E-03	3.20E-03	3.22E-03
pa	7.34E-05	7.40E-05	7.46E-05	7.52E-05	7.58E-05	7.64E-05	7.70E-05
u	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
np	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
pu	5.11E-01	5.11E-01	5.11E-01	5.11E-01	5.11E-01	5.11E-01	5.10E-01
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 54
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he 4	4.63E-02	4.69E-02	4.74E-02	4.80E-02	4.85E-02	4.91E-02	4.96E-02
pb206	1.60E-06	1.65E-06	1.70E-06	1.75E-06	1.80E-06	1.85E-06	1.91E-06
pb207	8.84E-06	9.02E-06	9.21E-06	9.40E-06	9.59E-06	9.78E-06	9.98E-06
pb208	2.46E-06	2.50E-06	2.54E-06	2.59E-06	2.63E-06	2.68E-06	2.72E-06
pb210	1.88E-06	1.92E-06	1.96E-06	2.00E-06	2.04E-06	2.08E-06	2.12E-06
ra226	2.62E-04	2.66E-04	2.70E-04	2.75E-04	2.79E-04	2.84E-04	2.88E-04
ac227	7.58E-06	7.67E-06	7.76E-06	7.84E-06	7.93E-06	8.02E-06	8.11E-06
th229	6.78E-05	6.89E-05	7.00E-05	7.12E-05	7.24E-05	7.35E-05	7.47E-05
th230	5.87E-01	5.92E-01	5.97E-01	6.02E-01	6.07E-01	6.12E-01	6.17E-01
th231	7.00E-07	6.97E-07	6.97E-07	6.97E-07	6.97E-07	6.97E-07	6.97E-07
th232	1.20E-01	1.21E-01	1.22E-01	1.23E-01	1.24E-01	1.25E-01	1.26E-01
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	1.66E-02	1.68E-02	1.69E-02	1.70E-02	1.72E-02	1.73E-02	1.75E-02
pa233	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04
u232	5.93E-06	5.92E-06	5.91E-06	5.89E-06	5.87E-06	5.84E-06	5.81E-06
u233	3.18E-01	3.21E-01	3.24E-01	3.27E-01	3.30E-01	3.32E-01	3.35E-01
u234	2.12E+03	2.12E+03	2.12E+03	2.12E+03	2.12E+03	2.12E+03	2.12E+03
u235	1.71E+05	1.71E+05	1.71E+05	1.71E+05	1.71E+05	1.71E+05	1.71E+05
u236	4.12E+04	4.12E+04	4.12E+04	4.12E+04	4.12E+04	4.12E+04	4.12E+04
u238	8.66E+06	8.66E+06	8.66E+06	8.66E+06	8.66E+06	8.66E+06	8.66E+06
np236	4.66E-06	4.66E-06	4.66E-06	4.66E-06	4.66E-06	4.66E-06	4.66E-06
np237	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03
pu238	3.07E+00	3.05E+00	3.03E+00	3.01E+00	2.99E+00	2.97E+00	2.95E+00
pu239	1.19E+02	1.19E+02	1.19E+02	1.19E+02	1.19E+02	1.19E+02	1.19E+02
pu240	5.87E-02	5.87E-02	5.87E-02	5.87E-02	5.87E-02	5.87E-02	5.87E-02

pu241	1.63E-05	1.57E-05	1.50E-05	1.44E-05	1.39E-05	1.33E-05	1.28E-05
am241	2.22E-05	2.28E-05	2.34E-05	2.40E-05	2.45E-05	2.50E-05	2.55E-05
total	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 55
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0 element concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	4.63E-02	4.69E-02	4.74E-02	4.80E-02	4.85E-02	4.91E-02	4.96E-02
pb	1.48E-05	1.51E-05	1.54E-05	1.57E-05	1.61E-05	1.64E-05	1.67E-05
ra	2.62E-04	2.66E-04	2.70E-04	2.75E-04	2.79E-04	2.84E-04	2.88E-04
ac	7.58E-06	7.67E-06	7.76E-06	7.84E-06	7.93E-06	8.02E-06	8.11E-06
th	7.07E-01	7.13E-01	7.19E-01	7.25E-01	7.31E-01	7.37E-01	7.43E-01
pa	1.70E-02	1.71E-02	1.72E-02	1.74E-02	1.75E-02	1.77E-02	1.78E-02
u	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06
np	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03
pu	1.22E+02	1.22E+02	1.22E+02	1.22E+02	1.22E+02	1.22E+02	1.22E+02
am	2.22E-05	2.28E-05	2.34E-05	2.40E-05	2.45E-05	2.50E-05	2.55E-05
totals	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 56
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl207	5.48E-04	5.55E-04	5.61E-04	5.67E-04	5.74E-04	5.80E-04	5.86E-04
tl208	4.58E-05	4.63E-05	4.65E-05	4.66E-05	4.67E-05	4.67E-05	4.66E-05
pb209	1.34E-05	1.37E-05	1.39E-05	1.41E-05	1.43E-05	1.46E-05	1.48E-05
pb210	1.44E-04	1.47E-04	1.50E-04	1.53E-04	1.56E-04	1.59E-04	1.62E-04
pb211	5.50E-04	5.56E-04	5.63E-04	5.69E-04	5.75E-04	5.82E-04	5.88E-04
pb212	1.27E-04	1.29E-04	1.29E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
pb214	2.59E-04	2.63E-04	2.67E-04	2.72E-04	2.76E-04	2.80E-04	2.85E-04
bi210	1.44E-04	1.47E-04	1.50E-04	1.53E-04	1.56E-04	1.59E-04	1.62E-04
bi211	5.50E-04	5.56E-04	5.63E-04	5.69E-04	5.75E-04	5.82E-04	5.88E-04
bi212	1.27E-04	1.29E-04	1.29E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
bi213	1.34E-05	1.37E-05	1.39E-05	1.41E-05	1.43E-05	1.46E-05	1.48E-05
bi214	2.59E-04	2.63E-04	2.67E-04	2.72E-04	2.76E-04	2.80E-04	2.85E-04
po210	1.44E-04	1.44E-04	1.46E-04	1.49E-04	1.52E-04	1.55E-04	1.58E-04
po211	1.51E-06	1.53E-06	1.55E-06	1.56E-06	1.58E-06	1.60E-06	1.62E-06
po212	8.16E-05	8.24E-05	8.29E-05	8.31E-05	8.32E-05	8.32E-05	8.31E-05
po213	1.31E-05	1.34E-05	1.36E-05	1.38E-05	1.40E-05	1.43E-05	1.45E-05
po214	2.59E-04	2.63E-04	2.67E-04	2.72E-04	2.76E-04	2.80E-04	2.85E-04
po215	5.50E-04	5.56E-04	5.63E-04	5.69E-04	5.75E-04	5.82E-04	5.88E-04
po216	1.27E-04	1.29E-04	1.29E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
po218	2.59E-04	2.63E-04	2.67E-04	2.72E-04	2.76E-04	2.81E-04	2.85E-04
at217	1.34E-05	1.37E-05	1.39E-05	1.41E-05	1.43E-05	1.46E-05	1.48E-05
rn219	5.50E-04	5.56E-04	5.63E-04	5.69E-04	5.75E-04	5.82E-04	5.88E-04
rn220	1.27E-04	1.29E-04	1.29E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
rn222	2.59E-04	2.63E-04	2.67E-04	2.72E-04	2.76E-04	2.81E-04	2.85E-04
fr221	1.34E-05	1.37E-05	1.39E-05	1.41E-05	1.43E-05	1.46E-05	1.48E-05
fr223	7.57E-06	7.66E-06	7.75E-06	7.83E-06	7.92E-06	8.01E-06	8.10E-06
ra223	5.50E-04	5.56E-04	5.63E-04	5.69E-04	5.75E-04	5.82E-04	5.88E-04
ra224	1.27E-04	1.29E-04	1.29E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
ra225	1.34E-05	1.37E-05	1.39E-05	1.41E-05	1.43E-05	1.46E-05	1.48E-05
ra226	2.59E-04	2.63E-04	2.67E-04	2.72E-04	2.76E-04	2.81E-04	2.85E-04
ac225	1.34E-05	1.37E-05	1.39E-05	1.41E-05	1.43E-05	1.46E-05	1.48E-05
ac227	5.49E-04	5.55E-04	5.61E-04	5.68E-04	5.74E-04	5.80E-04	5.87E-04
th227	5.42E-04	5.49E-04	5.55E-04	5.61E-04	5.67E-04	5.74E-04	5.80E-04
th228	1.27E-04	1.28E-04	1.29E-04	1.29E-04	1.29E-04	1.29E-04	1.29E-04

th229	1.34E-05	1.37E-05	1.39E-05	1.41E-05	1.43E-05	1.46E-05	1.48E-05
th230	1.21E-02	1.22E-02	1.23E-02	1.24E-02	1.25E-02	1.26E-02	1.27E-02
th231	3.72E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	7.85E-04	7.92E-04	7.98E-04	8.05E-04	8.12E-04	8.18E-04	8.25E-04
pa233	7.04E+00	7.05E+00	7.05E+00	7.05E+00	7.05E+00	7.05E+00	7.05E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
u232	1.31E-04	1.31E-04	1.31E-04	1.30E-04	1.30E-04	1.29E-04	1.28E-04
u233	3.06E-03	3.09E-03	3.12E-03	3.15E-03	3.18E-03	3.21E-03	3.23E-03
u234	1.32E+01	1.32E+01	1.32E+01	1.32E+01	1.32E+01	1.32E+01	1.32E+01
u235	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01
u236	2.67E+00	2.67E+00	2.67E+00	2.67E+00	2.67E+00	2.67E+00	2.67E+00
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
np237	7.04E+00	7.04E+00	7.04E+00	7.04E+00	7.04E+00	7.04E+00	7.04E+00
pu236	1.37E-04	1.12E-04	9.20E-05	7.54E-05	6.18E-05	5.06E-05	4.15E-05
pu238	5.25E+01	5.22E+01	5.19E+01	5.15E+01	5.12E+01	5.08E+01	5.05E+01
pu239	7.39E+00	7.39E+00	7.39E+00	7.39E+00	7.39E+00	7.39E+00	7.39E+00

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 57
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pu240	1.33E-02	1.33E-02	1.33E-02	1.33E-02	1.33E-02	1.33E-02	1.33E-02
pu241	1.69E-03	1.62E-03	1.56E-03	1.49E-03	1.43E-03	1.38E-03	1.32E-03
am241	7.62E-05	7.83E-05	8.03E-05	8.23E-05	8.41E-05	8.59E-05	8.75E-05
total	5.34E+03	9.90E+01	9.87E+01	9.84E+01	9.80E+01	9.77E+01	9.74E+01

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 58
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0 element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl	2.69E-06	2.72E-06	2.75E-06	2.77E-06	2.79E-06	2.81E-06	2.82E-06
pb	2.82E-06	2.86E-06	2.90E-06	2.93E-06	2.97E-06	3.00E-06	3.04E-06
bi	2.78E-05	2.81E-05	2.85E-05	2.88E-05	2.91E-05	2.94E-05	2.97E-05
po	6.08E-05	6.16E-05	6.23E-05	6.31E-05	6.39E-05	6.46E-05	6.54E-05
at	5.73E-07	5.83E-07	5.92E-07	6.02E-07	6.12E-07	6.22E-07	6.32E-07
rn	3.62E-05	3.67E-05	3.71E-05	3.75E-05	3.80E-05	3.84E-05	3.88E-05
fr	5.37E-07	5.46E-07	5.55E-07	5.64E-07	5.73E-07	5.82E-07	5.91E-07
ra	3.14E-05	3.18E-05	3.22E-05	3.25E-05	3.29E-05	3.33E-05	3.36E-05
ac	7.34E-07	7.45E-07	7.56E-07	7.67E-07	7.78E-07	7.90E-07	8.01E-07
th	1.98E-03	1.98E-03	1.98E-03	1.98E-03	1.99E-03	1.99E-03	1.99E-03
pa	3.22E-02	3.23E-02	3.23E-02	3.23E-02	3.23E-02	3.23E-02	3.23E-02
u	7.56E+00	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
np	7.11E+00	2.01E-01	2.01E-01	2.01E-01	2.01E-01	2.01E-01	2.01E-01
pu	1.97E+00	1.96E+00	1.95E+00	1.94E+00	1.93E+00	1.92E+00	1.90E+00
am	2.54E-06	2.61E-06	2.68E-06	2.74E-06	2.81E-06	2.86E-06	2.92E-06
totals	1.67E+01	2.73E+00	2.72E+00	2.71E+00	2.70E+00	2.69E+00	2.68E+00

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 59
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl207	7.15E-09	7.24E-09	7.32E-09	7.40E-09	7.48E-09	7.57E-09	7.65E-09
tl208	9.12E-07	9.21E-07	9.26E-07	9.29E-07	9.30E-07	9.30E-07	9.29E-07
pb211	2.20E-07	2.23E-07	2.26E-07	2.28E-07	2.31E-07	2.33E-07	2.36E-07
pb212	1.09E-07	1.11E-07	1.11E-07	1.12E-07	1.12E-07	1.12E-07	1.12E-07

pb214	3.83E-07	3.90E-07	3.96E-07	4.03E-07	4.09E-07	4.16E-07	4.22E-07
bi211	1.53E-07	1.54E-07	1.56E-07	1.58E-07	1.60E-07	1.61E-07	1.63E-07
bi212	7.94E-08	8.03E-08	8.07E-08	8.09E-08	8.10E-08	8.10E-08	8.09E-08
bi213	1.01E-08	1.02E-08	1.04E-08	1.06E-08	1.07E-08	1.09E-08	1.11E-08
bi214	2.31E-06	2.35E-06	2.39E-06	2.43E-06	2.47E-06	2.51E-06	2.55E-06
rn219	1.83E-07	1.85E-07	1.87E-07	1.89E-07	1.91E-07	1.93E-07	1.95E-07
ra223	4.38E-07	4.43E-07	4.48E-07	4.53E-07	4.58E-07	4.63E-07	4.68E-07
ra224	7.60E-09	7.68E-09	7.72E-09	7.74E-09	7.75E-09	7.75E-09	7.74E-09
ra226	1.11E-08	1.13E-08	1.14E-08	1.16E-08	1.18E-08	1.20E-08	1.22E-08
th227	3.57E-07	3.61E-07	3.65E-07	3.69E-07	3.73E-07	3.77E-07	3.82E-07
th229	7.53E-09	7.66E-09	7.78E-09	7.91E-09	8.04E-09	8.17E-09	8.30E-09
th230	1.21E-07	1.22E-07	1.23E-07	1.24E-07	1.25E-07	1.26E-07	1.27E-07
th231	6.84E-05	6.81E-05	6.81E-05	6.81E-05	6.81E-05	6.81E-05	6.81E-05
th234	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04
pa231	1.86E-07	1.88E-07	1.89E-07	1.91E-07	1.92E-07	1.94E-07	1.96E-07
pa233	9.33E-03	9.34E-03	9.34E-03	9.34E-03	9.34E-03	9.34E-03	9.34E-03
pa234m	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04
pa234	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05
u233	2.25E-08	2.27E-08	2.29E-08	2.31E-08	2.34E-08	2.36E-08	2.38E-08
u234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
u235	3.65E-04	3.65E-04	3.65E-04	3.65E-04	3.65E-04	3.65E-04	3.65E-04
u236	2.69E-05	2.69E-05	2.69E-05	2.69E-05	2.69E-05	2.69E-05	2.69E-05
u238	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05
np237	1.47E-03	1.47E-03	1.47E-03	1.47E-03	1.47E-03	1.47E-03	1.47E-03
pu238	5.92E-04	5.88E-04	5.84E-04	5.80E-04	5.77E-04	5.73E-04	5.69E-04
pu239	3.55E-05	3.55E-05	3.55E-05	3.55E-05	3.55E-05	3.55E-05	3.55E-05
pu240	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07
am241	1.29E-08	1.33E-08	1.36E-08	1.39E-08	1.43E-08	1.46E-08	1.48E-08
total	3.97E+00	1.24E-02	1.24E-02	1.24E-02	1.24E-02	1.24E-02	1.24E-02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 60
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0

nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	3.82E-05	3.64E-05	3.48E-05	3.32E-05	3.17E-05	3.02E-05	2.88E-05
li 6	1.97E-06	1.97E-06	1.97E-06	1.97E-06	1.97E-06	1.97E-06	1.97E-06
be 10	5.90E-07	5.90E-07	5.90E-07	5.90E-07	5.90E-07	5.90E-07	5.90E-07
ge 72	1.26E-05	1.26E-05	1.26E-05	1.26E-05	1.26E-05	1.26E-05	1.26E-05
ge 73	5.53E-05	5.53E-05	5.53E-05	5.53E-05	5.53E-05	5.53E-05	5.53E-05
ge 74	4.84E-05	4.84E-05	4.84E-05	4.84E-05	4.84E-05	4.84E-05	4.84E-05
as 75	5.64E-04	5.64E-04	5.64E-04	5.64E-04	5.64E-04	5.64E-04	5.64E-04
ge 76	1.88E-03	1.88E-03	1.88E-03	1.88E-03	1.88E-03	1.88E-03	1.88E-03
se 77	4.17E-03	4.17E-03	4.17E-03	4.17E-03	4.17E-03	4.17E-03	4.17E-03
se 78	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02
se 79	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02
br 79	2.39E-06	2.43E-06	2.47E-06	2.51E-06	2.55E-06	2.59E-06	2.63E-06
se 80	6.79E-02	6.79E-02	6.79E-02	6.79E-02	6.79E-02	6.79E-02	6.79E-02
br 81	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01
se 82	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01
kr 82	3.39E-05	3.39E-05	3.39E-05	3.39E-05	3.39E-05	3.39E-05	3.39E-05
kr 83	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01
kr 84	5.86E-01	5.86E-01	5.86E-01	5.86E-01	5.86E-01	5.86E-01	5.86E-01
kr 85	2.25E-02	2.13E-02	2.02E-02	1.92E-02	1.81E-02	1.72E-02	1.63E-02
rb 85	6.56E-01	6.57E-01	6.58E-01	6.59E-01	6.60E-01	6.61E-01	6.62E-01
kr 86	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
sr 86	4.81E-06	4.81E-06	4.81E-06	4.81E-06	4.81E-06	4.81E-06	4.81E-06
rb 87	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00
sr 87	2.45E-06	2.45E-06	2.45E-06	2.45E-06	2.45E-06	2.45E-06	2.45E-06
sr 88	2.07E+00	2.07E+00	2.07E+00	2.07E+00	2.07E+00	2.07E+00	2.07E+00

y 89	2.81E+00	2.81E+00	2.81E+00	2.81E+00	2.81E+00	2.81E+00	2.81E+00
sr 90	1.27E+00	1.25E+00	1.22E+00	1.20E+00	1.17E+00	1.15E+00	1.13E+00
y 90	3.31E-04	3.24E-04	3.18E-04	3.11E-04	3.05E-04	2.99E-04	2.93E-04
zr 90	2.16E+00	2.18E+00	2.21E+00	2.23E+00	2.26E+00	2.28E+00	2.30E+00
zr 91	3.50E+00	3.51E+00	3.51E+00	3.51E+00	3.51E+00	3.51E+00	3.51E+00
zr 92	3.57E+00	3.57E+00	3.57E+00	3.57E+00	3.57E+00	3.57E+00	3.57E+00
zr 93	2.56E+00	2.56E+00	2.56E+00	2.56E+00	2.56E+00	2.56E+00	2.56E+00
nb 93	3.72E-05	3.79E-05	3.87E-05	3.94E-05	4.02E-05	4.10E-05	4.18E-05
nb 93m	2.08E-05	2.10E-05	2.12E-05	2.14E-05	2.16E-05	2.18E-05	2.20E-05
zr 94	3.94E+00	3.94E+00	3.94E+00	3.94E+00	3.94E+00	3.94E+00	3.94E+00
nb 94	1.01E-06	1.01E-06	1.01E-06	1.01E-06	1.01E-06	1.01E-06	1.01E-06
mo 95	4.00E+00	4.02E+00	4.02E+00	4.02E+00	4.02E+00	4.02E+00	4.02E+00
zr 96	3.94E+00	3.94E+00	3.94E+00	3.94E+00	3.94E+00	3.94E+00	3.94E+00
mo 96	4.33E-04	4.33E-04	4.33E-04	4.33E-04	4.33E-04	4.33E-04	4.33E-04
mo 97	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00
mo 98	3.72E+00	3.72E+00	3.72E+00	3.72E+00	3.72E+00	3.72E+00	3.72E+00
tc 99	3.96E+00	3.96E+00	3.96E+00	3.96E+00	3.96E+00	3.96E+00	3.96E+00
ru 99	7.79E-04	7.90E-04	8.00E-04	8.11E-04	8.22E-04	8.33E-04	8.44E-04
mo100	4.10E+00	4.10E+00	4.10E+00	4.10E+00	4.10E+00	4.10E+00	4.10E+00
ru100	1.95E-04	1.95E-04	1.95E-04	1.95E-04	1.95E-04	1.95E-04	1.95E-04
ru101	3.39E+00	3.39E+00	3.39E+00	3.39E+00	3.39E+00	3.39E+00	3.39E+00
ru102	2.87E+00	2.87E+00	2.87E+00	2.87E+00	2.87E+00	2.87E+00	2.87E+00
rh103	2.12E+00	2.12E+00	2.12E+00	2.12E+00	2.12E+00	2.12E+00	2.12E+00
ru104	1.32E+00	1.32E+00	1.32E+00	1.32E+00	1.32E+00	1.32E+00	1.32E+00
pd104	4.68E-04	4.68E-04	4.68E-04	4.68E-04	4.68E-04	4.68E-04	4.68E-04
pd105	7.35E-01	7.35E-01	7.35E-01	7.35E-01	7.35E-01	7.35E-01	7.35E-01
ru106	4.83E-03	2.74E-03	1.55E-03	8.79E-04	4.98E-04	2.82E-04	1.60E-04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 61
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0
nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pd106	3.23E-01	3.25E-01	3.26E-01	3.27E-01	3.27E-01	3.27E-01	3.28E-01
pd107	1.26E-01	1.26E-01	1.26E-01	1.26E-01	1.26E-01	1.26E-01	1.26E-01
ag107	6.68E-07	6.80E-07	6.91E-07	7.02E-07	7.13E-07	7.24E-07	7.35E-07
pd108	6.05E-02	6.05E-02	6.05E-02	6.05E-02	6.05E-02	6.05E-02	6.05E-02
ag109	3.08E-02	3.08E-02	3.08E-02	3.08E-02	3.08E-02	3.08E-02	3.08E-02
pd110	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02
cd110	5.99E-06	6.00E-06	6.00E-06	6.00E-06	6.00E-06	6.00E-06	6.00E-06
cd111	1.61E-02	1.61E-02	1.61E-02	1.61E-02	1.61E-02	1.61E-02	1.61E-02
cd112	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02
cd113	1.23E-02	1.23E-02	1.23E-02	1.23E-02	1.23E-02	1.23E-02	1.23E-02
cd113m	4.29E-05	4.12E-05	3.95E-05	3.80E-05	3.64E-05	3.50E-05	3.36E-05
in113	1.69E-04	1.71E-04	1.73E-04	1.74E-04	1.76E-04	1.77E-04	1.79E-04
cd114	1.16E-02	1.16E-02	1.16E-02	1.16E-02	1.16E-02	1.16E-02	1.16E-02
in115	8.54E-03	8.54E-03	8.54E-03	8.54E-03	8.54E-03	8.54E-03	8.54E-03
sn115	4.30E-04	4.30E-04	4.30E-04	4.30E-04	4.30E-04	4.30E-04	4.30E-04
cd116	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02
sn116	2.18E-06	2.18E-06	2.18E-06	2.18E-06	2.18E-06	2.18E-06	2.18E-06
sn117	8.95E-03	8.95E-03	8.95E-03	8.95E-03	8.95E-03	8.95E-03	8.95E-03
sn118	9.18E-03	9.18E-03	9.18E-03	9.18E-03	9.18E-03	9.18E-03	9.18E-03
sn119	1.01E-02	1.01E-02	1.01E-02	1.01E-02	1.01E-02	1.01E-02	1.01E-02
sn120	1.01E-02	1.01E-02	1.01E-02	1.01E-02	1.01E-02	1.01E-02	1.01E-02
sn121m	3.82E-05	3.78E-05	3.74E-05	3.71E-05	3.67E-05	3.63E-05	3.59E-05
sb121	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02
sn122	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02
sb123	1.34E-02	1.34E-02	1.34E-02	1.34E-02	1.34E-02	1.34E-02	1.34E-02
sn124	2.16E-02	2.16E-02	2.16E-02	2.16E-02	2.16E-02	2.16E-02	2.16E-02
te124	9.89E-06	9.92E-06	9.92E-06	9.92E-06	9.92E-06	9.92E-06	9.92E-06

sb125	9.74E-04	7.91E-04	6.40E-04	5.18E-04	4.19E-04	3.39E-04	2.75E-04
te125	2.39E-02	2.41E-02	2.42E-02	2.43E-02	2.44E-02	2.45E-02	2.46E-02
te125m	1.33E-05	1.12E-05	9.09E-06	7.36E-06	5.95E-06	4.82E-06	3.90E-06
sn126	3.55E-02	3.55E-02	3.55E-02	3.55E-02	3.55E-02	3.55E-02	3.55E-02
te126	2.20E-04	2.20E-04	2.20E-04	2.20E-04	2.21E-04	2.21E-04	2.21E-04
i127	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01
te128	2.99E-01	2.99E-01	2.99E-01	2.99E-01	2.99E-01	2.99E-01	2.99E-01
xe128	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.68E-06
i129	6.43E-01	6.43E-01	6.43E-01	6.43E-01	6.43E-01	6.43E-01	6.43E-01
xe129	1.42E-06	1.44E-06	1.47E-06	1.49E-06	1.51E-06	1.54E-06	1.56E-06
te130	1.50E+00	1.50E+00	1.50E+00	1.50E+00	1.50E+00	1.50E+00	1.50E+00
xe130	1.96E-04	1.96E-04	1.96E-04	1.96E-04	1.96E-04	1.96E-04	1.96E-04
xe131	2.49E+00	2.49E+00	2.49E+00	2.49E+00	2.49E+00	2.49E+00	2.49E+00
xe132	3.75E+00	3.75E+00	3.75E+00	3.75E+00	3.75E+00	3.75E+00	3.75E+00
cs133	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00
xe134	6.87E+00	6.87E+00	6.87E+00	6.87E+00	6.87E+00	6.87E+00	6.87E+00
cs134	1.88E-05	1.42E-05	1.07E-05	8.09E-06	6.11E-06	4.62E-06	3.49E-06
ba134	3.12E-04	3.17E-04	3.20E-04	3.23E-04	3.25E-04	3.26E-04	3.28E-04
cs135	5.79E+00	5.79E+00	5.79E+00	5.79E+00	5.79E+00	5.79E+00	5.79E+00
ba135	8.81E-05	8.96E-05	9.10E-05	9.25E-05	9.40E-05	9.54E-05	9.69E-05
xe136	5.63E+00	5.63E+00	5.63E+00	5.63E+00	5.63E+00	5.63E+00	5.63E+00
ba136	4.88E-03	4.88E-03	4.88E-03	4.88E-03	4.88E-03	4.88E-03	4.88E-03
cs137	2.20E+00	2.16E+00	2.12E+00	2.08E+00	2.04E+00	2.00E+00	1.96E+00
ba137	3.44E+00	3.48E+00	3.52E+00	3.56E+00	3.60E+00	3.64E+00	3.68E+00
ba138	6.04E+00	6.04E+00	6.04E+00	6.04E+00	6.04E+00	6.04E+00	6.04E+00

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 62
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0
nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
la138	3.03E-05	3.03E-05	3.03E-05	3.03E-05	3.03E-05	3.03E-05	3.03E-05
la139	5.78E+00	5.78E+00	5.78E+00	5.78E+00	5.78E+00	5.78E+00	5.78E+00
ce140	5.77E+00	5.78E+00	5.78E+00	5.78E+00	5.78E+00	5.78E+00	5.78E+00
pr141	5.34E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00
ce142	5.44E+00	5.44E+00	5.44E+00	5.44E+00	5.44E+00	5.44E+00	5.44E+00
nd142	5.73E-05	5.73E-05	5.73E-05	5.73E-05	5.73E-05	5.73E-05	5.73E-05
nd143	5.52E+00	5.53E+00	5.53E+00	5.53E+00	5.53E+00	5.53E+00	5.53E+00
ce144	5.78E-02	2.76E-02	1.32E-02	6.28E-03	2.99E-03	1.43E-03	6.81E-04
nd144	5.08E+00	5.11E+00	5.13E+00	5.13E+00	5.14E+00	5.14E+00	5.14E+00
nd145	3.72E+00	3.72E+00	3.72E+00	3.72E+00	3.72E+00	3.72E+00	3.72E+00
nd146	2.86E+00	2.86E+00	2.86E+00	2.86E+00	2.86E+00	2.86E+00	2.86E+00
pm147	8.22E-02	6.67E-02	5.35E-02	4.30E-02	3.45E-02	2.77E-02	2.22E-02
sm147	2.10E+00	2.11E+00	2.13E+00	2.14E+00	2.15E+00	2.15E+00	2.16E+00
nd148	1.63E+00	1.63E+00	1.63E+00	1.63E+00	1.63E+00	1.63E+00	1.63E+00
sm148	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04
sm149	9.89E-01	9.90E-01	9.90E-01	9.90E-01	9.90E-01	9.90E-01	9.90E-01
nd150	6.57E-01	6.57E-01	6.57E-01	6.57E-01	6.57E-01	6.57E-01	6.57E-01
sm150	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02
sm151	2.95E-01	2.94E-01	2.92E-01	2.90E-01	2.88E-01	2.86E-01	2.84E-01
eu151	1.28E-01	1.30E-01	1.32E-01	1.34E-01	1.36E-01	1.37E-01	1.39E-01
sm152	2.78E-01	2.78E-01	2.78E-01	2.78E-01	2.78E-01	2.78E-01	2.78E-01
eu152	1.23E-04	1.18E-04	1.13E-04	1.08E-04	1.03E-04	9.90E-05	9.48E-05
gd152	1.80E-04	1.81E-04	1.82E-04	1.84E-04	1.85E-04	1.86E-04	1.87E-04
eu153	1.70E-01	1.70E-01	1.70E-01	1.70E-01	1.70E-01	1.70E-01	1.70E-01
sm154	7.87E-02	7.87E-02	7.87E-02	7.87E-02	7.87E-02	7.87E-02	7.87E-02
eu154	1.25E-05	1.17E-05	1.09E-05	1.02E-05	9.56E-06	8.94E-06	8.36E-06
gd154	4.63E-05	4.72E-05	4.79E-05	4.86E-05	4.93E-05	4.99E-05	5.05E-05
eu155	2.42E-03	2.14E-03	1.89E-03	1.67E-03	1.48E-03	1.31E-03	1.16E-03
gd155	3.26E-02	3.28E-02	3.31E-02	3.33E-02	3.35E-02	3.37E-02	3.38E-02

gd156	1.62E-02	1.63E-02	1.63E-02	1.63E-02	1.63E-02	1.63E-02	1.63E-02
gd157	6.71E-03	6.71E-03	6.71E-03	6.71E-03	6.71E-03	6.71E-03	6.71E-03
gd158	4.26E-03	4.26E-03	4.26E-03	4.26E-03	4.26E-03	4.26E-03	4.26E-03
tb159	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03
gd160	4.35E-04	4.35E-04	4.35E-04	4.35E-04	4.35E-04	4.35E-04	4.35E-04
dy161	1.33E-04	1.34E-04	1.34E-04	1.34E-04	1.34E-04	1.34E-04	1.34E-04
dy162	3.81E-05	3.81E-05	3.81E-05	3.81E-05	3.81E-05	3.81E-05	3.81E-05
dy163	1.27E-05	1.27E-05	1.27E-05	1.27E-05	1.27E-05	1.27E-05	1.27E-05
dy164	4.10E-06	4.10E-06	4.10E-06	4.10E-06	4.10E-06	4.10E-06	4.10E-06
ho165	1.85E-06	1.85E-06	1.85E-06	1.85E-06	1.85E-06	1.85E-06	1.85E-06
total	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 63
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	3.69E-01	3.52E-01	3.36E-01	3.21E-01	3.06E-01	2.92E-01	2.79E-01
c 14	5.29E-07	5.29E-07	5.29E-07	5.29E-07	5.29E-07	5.29E-07	5.29E-07
se 79	3.13E-04	3.13E-04	3.13E-04	3.13E-04	3.13E-04	3.13E-04	3.12E-04
kr 85	8.84E+00	8.37E+00	7.93E+00	7.52E+00	7.12E+00	6.75E+00	6.40E+00
sr 90	1.80E+02	1.76E+02	1.73E+02	1.69E+02	1.66E+02	1.62E+02	1.59E+02
y 90	1.80E+02	1.76E+02	1.73E+02	1.69E+02	1.66E+02	1.62E+02	1.59E+02
y 91	1.99E+02	5.44E+00	1.48E-01	4.01E-03	1.09E-04	2.96E-06	8.04E-08
zr 93	6.43E-03	6.43E-03	6.43E-03	6.43E-03	6.43E-03	6.43E-03	6.43E-03
nb 93m	4.95E-03	5.00E-03	5.06E-03	5.10E-03	5.15E-03	5.19E-03	5.24E-03
zr 95	2.18E+02	8.09E+00	3.00E-01	1.11E-02	4.11E-04	1.52E-05	5.64E-07
nb 95	2.18E+02	1.72E+01	6.58E-01	2.44E-02	9.05E-04	3.35E-05	1.24E-06
tc 99	6.78E-02	6.78E-02	6.78E-02	6.78E-02	6.78E-02	6.78E-02	6.78E-02
rh102	8.00E-06	6.56E-06	5.37E-06	4.40E-06	3.61E-06	2.96E-06	2.42E-06
ru106	1.60E+01	9.07E+00	5.14E+00	2.92E+00	1.65E+00	9.37E-01	5.31E-01
rh106	1.60E+01	9.07E+00	5.14E+00	2.92E+00	1.65E+00	9.37E-01	5.31E-01
pd107	6.46E-05	6.46E-05	6.46E-05	6.46E-05	6.46E-05	6.46E-05	6.46E-05
cd113m	9.63E-03	9.25E-03	8.88E-03	8.52E-03	8.18E-03	7.85E-03	7.53E-03
sn119m	1.53E-03	7.46E-04	3.63E-04	1.77E-04	8.60E-05	4.19E-05	2.04E-05
sn121	4.70E-01	1.58E-03	1.56E-03	1.55E-03	1.53E-03	1.51E-03	1.50E-03
sn121m	2.05E-03	2.03E-03	2.01E-03	1.99E-03	1.97E-03	1.95E-03	1.93E-03
sn123	5.82E-02	1.14E-02	2.22E-03	4.33E-04	8.46E-05	1.65E-05	3.23E-06
sb125	1.02E+00	8.29E-01	6.71E-01	5.43E-01	4.39E-01	3.56E-01	2.88E-01
te125m	2.39E-01	2.02E-01	1.64E-01	1.33E-01	1.07E-01	8.68E-02	7.03E-02
sn126	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03
sb126	4.07E-03	1.41E-04	1.41E-04	1.41E-04	1.41E-04	1.41E-04	1.41E-04
sb126m	6.41E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03
te127	4.21E+00	1.09E-01	1.57E-02	2.26E-03	3.26E-04	4.71E-05	6.80E-06
te127m	7.40E-01	1.11E-01	1.60E-02	2.31E-03	3.33E-04	4.81E-05	6.94E-06
i129	1.13E-04	1.14E-04	1.14E-04	1.14E-04	1.14E-04	1.14E-04	1.14E-04
cs134	2.43E-02	1.83E-02	1.39E-02	1.05E-02	7.92E-03	5.98E-03	4.52E-03
cs135	6.67E-03	6.67E-03	6.67E-03	6.67E-03	6.67E-03	6.67E-03	6.67E-03
cs137	1.91E+02	1.88E+02	1.84E+02	1.81E+02	1.77E+02	1.74E+02	1.70E+02
ba137m	1.81E+02	1.77E+02	1.74E+02	1.71E+02	1.67E+02	1.64E+02	1.61E+02
ce144	1.84E+02	8.78E+01	4.19E+01	2.00E+01	9.53E+00	4.54E+00	2.17E+00
pr144	1.84E+02	8.78E+01	4.19E+01	2.00E+01	9.53E+00	4.54E+00	2.17E+00
pr144m	2.58E+00	1.23E+00	5.86E-01	2.80E-01	1.33E-01	6.36E-02	3.03E-02
pm147	7.62E+01	6.19E+01	4.96E+01	3.98E+01	3.20E+01	2.56E+01	2.06E+01
sm151	7.78E+00	7.73E+00	7.68E+00	7.63E+00	7.58E+00	7.53E+00	7.48E+00
eu152	2.17E-02	2.08E-02	1.99E-02	1.91E-02	1.83E-02	1.75E-02	1.67E-02
eu154	3.38E-03	3.16E-03	2.96E-03	2.76E-03	2.59E-03	2.42E-03	2.26E-03
eu155	1.19E+00	1.06E+00	9.33E-01	8.25E-01	7.29E-01	6.45E-01	5.70E-01
total	2.07E+04	1.03E+03	8.67E+02	7.92E+02	7.47E+02	7.15E+02	6.91E+02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 64
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0
element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h	1.25E-05	1.19E-05	1.13E-05	1.08E-05	1.03E-05	9.85E-06	9.40E-06
se	3.33E+00	9.80E-08	9.80E-08	9.80E-08	9.80E-08	9.80E-08	9.80E-08
kr	1.29E+01	1.26E-02	1.19E-02	1.13E-02	1.07E-02	1.01E-02	9.59E-03
sr	2.01E+01	2.13E-01	2.01E-01	1.96E-01	1.92E-01	1.88E-01	1.85E-01
y	2.81E+01	9.95E-01	9.56E-01	9.37E-01	9.17E-01	8.99E-01	8.81E-01
zr	1.20E+01	4.08E-02	1.51E-03	5.67E-05	2.80E-06	8.01E-07	7.27E-07
nb	2.15E+01	8.25E-02	3.16E-03	1.18E-04	5.23E-06	1.06E-06	9.08E-07
tc	6.48E+00	3.40E-05	3.40E-05	3.40E-05	3.40E-05	3.40E-05	3.40E-05
ru	7.12E-01	2.18E-03	3.13E-04	1.73E-04	9.82E-05	5.57E-05	3.16E-05
rh	3.83E-01	8.71E-02	4.93E-02	2.79E-02	1.58E-02	8.98E-03	5.09E-03
ag	7.41E-02	2.00E-07	8.59E-08	3.69E-08	1.59E-08	6.81E-09	2.93E-09
cd	6.86E-02	1.06E-05	9.66E-06	9.27E-06	8.89E-06	8.54E-06	8.19E-06
sn	1.87E+00	3.90E-05	1.02E-05	4.53E-06	3.38E-06	3.13E-06	3.06E-06
sb	7.51E+00	2.64E-03	2.14E-03	1.73E-03	1.40E-03	1.14E-03	9.25E-04
te	9.29E+00	4.13E-04	1.68E-04	1.16E-04	9.09E-05	7.32E-05	5.92E-05
i	2.08E+01	5.31E-08	5.31E-08	5.31E-08	5.31E-08	5.31E-08	5.31E-08
cs	1.83E+01	2.09E-01	2.05E-01	2.01E-01	1.97E-01	1.93E-01	1.89E-01
ba	1.19E+01	6.96E-01	6.83E-01	6.70E-01	6.57E-01	6.45E-01	6.32E-01
ce	4.40E+00	5.79E-02	2.74E-02	1.31E-02	6.24E-03	2.97E-03	1.42E-03
pr	6.24E+00	6.45E-01	3.08E-01	1.47E-01	7.00E-02	3.34E-02	1.59E-02
pm	3.40E-01	2.27E-02	1.82E-02	1.46E-02	1.17E-02	9.41E-03	7.55E-03
sm	2.10E-02	9.09E-04	9.03E-04	8.97E-04	8.91E-04	8.86E-04	8.80E-04
eu	9.31E-03	1.01E-03	9.04E-04	8.12E-04	7.30E-04	6.56E-04	5.91E-04
totals	2.61E+02	3.07E+00	2.47E+00	2.22E+00	2.08E+00	1.99E+00	1.93E+00

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 65
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0
nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.17E-04	1.11E-04	1.05E-04	9.94E-05	9.41E-05	8.92E-05	8.45E-05
y 90	1.81E-06	1.78E-06	1.74E-06	1.70E-06	1.67E-06	1.64E-06	1.60E-06
nb 93m	5.52E-08	5.58E-08	5.63E-08	5.69E-08	5.74E-08	5.79E-08	5.84E-08
zr 95	9.47E-01	3.51E-02	1.30E-03	4.81E-05	1.78E-06	6.61E-08	2.45E-09
nb 95	9.88E-01	7.78E-02	2.98E-03	1.11E-04	4.10E-06	1.52E-07	5.63E-09
rh102	1.02E-07	8.39E-08	6.88E-08	5.64E-08	4.62E-08	3.78E-08	3.10E-08
rh106	1.95E-02	1.11E-02	6.28E-03	3.56E-03	2.02E-03	1.14E-03	6.48E-04
ag110m	4.50E-07	1.93E-07	8.31E-08	3.57E-08	1.53E-08	6.59E-09	2.83E-09
sn121m	6.09E-08	6.03E-08	5.96E-08	5.90E-08	5.84E-08	5.78E-08	5.72E-08
sb125	2.63E-03	2.13E-03	1.73E-03	1.40E-03	1.13E-03	9.15E-04	7.40E-04
te125m	5.04E-05	4.27E-05	3.46E-05	2.80E-05	2.26E-05	1.83E-05	1.48E-05
sn126	7.80E-07	7.80E-07	7.80E-07	7.80E-07	7.80E-07	7.80E-07	7.80E-07
sb126	6.64E-05	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06
sb126m	5.90E-05	9.29E-06	9.29E-06	9.29E-06	9.29E-06	9.29E-06	9.29E-06
i129	1.65E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08
cs134	2.24E-04	1.69E-04	1.28E-04	9.65E-05	7.30E-05	5.51E-05	4.17E-05
ba137m	6.42E-01	6.29E-01	6.17E-01	6.05E-01	5.94E-01	5.83E-01	5.71E-01
ce144	2.07E-02	9.89E-03	4.72E-03	2.25E-03	1.07E-03	5.12E-04	2.44E-04
pr144	3.16E-02	1.51E-02	7.18E-03	3.42E-03	1.63E-03	7.79E-04	3.71E-04
pr144m	1.91E-04	9.11E-05	4.35E-05	2.07E-05	9.88E-06	4.71E-06	2.25E-06
pm147	1.98E-06	1.61E-06	1.29E-06	1.03E-06	8.30E-07	6.66E-07	5.34E-07
sm151	6.54E-07	6.50E-07	6.46E-07	6.42E-07	6.38E-07	6.34E-07	6.30E-07
eu152	1.50E-04	1.43E-04	1.37E-04	1.31E-04	1.26E-04	1.20E-04	1.15E-04
eu154	2.51E-05	2.35E-05	2.20E-05	2.06E-05	1.92E-05	1.80E-05	1.68E-05
eu155	4.58E-04	4.05E-04	3.58E-04	3.16E-04	2.80E-04	2.47E-04	2.19E-04

total	1.29E+02	7.83E-01	6.42E-01	6.17E-01	6.00E-01	5.87E-01	5.74E-01

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 66

decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec

0 element gamma power, watts

basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr	6.74E+00	1.11E-04	1.05E-04	9.94E-05	9.41E-05	8.92E-05	8.45E-05
y	9.80E+00	1.19E-04	4.91E-06	1.79E-06	1.67E-06	1.64E-06	1.60E-06
zr	4.81E+00	3.51E-02	1.30E-03	4.81E-05	1.78E-06	6.61E-08	2.45E-09
nb	9.13E+00	7.79E-02	2.98E-03	1.11E-04	4.16E-06	2.12E-07	6.58E-08
rh	1.07E-01	1.11E-02	6.28E-03	3.56E-03	2.02E-03	1.14E-03	6.48E-04
ag	3.07E-02	1.93E-07	8.31E-08	3.57E-08	1.54E-08	6.60E-09	2.84E-09
sn	1.23E+00	1.36E-06	9.56E-07	8.69E-07	8.48E-07	8.42E-07	8.39E-07
sb	5.16E+00	2.14E-03	1.74E-03	1.41E-03	1.14E-03	9.26E-04	7.52E-04
te	5.57E+00	5.71E-05	3.61E-05	2.82E-05	2.27E-05	1.83E-05	1.48E-05
i	1.36E+01	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08
cs	8.74E+00	1.69E-04	1.28E-04	9.65E-05	7.30E-05	5.51E-05	4.17E-05
ba	5.34E+00	6.29E-01	6.17E-01	6.05E-01	5.94E-01	5.83E-01	5.71E-01
ce	2.08E+00	1.00E-02	4.72E-03	2.25E-03	1.07E-03	5.12E-04	2.44E-04
pr	1.80E+00	1.51E-02	7.22E-03	3.44E-03	1.64E-03	7.83E-04	3.74E-04
pm	8.55E-02	1.67E-06	1.29E-06	1.03E-06	8.30E-07	6.66E-07	5.34E-07
sm	4.47E-03	6.50E-07	6.46E-07	6.42E-07	6.38E-07	6.34E-07	6.30E-07
eu	5.77E-03	5.72E-04	5.17E-04	4.68E-04	4.25E-04	3.86E-04	3.51E-04
totals	1.29E+02	7.83E-01	6.42E-01	6.17E-01	6.00E-01	5.87E-01	5.74E-01

1 page 67

photon spectrum as a function of time for light elements, cladding and structural materials

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2

power= .00 mw, burnup= 146.mwd, flux= 2.79E+08 n**2-sec

0 spectrum of photon release rates, photons/sec

basis = single reactor assembly

0

emean			time after discharge				
(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	5.15E+11	5.55E+04	4.44E+04	3.56E+04	2.85E+04	2.28E+04	1.83E+04
3.00E-02	1.69E+11	1.77E+04	1.41E+04	1.13E+04	9.07E+03	7.26E+03	5.82E+03
5.50E-02	1.18E+11	1.19E+04	9.55E+03	7.65E+03	6.13E+03	4.91E+03	3.93E+03
8.50E-02	6.90E+10	6.71E+03	5.37E+03	4.30E+03	3.45E+03	2.76E+03	2.21E+03
1.20E-01	4.90E+10	4.59E+03	3.67E+03	2.94E+03	2.36E+03	1.89E+03	1.51E+03
1.70E-01	5.13E+10	4.50E+03	3.61E+03	2.89E+03	2.31E+03	1.85E+03	1.48E+03
3.00E-01	5.88E+10	4.48E+03	3.59E+03	2.88E+03	2.30E+03	1.84E+03	1.48E+03
6.50E-01	2.89E+10	2.39E+05	1.92E+05	1.54E+05	1.23E+05	9.85E+04	7.89E+04
1.13E+00	4.97E+09	1.91E+05	1.53E+05	1.22E+05	9.81E+04	7.85E+04	6.29E+04
1.58E+00	9.04E+11	4.78E-01	3.83E-01	3.07E-01	2.46E-01	1.97E-01	1.58E-01
2.00E+00	1.79E+08	4.25E-02	3.40E-02	2.73E-02	2.18E-02	1.75E-02	1.40E-02
2.40E+00	3.63E+07	9.53E-03	7.63E-03	6.11E-03	4.90E-03	3.92E-03	3.14E-03
2.80E+00	2.13E+11	1.49E-04	1.20E-04	9.57E-05	7.67E-05	6.14E-05	4.92E-05
3.25E+00	1.36E+04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
3.75E+00	1.39E+08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.25E+00	1.82E+06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.75E+00	6.63E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
5.50E+00	1.09E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0 total	2.18E+12	5.36E+05	4.29E+05	3.44E+05	2.75E+05	2.20E+05	1.77E+05
0 mev/sec	2.10E+12	3.75E+05	3.01E+05	2.41E+05	1.93E+05	1.54E+05	1.24E+05

0 spectrum of energy release rates, mev/watt-sec

basis = single reactor assembly

0

emean		time after discharge					
(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d

1.00E-02	1.29E+06	1.39E-01	1.11E-01	8.90E-02	7.13E-02	5.71E-02	4.57E-02
3.00E-02	1.27E+06	1.32E-01	1.06E-01	8.49E-02	6.80E-02	5.45E-02	4.36E-02
5.50E-02	1.62E+06	1.64E-01	1.31E-01	1.05E-01	8.42E-02	6.75E-02	5.40E-02
8.50E-02	1.47E+06	1.43E-01	1.14E-01	9.15E-02	7.33E-02	5.87E-02	4.70E-02
1.20E-01	1.47E+06	1.38E-01	1.10E-01	8.83E-02	7.07E-02	5.66E-02	4.54E-02
1.70E-01	2.18E+06	1.91E-01	1.53E-01	1.23E-01	9.84E-02	7.88E-02	6.31E-02
3.00E-01	4.41E+06	3.36E-01	2.69E-01	2.16E-01	1.73E-01	1.38E-01	1.11E-01
6.50E-01	4.70E+06	3.89E+01	3.12E+01	2.50E+01	2.00E+01	1.60E+01	1.28E+01
1.13E+00	1.40E+06	5.37E+01	4.30E+01	3.44E+01	2.76E+01	2.21E+01	1.77E+01
1.58E+00	3.56E+08	1.88E-04	1.51E-04	1.21E-04	9.67E-05	7.75E-05	6.20E-05
2.00E+00	8.96E+04	2.13E-05	1.70E-05	1.36E-05	1.09E-05	8.75E-06	7.00E-06
2.40E+00	2.18E+04	5.72E-06	4.58E-06	3.67E-06	2.94E-06	2.35E-06	1.88E-06
2.80E+00	1.49E+08	1.04E-07	8.37E-08	6.70E-08	5.37E-08	4.30E-08	3.44E-08
3.25E+00	1.10E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
3.75E+00	1.30E+05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.25E+00	1.93E+03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.75E+00	7.87E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
5.50E+00	1.50E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0 total	5.25E+08	9.38E+01	7.52E+01	6.02E+01	4.82E+01	3.86E+01	3.09E+01
0 gamma watts	3.37E-01	6.02E-08	4.82E-08	3.86E-08	3.09E-08	2.48E-08	1.98E-08

1 page 68

photon spectrum as a function of time for fission products

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 146.mwd, flux= 2.79E+08 n**2-sec

0 spectrum of photon release rates, photons/sec
basis = single reactor assembly

0

emean		time after discharge					
(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	2.61E+14	7.89E+12	6.25E+12	5.47E+12	5.04E+12	4.78E+12	4.60E+12
3.00E-02	1.14E+14	3.41E+12	2.67E+12	2.32E+12	2.12E+12	2.01E+12	1.93E+12
5.50E-02	6.07E+13	1.71E+12	1.33E+12	1.15E+12	1.05E+12	9.93E+11	9.54E+11
8.50E-02	4.20E+13	1.02E+12	7.78E+11	6.59E+11	5.95E+11	5.58E+11	5.34E+11
1.20E-01	3.44E+13	1.04E+12	6.94E+11	5.25E+11	4.40E+11	3.95E+11	3.70E+11
1.70E-01	5.50E+13	6.56E+11	5.00E+11	4.27E+11	3.88E+11	3.65E+11	3.50E+11
3.00E-01	1.10E+14	7.09E+11	5.35E+11	4.50E+11	4.05E+11	3.79E+11	3.63E+11
6.50E-01	2.29E+14	7.58E+12	6.25E+12	6.02E+12	5.86E+12	5.73E+12	5.61E+12
1.13E+00	7.81E+13	5.55E+10	3.75E+10	2.86E+10	2.40E+10	2.14E+10	1.99E+10
1.58E+00	4.04E+13	1.94E+10	1.08E+10	6.62E+09	4.54E+09	3.49E+09	2.95E+09
2.00E+00	1.23E+13	2.94E+10	1.41E+10	6.85E+09	3.36E+09	1.69E+09	8.83E+08
2.40E+00	1.06E+13	6.19E+08	3.27E+08	1.74E+08	9.30E+07	5.01E+07	2.72E+07
2.80E+00	4.23E+12	8.07E+07	4.38E+07	2.39E+07	1.31E+07	7.21E+06	3.99E+06
3.25E+00	2.48E+12	1.01E+07	5.75E+06	3.26E+06	1.85E+06	1.05E+06	5.93E+05
3.75E+00	1.26E+12	4.47E+03	2.53E+03	1.44E+03	8.14E+02	4.61E+02	2.61E+02
4.25E+00	1.39E+12	2.00E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07
4.75E+00	4.08E+11	1.00E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07
5.50E+00	3.04E+11	7.45E-08	7.46E-08	7.47E-08	7.48E-08	7.49E-08	7.49E-08
0 total	1.06E+15	2.41E+13	1.91E+13	1.71E+13	1.59E+13	1.52E+13	1.47E+13
0 mev/sec	4.44E+14	5.89E+12	4.76E+12	4.48E+12	4.31E+12	4.19E+12	4.09E+12

0 spectrum of energy release rates, mev/watt-sec
basis = single reactor assembly

0

emean		time after discharge					
(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	6.51E+08	1.97E+07	1.56E+07	1.37E+07	1.26E+07	1.19E+07	1.15E+07
3.00E-02	8.54E+08	2.56E+07	2.01E+07	1.74E+07	1.59E+07	1.51E+07	1.45E+07
5.50E-02	8.35E+08	2.35E+07	1.83E+07	1.58E+07	1.45E+07	1.36E+07	1.31E+07
8.50E-02	8.92E+08	2.17E+07	1.65E+07	1.40E+07	1.26E+07	1.19E+07	1.14E+07
1.20E-01	1.03E+09	3.13E+07	2.08E+07	1.58E+07	1.32E+07	1.19E+07	1.11E+07

	1.70E-01	2.34E+09	2.79E+07	2.13E+07	1.81E+07	1.65E+07	1.55E+07	1.49E+07
	3.00E-01	8.25E+09	5.32E+07	4.01E+07	3.38E+07	3.04E+07	2.85E+07	2.72E+07
	6.50E-01	3.73E+10	1.23E+09	1.02E+09	9.78E+08	9.53E+08	9.31E+08	9.12E+08
	1.13E+00	2.20E+10	1.56E+07	1.05E+07	8.05E+06	6.74E+06	6.03E+06	5.60E+06
	1.58E+00	1.59E+10	7.65E+06	4.26E+06	2.61E+06	1.79E+06	1.38E+06	1.16E+06
	2.00E+00	6.14E+09	1.47E+07	7.07E+06	3.43E+06	1.68E+06	8.44E+05	4.41E+05
	2.40E+00	6.37E+09	3.72E+05	1.96E+05	1.04E+05	5.58E+04	3.01E+04	1.63E+04
	2.80E+00	2.96E+09	5.65E+04	3.07E+04	1.67E+04	9.17E+03	5.05E+03	2.79E+03
	3.25E+00	2.01E+09	8.24E+03	4.67E+03	2.65E+03	1.50E+03	8.50E+02	4.82E+02
	3.75E+00	1.18E+09	4.19E+00	2.37E+00	1.35E+00	7.63E-01	4.32E-01	2.45E-01
	4.25E+00	1.48E+09	2.13E-10	2.13E-10	2.13E-10	2.14E-10	2.14E-10	2.14E-10
	4.75E+00	4.85E+08	1.19E-10	1.19E-10	1.20E-10	1.20E-10	1.20E-10	1.20E-10
	5.50E+00	4.18E+08	1.02E-10	1.03E-10	1.03E-10	1.03E-10	1.03E-10	1.03E-10
0	total	1.11E+11	1.47E+09	1.19E+09	1.12E+09	1.08E+09	1.05E+09	1.02E+09
0	gamma watts	7.12E+01	9.44E-01	7.63E-01	7.18E-01	6.92E-01	6.72E-01	6.56E-01

1

0 principal photon sources in group 1, photons/sec

mean energy = .0100 mev. nuclides exceeding 1.0E-03 of total group release rate (4.78E+12) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	4.66E+10	4.42E+10	4.19E+10	3.97E+10	3.76E+10	3.56E+10	3.37E+10
sr 90	7.33E+11	7.18E+11	7.03E+11	6.89E+11	6.75E+11	6.61E+11	6.48E+11
y 90	3.60E+12	3.53E+12	3.46E+12	3.39E+12	3.32E+12	3.25E+12	3.18E+12
rh106	4.76E+11	2.70E+11	1.53E+11	8.68E+10	4.92E+10	2.79E+10	1.58E+10
cs137	6.75E+11	6.62E+11	6.50E+11	6.37E+11	6.25E+11	6.13E+11	6.01E+11
ba137m	3.17E+10	3.11E+10	3.05E+10	2.99E+10	2.93E+10	2.88E+10	2.82E+10
ce144	3.55E+11	1.69E+11	8.06E+10	3.85E+10	1.83E+10	8.75E+09	4.17E+09
pr144	4.70E+12	2.24E+12	1.07E+12	5.10E+11	2.43E+11	1.16E+11	5.53E+10
pm147	8.86E+10	7.19E+10	5.77E+10	4.63E+10	3.71E+10	2.98E+10	2.39E+10

0 principal photon sources in group 2, photons/sec

mean energy = .0300 mev. nuclides exceeding 1.0E-03 of total group release rate (2.01E+12) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.36E+10	1.29E+10	1.22E+10	1.16E+10	1.10E+10	1.04E+10	9.83E+09
sr 90	2.07E+11	2.03E+11	1.99E+11	1.95E+11	1.91E+11	1.87E+11	1.83E+11
y 90	1.17E+12	1.15E+12	1.13E+12	1.10E+12	1.08E+12	1.06E+12	1.04E+12
rh106	1.59E+11	9.02E+10	5.11E+10	2.90E+10	1.64E+10	9.31E+09	5.28E+09
sb125	1.87E+10	1.52E+10	1.23E+10	9.96E+09	8.06E+09	6.52E+09	5.28E+09
te125m	1.02E+10	8.65E+09	7.01E+09	5.67E+09	4.59E+09	3.72E+09	3.01E+09
cs137	1.88E+11	1.85E+11	1.81E+11	1.78E+11	1.74E+11	1.71E+11	1.68E+11
ba137m	5.44E+11	5.34E+11	5.23E+11	5.13E+11	5.04E+11	4.94E+11	4.85E+11
ce144	8.23E+11	3.93E+11	1.87E+11	8.93E+10	4.26E+10	2.03E+10	9.69E+09
pr144	1.55E+12	7.41E+11	3.54E+11	1.69E+11	8.04E+10	3.84E+10	1.83E+10
pm147	1.95E+10	1.58E+10	1.27E+10	1.02E+10	8.17E+09	6.55E+09	5.26E+09

0 principal photon sources in group 3, photons/sec

mean energy = .0550 mev. nuclides exceeding 1.0E-03 of total group release rate (9.93E+11) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	8.33E+09	7.90E+09	7.48E+09	7.09E+09	6.72E+09	6.36E+09	6.03E+09
sr 90	1.22E+11	1.20E+11	1.17E+11	1.15E+11	1.13E+11	1.10E+11	1.08E+11
y 90	8.11E+11	7.94E+11	7.78E+11	7.62E+11	7.47E+11	7.32E+11	7.17E+11
rh106	1.13E+11	6.39E+10	3.62E+10	2.05E+10	1.16E+10	6.59E+09	3.74E+09
cs137	1.09E+11	1.07E+11	1.05E+11	1.03E+11	1.01E+11	9.94E+10	9.75E+10
ce144	1.19E+11	5.68E+10	2.71E+10	1.29E+10	6.16E+09	2.94E+09	1.40E+09
pr144	1.09E+12	5.20E+11	2.48E+11	1.18E+11	5.65E+10	2.69E+10	1.28E+10
pm147	8.18E+09	6.64E+09	5.33E+09	4.28E+09	3.43E+09	2.75E+09	2.21E+09
eu155	9.21E+09	8.14E+09	7.20E+09	6.36E+09	5.62E+09	4.97E+09	4.39E+09

1

0 principal photon sources in group 4, photons/sec

mean energy = .0850 mev. nuclides exceeding 1.0E-03 of total group release rate (5.58E+11) at 1521.9 d

nuclide		time after discharge					
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	4.17E+09	3.95E+09	3.74E+09	3.55E+09	3.36E+09	3.19E+09	3.02E+09
sr 90	5.84E+10	5.72E+10	5.60E+10	5.49E+10	5.38E+10	5.27E+10	5.16E+10
y 90	4.69E+11	4.60E+11	4.50E+11	4.41E+11	4.32E+11	4.23E+11	4.15E+11
rh106	6.70E+10	3.80E+10	2.15E+10	1.22E+10	6.91E+09	3.92E+09	2.22E+09
cs137	5.13E+10	5.03E+10	4.93E+10	4.84E+10	4.75E+10	4.66E+10	4.57E+10
ce144	1.68E+11	8.02E+10	3.83E+10	1.82E+10	8.70E+09	4.15E+09	1.98E+09
pr144	6.42E+11	3.06E+11	1.46E+11	6.97E+10	3.32E+10	1.58E+10	7.56E+09
pm147	2.33E+09	1.89E+09	1.52E+09	1.22E+09	9.76E+08	7.83E+08	6.29E+08
eu155	1.40E+10	1.24E+10	1.09E+10	9.66E+09	8.54E+09	7.55E+09	6.67E+09

0 principal photon sources in group 5, photons/sec
mean energy = .1200 mev. nuclides exceeding 1.0E-03 of total group release rate (3.95E+11) at 1521.9 d

nuclide		time after discharge					
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	2.51E+09	2.38E+09	2.26E+09	2.14E+09	2.03E+09	1.92E+09	1.82E+09
sr 90	3.32E+10	3.25E+10	3.19E+10	3.12E+10	3.06E+10	3.00E+10	2.94E+10
y 90	3.30E+11	3.23E+11	3.17E+11	3.10E+11	3.04E+11	2.98E+11	2.92E+11
rh106	4.84E+10	2.74E+10	1.55E+10	8.81E+09	4.99E+09	2.83E+09	1.60E+09
cs137	2.87E+10	2.82E+10	2.76E+10	2.71E+10	2.66E+10	2.61E+10	2.56E+10
ce144	8.25E+11	3.93E+11	1.88E+11	8.95E+10	4.27E+10	2.03E+10	9.70E+09
pr144	4.60E+11	2.19E+11	1.05E+11	4.98E+10	2.38E+10	1.13E+10	5.41E+09
eu155	7.99E+09	7.06E+09	6.24E+09	5.51E+09	4.87E+09	4.31E+09	3.81E+09

0 principal photon sources in group 6, photons/sec
mean energy = .1700 mev. nuclides exceeding 1.0E-03 of total group release rate (3.65E+11) at 1521.9 d

nuclide		time after discharge					
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	2.00E+09	1.89E+09	1.79E+09	1.70E+09	1.61E+09	1.53E+09	1.45E+09
sr 90	2.37E+10	2.32E+10	2.27E+10	2.23E+10	2.18E+10	2.14E+10	2.09E+10
y 90	3.40E+11	3.33E+11	3.27E+11	3.20E+11	3.13E+11	3.07E+11	3.01E+11
rh106	5.19E+10	2.94E+10	1.67E+10	9.44E+09	5.35E+09	3.03E+09	1.72E+09
sb125	2.82E+09	2.29E+09	1.85E+09	1.50E+09	1.21E+09	9.82E+08	7.95E+08
cs137	2.03E+10	1.99E+10	1.95E+10	1.92E+10	1.88E+10	1.84E+10	1.81E+10
pr144	4.86E+11	2.32E+11	1.11E+11	5.27E+10	2.51E+10	1.20E+10	5.72E+09

0 principal photon sources in group 7, photons/sec
mean energy = .3000 mev. nuclides exceeding 1.0E-03 of total group release rate (3.79E+11) at 1521.9 d

nuclide		time after discharge					
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.21E+09	1.14E+09	1.08E+09	1.03E+09	9.72E+08	9.21E+08	8.73E+08
sr 90	1.07E+10	1.05E+10	1.03E+10	1.01E+10	9.89E+09	9.69E+09	9.50E+09
y 90	3.78E+11	3.70E+11	3.63E+11	3.55E+11	3.48E+11	3.41E+11	3.34E+11
rh106	6.26E+10	3.55E+10	2.01E+10	1.14E+10	6.46E+09	3.66E+09	2.07E+09
cs137	1.03E+10	1.01E+10	9.88E+09	9.69E+09	9.51E+09	9.33E+09	9.15E+09
pr144	5.69E+11	2.71E+11	1.29E+11	6.17E+10	2.94E+10	1.40E+10	6.69E+09

1

0 principal photon sources in group 8, photons/sec
mean energy = .6500 mev. nuclides exceeding 1.0E-03 of total group release rate (5.73E+12) at 1521.9 d

nuclide		time after discharge					
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	1.60E+11	1.56E+11	1.53E+11	1.50E+11	1.47E+11	1.44E+11	1.41E+11
rh106	1.93E+11	1.09E+11	6.21E+10	3.52E+10	1.99E+10	1.13E+10	6.41E+09
sb125	2.29E+10	1.86E+10	1.51E+10	1.22E+10	9.86E+09	7.98E+09	6.46E+09
ba137m	6.12E+12	6.00E+12	5.88E+12	5.77E+12	5.66E+12	5.55E+12	5.45E+12
pr144	3.88E+11	1.85E+11	8.83E+10	4.21E+10	2.01E+10	9.58E+09	4.57E+09

0 principal photon sources in group 9, photons/sec
mean energy = 1.1250 mev. nuclides exceeding 1.0E-03 of total group release rate (2.14E+10) at 1521.9 d

nuclide		time after discharge					
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	2.08E+10	2.04E+10	2.00E+10	1.96E+10	1.92E+10	1.88E+10	1.84E+10
rh106	1.80E+10	1.02E+10	5.78E+09	3.28E+09	1.86E+09	1.05E+09	5.97E+08

```
    pr144   4.97E+10  2.37E+10  1.13E+10  5.39E+09  2.57E+09  1.23E+09  5.85E+08
    eu152   3.37E+08  3.23E+08  3.09E+08  2.96E+08  2.84E+08  2.72E+08  2.60E+08
    eu154   8.42E+07  7.87E+07  7.36E+07  6.88E+07  6.44E+07  6.02E+07  5.63E+07
0                  principal photon sources in group 10, photons/sec
     mean energy = 1.5750 mev.  nuclides exceeding  1.0E-03 of total group release rate (3.49E+09) at  1521.9 d
  nuclide                                          time after discharge
            initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
    y 90  2.66E+09  2.61E+09  2.55E+09  2.50E+09  2.45E+09  2.40E+09  2.35E+09
   rh106  3.39E+09  1.92E+09  1.09E+09  6.18E+08  3.50E+08  1.99E+08  1.13E+08
   cs134  2.37E+07  1.79E+07  1.35E+07  1.02E+07  7.71E+06  5.83E+06  4.41E+06
   pr144  3.09E+10  1.47E+10  7.03E+09  3.35E+09  1.60E+09  7.63E+08  3.64E+08
   eu152  1.55E+08  1.48E+08  1.42E+08  1.36E+08  1.30E+08  1.25E+08  1.19E+08
0                  principal photon sources in group 11, photons/sec
     mean energy = 2.0000 mev.  nuclides exceeding  1.0E-03 of total group release rate (1.69E+09) at  1521.9 d
  nuclide                                          time after discharge
            initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
    y 90  1.59E+08  1.56E+08  1.53E+08  1.50E+08  1.47E+08  1.44E+08  1.41E+08
   rh106  1.10E+09  6.25E+08  3.54E+08  2.01E+08  1.14E+08  6.45E+07  3.66E+07
   pr144  5.99E+10  2.86E+10  1.36E+10  6.50E+09  3.10E+09  1.48E+09  7.05E+08
0                  principal photon sources in group 12, photons/sec
     mean energy = 2.4000 mev.  nuclides exceeding  1.0E-03 of total group release rate (5.01E+07) at  1521.9 d
  nuclide                                          time after discharge
            initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
    y 90  9.28E+04  9.10E+04  8.91E+04  8.73E+04  8.55E+04  8.38E+04  8.21E+04
   rh106  6.16E+08  3.49E+08  1.98E+08  1.12E+08  6.36E+07  3.61E+07  2.04E+07
   pr144  5.66E+08  2.70E+08  1.29E+08  6.14E+07  2.93E+07  1.40E+07  6.67E+06
1                                                                                                    page  72
0                  principal photon sources in group 13, photons/sec
     mean energy = 2.8000 mev.  nuclides exceeding  1.0E-03 of total group release rate (7.21E+06) at  1521.9 d
  nuclide                                          time after discharge
            initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
   rh106  1.04E+08  5.89E+07  3.34E+07  1.89E+07  1.07E+07  6.08E+06  3.45E+06
   pr144  4.56E+07  2.18E+07  1.04E+07  4.95E+06  2.36E+06  1.13E+06  5.37E+05
0                  principal photon sources in group 14, photons/sec
     mean energy = 3.2500 mev.  nuclides exceeding  1.0E-03 of total group release rate (1.05E+06) at  1521.9 d
  nuclide                                          time after discharge
            initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
   rh106  1.79E+07  1.01E+07  5.75E+06  3.26E+06  1.85E+06  1.05E+06  5.93E+05
0                  principal photon sources in group 15, photons/sec
     mean energy = 3.7500 mev.  nuclides exceeding  1.0E-03 of total group release rate (4.61E+02) at  1521.9 d
  nuclide                                          time after discharge
            initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
   rh106  7.88E+03  4.47E+03  2.53E+03  1.44E+03  8.14E+02  4.61E+02  2.61E+02
0                  principal photon sources in group 16, photons/sec
     mean energy = 4.2500 mev.  nuclides exceeding  1.0E-03 of total group release rate (2.01E-07) at  1521.9 d
  nuclide                                          time after discharge
            initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
   ce142  1.46E-07  1.46E-07  1.46E-07  1.46E-07  1.46E-07  1.46E-07  1.46E-07
   sm147  5.38E-08  5.42E-08  5.46E-08  5.49E-08  5.51E-08  5.52E-08  5.54E-08
0                  principal photon sources in group 17, photons/sec
     mean energy = 4.7500 mev.  nuclides exceeding  1.0E-03 of total group release rate (1.01E-07) at  1521.9 d
  nuclide                                          time after discharge
            initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
   ce142  7.32E-08  7.32E-08  7.32E-08  7.32E-08  7.32E-08  7.32E-08  7.32E-08
   sm147  2.70E-08  2.72E-08  2.74E-08  2.75E-08  2.76E-08  2.77E-08  2.78E-08
0                  principal photon sources in group 18, photons/sec
     mean energy = 5.5000 mev.  nuclides exceeding  1.0E-03 of total group release rate (7.49E-08) at  1521.9 d
  nuclide                                          time after discharge
            initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
   ce142  5.43E-08  5.43E-08  5.43E-08  5.43E-08  5.43E-08  5.43E-08  5.43E-08
```

sm147 2.00E-08 2.02E-08 2.03E-08 2.04E-08 2.05E-08 2.06E-08 2.06E-08

1 page 73

photon spectrum as a function of time for heavy metals and their daughters

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 146.mwd, flux= 2.79E+08 n**2-sec

0 actinide photon release rates, photons/sec
basis = single reactor assembly

0

	emean	time after discharge						
	(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	1.00E-02	1.34E+14	8.65E+11	8.63E+11	8.61E+11	8.59E+11	8.57E+11	8.55E+11
	3.00E-02	8.46E+12	4.62E+10	4.62E+10	4.62E+10	4.62E+10	4.62E+10	4.62E+10
	5.50E-02	1.09E+13	2.08E+10	2.08E+10	2.08E+10	2.08E+10	2.08E+10	2.08E+10
	8.50E-02	5.26E+13	1.51E+11	1.51E+11	1.51E+11	1.51E+11	1.51E+11	1.51E+11
	1.20E-01	5.43E+13	2.91E+10	2.91E+10	2.91E+10	2.91E+10	2.91E+10	2.91E+10
	1.70E-01	1.72E+12	1.90E+10	1.90E+10	1.90E+10	1.90E+10	1.90E+10	1.90E+10
	3.00E-01	2.87E+13	1.30E+11	1.30E+11	1.30E+11	1.30E+11	1.30E+11	1.30E+11
	6.50E-01	1.45E+12	6.31E+09	6.31E+09	6.31E+09	6.31E+09	6.31E+09	6.31E+09
	1.13E+00	1.86E+12	9.19E+08	9.19E+08	9.19E+08	9.19E+08	9.19E+08	9.19E+08
	1.58E+00	1.10E+08	1.10E+08	1.10E+08	1.10E+08	1.11E+08	1.11E+08	1.11E+08
	2.00E+00	3.72E+07	3.72E+07	3.72E+07	3.72E+07	3.72E+07	3.72E+07	3.72E+07
	2.40E+00	4.45E+05	4.52E+05	4.59E+05	4.66E+05	4.73E+05	4.80E+05	4.87E+05
	2.80E+00	1.61E+06	1.63E+06	1.63E+06	1.64E+06	1.64E+06	1.64E+06	1.64E+06
	3.25E+00	1.44E+04	1.44E+04	1.45E+04	1.45E+04	1.46E+04	1.46E+04	1.47E+04
	3.75E+00	6.40E+03	6.39E+03	6.39E+03	6.39E+03	6.38E+03	6.38E+03	6.38E+03
	4.25E+00	3.69E+03	3.69E+03	3.69E+03	3.69E+03	3.69E+03	3.68E+03	3.68E+03
	4.75E+00	2.13E+03	2.13E+03	2.13E+03	2.13E+03	2.13E+03	2.13E+03	2.13E+03
	5.50E+00	1.92E+03	1.92E+03	1.92E+03	1.92E+03	1.92E+03	1.92E+03	1.92E+03
0	total	2.93E+14	1.27E+12	1.27E+12	1.26E+12	1.26E+12	1.26E+12	1.26E+12
0	mev/sec	2.51E+13	7.52E+10	7.52E+10	7.52E+10	7.52E+10	7.51E+10	7.51E+10

0 actinide energy release rates, mev/watt-sec
basis = single reactor assembly

0

	emean	time after discharge						
	(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	1.00E-02	3.34E+08	2.16E+06	2.16E+06	2.15E+06	2.15E+06	2.14E+06	2.14E+06
	3.00E-02	6.34E+07	3.46E+05	3.46E+05	3.46E+05	3.46E+05	3.46E+05	3.46E+05
	5.50E-02	1.50E+08	2.86E+05	2.86E+05	2.86E+05	2.86E+05	2.86E+05	2.86E+05
	8.50E-02	1.12E+09	3.21E+06	3.21E+06	3.21E+06	3.21E+06	3.21E+06	3.21E+06
	1.20E-01	1.63E+09	8.72E+05	8.72E+05	8.72E+05	8.72E+05	8.72E+05	8.72E+05
	1.70E-01	7.31E+07	8.08E+05	8.08E+05	8.08E+05	8.08E+05	8.08E+05	8.08E+05
	3.00E-01	2.15E+09	9.78E+06	9.78E+06	9.78E+06	9.78E+06	9.78E+06	9.78E+06
	6.50E-01	2.36E+08	1.03E+06	1.03E+06	1.03E+06	1.03E+06	1.03E+06	1.03E+06
	1.13E+00	5.23E+08	2.58E+05	2.58E+05	2.58E+05	2.58E+05	2.59E+05	2.59E+05
	1.58E+00	4.34E+04	4.35E+04	4.35E+04	4.35E+04	4.35E+04	4.35E+04	4.36E+04
	2.00E+00	1.86E+04	1.86E+04	1.86E+04	1.86E+04	1.86E+04	1.86E+04	1.86E+04
	2.40E+00	2.67E+02	2.71E+02	2.76E+02	2.80E+02	2.84E+02	2.88E+02	2.92E+02
	2.80E+00	1.13E+03	1.14E+03	1.14E+03	1.15E+03	1.15E+03	1.15E+03	1.15E+03
	3.25E+00	1.17E+01	1.17E+01	1.18E+01	1.18E+01	1.18E+01	1.19E+01	1.19E+01
	3.75E+00	6.00E+00	5.99E+00	5.99E+00	5.99E+00	5.98E+00	5.98E+00	5.98E+00
	4.25E+00	3.92E+00	3.92E+00	3.92E+00	3.92E+00	3.92E+00	3.91E+00	3.91E+00
	4.75E+00	2.53E+00	2.53E+00	2.53E+00	2.53E+00	2.53E+00	2.53E+00	2.53E+00
	5.50E+00	2.64E+00	2.64E+00	2.64E+00	2.64E+00	2.64E+00	2.64E+00	2.64E+00
0	total	6.28E+09	1.88E+07	1.88E+07	1.88E+07	1.88E+07	1.88E+07	1.88E+07
0	gamma watts	4.02E+00	1.21E-02	1.21E-02	1.21E-02	1.20E-02	1.20E-02	1.20E-02

1 page 74

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2

alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pb210	3.48E-10	3.55E-10	3.62E-10	3.70E-10	3.77E-10	3.85E-10	3.92E-10
bi210	8.87E-08	9.06E-08	9.24E-08	9.43E-08	9.62E-08	9.82E-08	1.00E-07
bi211	8.72E-01	8.82E-01	8.92E-01	9.02E-01	9.12E-01	9.22E-01	9.32E-01
bi212	5.58E-02	5.64E-02	5.67E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02
bi213	3.11E-04	3.16E-04	3.21E-04	3.26E-04	3.32E-04	3.37E-04	3.43E-04
bi214	7.25E-05	7.37E-05	7.49E-05	7.61E-05	7.73E-05	7.86E-05	7.98E-05
po210	1.09E-01	1.09E-01	1.11E-01	1.13E-01	1.15E-01	1.18E-01	1.20E-01
po211	3.45E-03	3.49E-03	3.53E-03	3.57E-03	3.61E-03	3.65E-03	3.69E-03
po212	2.86E-01	2.89E-01	2.90E-01	2.91E-01	2.92E-01	2.92E-01	2.91E-01
po213	4.10E-02	4.17E-02	4.24E-02	4.31E-02	4.38E-02	4.45E-02	4.52E-02
po214	6.46E-01	6.56E-01	6.67E-01	6.78E-01	6.89E-01	7.00E-01	7.11E-01
po215	1.23E+00	1.25E+00	1.26E+00	1.28E+00	1.29E+00	1.30E+00	1.32E+00
po216	2.23E-01	2.25E-01	2.27E-01	2.27E-01	2.28E-01	2.27E-01	2.27E-01
po218	3.07E-01	3.12E-01	3.17E-01	3.23E-01	3.28E-01	3.33E-01	3.38E-01
at217	2.66E-02	2.70E-02	2.75E-02	2.79E-02	2.84E-02	2.88E-02	2.93E-02
rn218	4.21E-12	1.66E-16	6.51E-21	2.56E-25	.00E+00	.00E+00	.00E+00
rn219	9.80E-01	9.92E-01	1.00E+00	1.01E+00	1.03E+00	1.04E+00	1.05E+00
rn220	1.77E-01	1.79E-01	1.79E-01	1.80E-01	1.80E-01	1.80E-01	1.80E-01
rn222	2.24E-01	2.28E-01	2.32E-01	2.36E-01	2.39E-01	2.43E-01	2.47E-01
fr221	1.94E-02	1.97E-02	2.00E-02	2.04E-02	2.07E-02	2.10E-02	2.14E-02
fr223	3.71E-07	3.75E-07	3.79E-07	3.84E-07	3.88E-07	3.92E-07	3.96E-07
ra222	3.25E-12	1.28E-16	5.03E-21	1.98E-25	.00E+00	.00E+00	.00E+00
ra223	5.67E-01	5.74E-01	5.81E-01	5.87E-01	5.94E-01	6.00E-01	6.07E-01
ra224	1.25E-01	1.26E-01	1.27E-01	1.27E-01	1.27E-01	1.27E-01	1.27E-01
ra226	1.31E-01	1.33E-01	1.36E-01	1.38E-01	1.40E-01	1.42E-01	1.45E-01
ac225	1.39E-02	1.42E-02	1.44E-02	1.46E-02	1.49E-02	1.51E-02	1.54E-02
ac227	4.17E-03	4.22E-03	4.27E-03	4.32E-03	4.36E-03	4.41E-03	4.46E-03
ac228	2.11E-13	2.12E-13	2.14E-13	2.16E-13	2.18E-13	2.20E-13	2.22E-13
th226	2.94E-12	1.16E-16	4.54E-21	1.79E-25	.00E+00	.00E+00	.00E+00
th227	6.26E-01	6.33E-01	6.41E-01	6.48E-01	6.55E-01	6.62E-01	6.69E-01
th228	1.05E-01	1.06E-01	1.07E-01	1.07E-01	1.07E-01	1.07E-01	1.07E-01
th229	8.15E-03	8.28E-03	8.42E-03	8.56E-03	8.70E-03	8.84E-03	8.98E-03
th230	5.67E+00	5.71E+00	5.76E+00	5.81E+00	5.85E+00	5.90E+00	5.95E+00
th232	2.93E-06	2.95E-06	2.97E-06	3.00E-06	3.02E-06	3.05E-06	3.07E-06
pa231	4.76E-01	4.80E-01	4.84E-01	4.88E-01	4.92E-01	4.96E-01	5.00E-01
u230	2.31E-12	9.09E-17	3.58E-21	1.41E-25	.00E+00	.00E+00	.00E+00
u231	1.49E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	1.01E-01	1.01E-01	1.01E-01	1.00E-01	1.00E-01	9.96E-02	9.90E-02
u233	1.62E+00	1.63E+00	1.65E+00	1.66E+00	1.68E+00	1.69E+00	1.71E+00
u234	6.63E+03	6.63E+03	6.63E+03	6.63E+03	6.63E+03	6.63E+03	6.63E+03
u235	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02
u236	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03
u238	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02
np235	2.41E-08	1.42E-08	8.31E-09	4.88E-09	2.87E-09	1.68E-09	9.88E-10
np237	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03
pu236	1.41E-01	1.16E-01	9.50E-02	7.78E-02	6.38E-02	5.23E-02	4.28E-02
pu237	1.26E-08	1.18E-10	1.10E-12	1.03E-14	9.68E-17	9.07E-19	8.49E-21
pu238	4.56E+04	4.53E+04	4.50E+04	4.47E+04	4.44E+04	4.41E+04	4.38E+04

1 neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

		initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	pu239	5.03E+03	5.03E+03	5.03E+03	5.03E+03	5.03E+03	5.03E+03	5.03E+03
	pu240	9.14E+00	9.14E+00	9.14E+00	9.14E+00	9.14E+00	9.14E+00	9.13E+00
	pu241	2.24E-05	2.15E-05	2.06E-05	1.98E-05	1.91E-05	1.83E-05	1.76E-05
	pu242	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08
	am239	6.85E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	am240	1.08E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	am241	6.56E-02	6.75E-02	6.92E-02	7.08E-02	7.24E-02	7.40E-02	7.54E-02
	am242m	3.95E-08	3.93E-08	3.91E-08	3.90E-08	3.88E-08	3.87E-08	3.85E-08
	am243	1.29E-10	1.29E-10	1.29E-10	1.29E-10	1.29E-10	1.29E-10	1.29E-10
	cm241	8.45E-18	1.36E-20	2.19E-23	3.52E-26	5.66E-29	.00E+00	.00E+00
	cm242	6.41E-04	1.85E-04	5.96E-05	2.51E-05	1.56E-05	1.30E-05	1.22E-05
	cm243	8.38E-12	8.21E-12	8.05E-12	7.88E-12	7.73E-12	7.57E-12	7.42E-12
	cm244	3.49E-12	3.38E-12	3.28E-12	3.18E-12	3.08E-12	2.98E-12	2.89E-12
	cm245	9.03E-20	9.03E-20	9.03E-20	9.03E-20	9.03E-20	9.03E-20	9.03E-20
	cm246	1.15E-23	1.15E-23	1.15E-23	1.15E-23	1.15E-23	1.15E-23	1.15E-23
0	total	6.26E+04	6.23E+04	6.20E+04	6.17E+04	6.14E+04	6.11E+04	6.08E+04

1 page 76

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron source, neutrons/sec/basis
basis = single reactor assembly

		initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	th230	1.45E-04	1.47E-04	1.48E-04	1.49E-04	1.50E-04	1.51E-04	1.53E-04
	pa231	5.97E-05	6.02E-05	6.07E-05	6.12E-05	6.17E-05	6.22E-05	6.27E-05
	u232	6.20E-06	6.20E-06	6.19E-06	6.17E-06	6.14E-06	6.12E-06	6.08E-06
	u234	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01
	u235	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00
	u236	1.57E+02	1.57E+02	1.57E+02	1.57E+02	1.57E+02	1.57E+02	1.57E+02
	u237	1.22E-09	7.87E-19	7.56E-19	7.26E-19	6.98E-19	6.70E-19	6.44E-19
	u238	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05
	u239	9.66E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	np236	7.39E-10	7.39E-10	7.39E-10	7.39E-10	7.39E-10	7.39E-10	7.39E-10
	np238	2.02E-08	1.15E-20	1.15E-20	1.14E-20	1.14E-20	1.13E-20	1.13E-20
	np239	1.98E-05	1.33E-21	1.33E-21	1.33E-21	1.33E-21	1.33E-21	1.33E-21
	pu236	9.56E-03	7.84E-03	6.43E-03	5.27E-03	4.32E-03	3.54E-03	2.90E-03
	pu238	8.41E+03	8.36E+03	8.30E+03	8.25E+03	8.20E+03	8.14E+03	8.09E+03
	pu239	2.69E+00	2.69E+00	2.69E+00	2.69E+00	2.69E+00	2.69E+00	2.69E+00
	pu240	6.08E+01	6.08E+01	6.07E+01	6.07E+01	6.07E+01	6.07E+01	6.07E+01
	pu241	8.05E-07	7.73E-07	7.43E-07	7.14E-07	6.85E-07	6.58E-07	6.32E-07
	pu242	8.44E-06	8.44E-06	8.44E-06	8.44E-06	8.44E-06	8.44E-06	8.44E-06
	pu243	6.83E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	pu244	2.24E-38	2.43E-38	2.62E-38	2.81E-38	3.00E-38	3.20E-38	3.39E-38
	am241	2.53E-05	2.60E-05	2.66E-05	2.73E-05	2.79E-05	2.85E-05	2.90E-05
	am242m	1.88E-07	1.87E-07	1.86E-07	1.85E-07	1.85E-07	1.84E-07	1.83E-07
	am242	1.07E-08	2.03E-10	2.02E-10	2.01E-10	2.00E-10	2.00E-10	1.99E-10
	am243	5.93E-13	5.93E-13	5.93E-13	5.93E-13	5.92E-13	5.92E-13	5.92E-13
	am244	1.19E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	cm242	3.20E-03	9.25E-04	2.97E-04	1.25E-04	7.79E-05	6.48E-05	6.10E-05
	cm243	1.82E-13	1.78E-13	1.75E-13	1.71E-13	1.68E-13	1.64E-13	1.61E-13
	cm244	4.56E-10	4.41E-10	4.28E-10	4.14E-10	4.01E-10	3.89E-10	3.76E-10
	cm245	2.45E-20	2.45E-20	2.45E-20	2.45E-20	2.45E-20	2.45E-20	2.45E-20
	cm246	4.14E-19	4.14E-19	4.14E-19	4.14E-19	4.14E-19	4.14E-19	4.14E-19
	cm248	2.92E-29	2.92E-29	2.92E-29	2.92E-29	2.92E-29	2.92E-29	2.92E-29
	cf249	1.92E-39	1.92E-39	1.92E-39	1.92E-39	1.92E-39	1.92E-39	1.92E-39
0	total	1.26E+05	1.26E+05	1.26E+05	1.26E+05	1.26E+05	1.26E+05	1.26E+05

0	total	1.89E+05	1.88E+05	1.88E+05	1.88E+05	1.87E+05	1.87E+05	1.87E+05

1

alpha-n neutron source spectrum as a function of time
(using reaction spectra for uranium dioxide)

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
2	3.00E+00 - 6.43E+00	1.212E+04	1.206E+04	1.201E+04	1.195E+04	1.189E+04	1.184E+04	1.178E+04
3	1.85E+00 - 3.00E+00	3.434E+04	3.418E+04	3.401E+04	3.385E+04	3.369E+04	3.353E+04	3.337E+04
4	1.40E+00 - 1.85E+00	9.222E+03	9.179E+03	9.135E+03	9.092E+03	9.049E+03	9.006E+03	8.963E+03
5	9.00E-01 - 1.40E+00	5.187E+03	5.163E+03	5.139E+03	5.114E+03	5.090E+03	5.066E+03	5.042E+03
6	4.00E-01 - 9.00E-01	1.507E+03	1.500E+03	1.493E+03	1.486E+03	1.478E+03	1.471E+03	1.464E+03
7	1.00E-01 - 4.00E-01	2.355E+02	2.344E+02	2.333E+02	2.322E+02	2.311E+02	2.300E+02	2.289E+02
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		6.261E+04	6.232E+04	6.202E+04	6.172E+04	6.143E+04	6.114E+04	6.085E+04

1

spontaneous fission neutron source spectrum as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	2.406E+03	2.405E+03	2.404E+03	2.403E+03	2.402E+03	2.401E+03	2.400E+03
2	3.00E+00 - 6.43E+00	2.637E+04	2.636E+04	2.635E+04	2.634E+04	2.633E+04	2.632E+04	2.631E+04
3	1.85E+00 - 3.00E+00	2.874E+04	2.873E+04	2.872E+04	2.870E+04	2.869E+04	2.868E+04	2.867E+04
4	1.40E+00 - 1.85E+00	1.629E+04	1.628E+04	1.627E+04	1.627E+04	1.626E+04	1.625E+04	1.625E+04
5	9.00E-01 - 1.40E+00	2.235E+04	2.235E+04	2.234E+04	2.233E+04	2.232E+04	2.231E+04	2.230E+04
6	4.00E-01 - 9.00E-01	2.491E+04	2.490E+04	2.489E+04	2.488E+04	2.487E+04	2.486E+04	2.485E+04
7	1.00E-01 - 4.00E-01	4.918E+03	4.916E+03	4.914E+03	4.912E+03	4.910E+03	4.907E+03	4.905E+03
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00

12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		1.260E+05	1.259E+05	1.259E+05	1.258E+05	1.258E+05	1.257E+05	1.257E+05
1								

total (alpha-n plus spon. fission) neutron source spectrum as a function of time
(using reaction spectra for uranium dioxide)

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
neutron spectra, neutrons/sec/basis
basis = single reactor assembly

boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1 6.43E+00 - 2.00E+01	2.406E+03	2.405E+03	2.404E+03	2.403E+03	2.402E+03	2.401E+03	2.400E+03
2 3.00E+00 - 6.43E+00	3.850E+04	3.843E+04	3.836E+04	3.829E+04	3.822E+04	3.815E+04	3.809E+04
3 1.85E+00 - 3.00E+00	6.308E+04	6.290E+04	6.273E+04	6.256E+04	6.238E+04	6.221E+04	6.204E+04
4 1.40E+00 - 1.85E+00	2.551E+04	2.546E+04	2.541E+04	2.536E+04	2.531E+04	2.526E+04	2.521E+04
5 9.00E-01 - 1.40E+00	2.754E+04	2.751E+04	2.747E+04	2.744E+04	2.741E+04	2.737E+04	2.734E+04
6 4.00E-01 - 9.00E-01	2.642E+04	2.640E+04	2.638E+04	2.636E+04	2.635E+04	2.633E+04	2.631E+04
7 1.00E-01 - 4.00E-01	5.154E+03	5.150E+03	5.147E+03	5.144E+03	5.141E+03	5.137E+03	5.134E+03
8 1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9 3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10 5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11 1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12 3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13 1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14 3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15 1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16 1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17 1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18 1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19 8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20 4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21 3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22 2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23 1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24 5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25 3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26 1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27 1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0	1.886E+05	1.883E+05	1.879E+05	1.876E+05	1.872E+05	1.869E+05	1.865E+05
1							

1 * gamma sources determined *
0case applies the following photon data base
master photon library
in binary mode

0 the sources include photons of nuclides for...

light elements
actinides
fission products

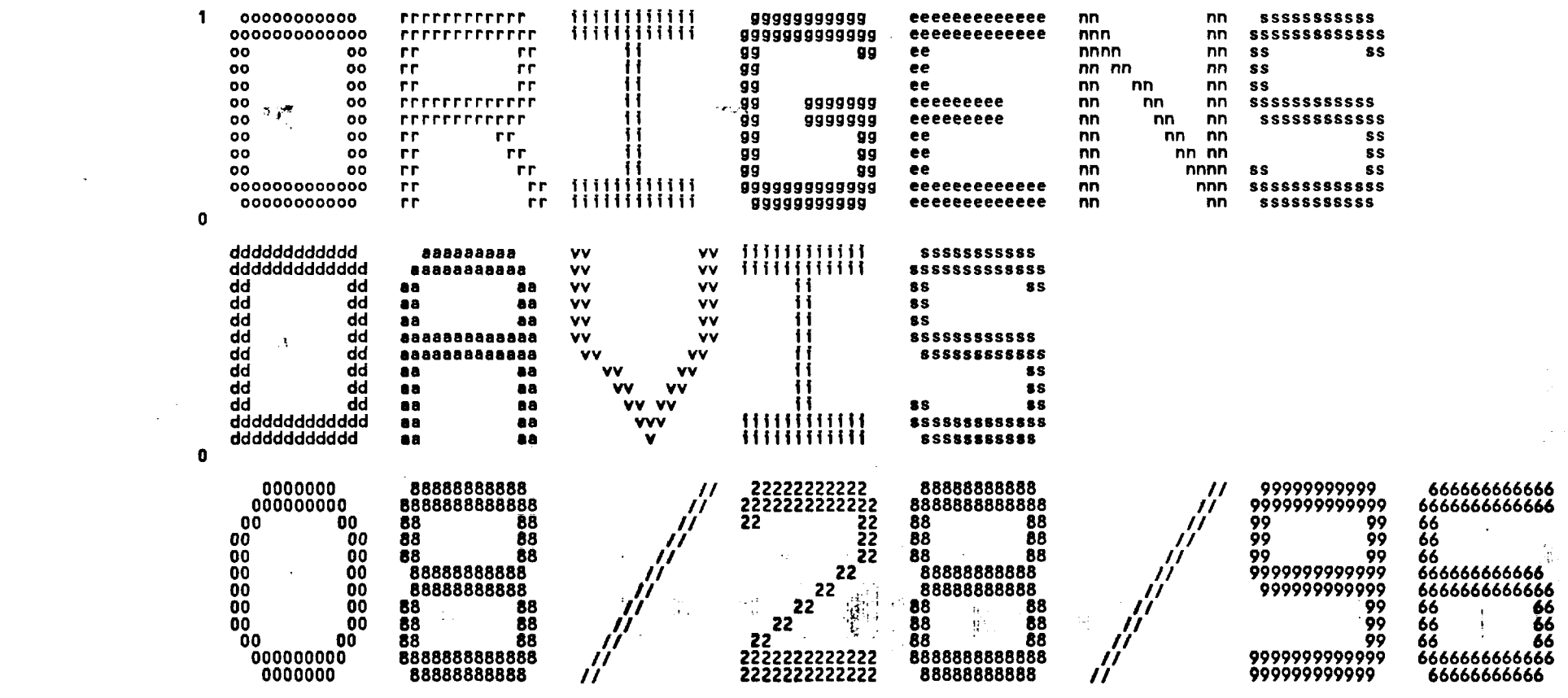
1 gamma source spectrum for gamma lines (sas2)
0 1826.25 day time of the requested nuclides
0

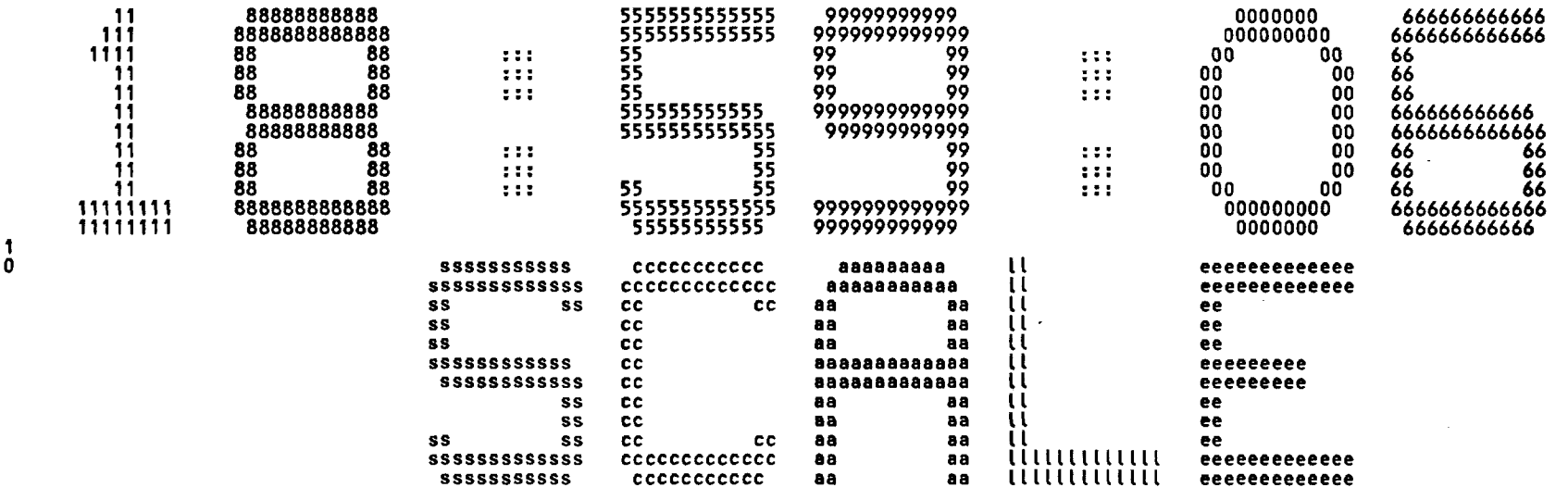
energy interval in mev			photons / second	mev / second
1.0000E-02	to	5.0000E-02	3.8302E+12	1.1491E+11
5.0000E-02	to	1.0000E-01	1.2026E+12	9.0196E+10
1.0000E-01	to	2.0000E-01	7.3628E+11	1.1044E+11
2.0000E-01	to	3.0000E-01	2.3336E+11	5.8341E+10
3.0000E-01	to	4.0000E-01	2.5637E+11	8.9730E+10
4.0000E-01	to	6.0000E-01	1.2042E+11	6.0208E+10
6.0000E-01	to	8.0000E-01	5.1131E+12	3.5792E+12
8.0000E-01	to	1.0000E+00	2.1239E+10	1.9115E+10
1.0000E+00	to	1.3300E+00	1.2983E+10	1.5125E+10
1.3300E+00	to	1.6600E+00	2.8176E+09	4.2123E+09
1.6600E+00	to	2.0000E+00	5.5369E+08	1.0133E+09
2.0000E+00	to	2.5000E+00	6.7003E+08	1.5076E+09
2.5000E+00	to	3.0000E+00	6.4986E+06	1.7871E+07
3.0000E+00	to	4.0000E+00	5.6448E+05	1.9757E+06
4.0000E+00	to	5.0000E+00	5.7240E+03	2.5758E+04
5.0000E+00	to	6.5000E+00	2.2820E+03	1.3122E+04
6.5000E+00	to	8.0000E+00	4.4500E+02	3.2262E+03
8.0000E+00	to	1.0000E+01	9.4093E+01	8.4683E+02
totals			1.1531E+13	4.1440E+12

0
0 total energy from nuclides with spectrum data = 4.1440E+12
0 total energy from nuclides with no spectrum data = 5.5050E+05
1
0 .results on logical unit no. 71, position 2, for time step 6, subcase 7. (run position 1, case position 2)
title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
0 .terminated logical unit no. 71 with zero flag record.
1 * normal termination of execution *

```
1          primary module access and input record ( scale driver - 95/03/29 - 09:06:37 )
-    module sas2h     will be called
       SAS2H: Far-Field Crit based on B&W 15x15, 3.00wt%, 20gwd/mtu 40% H2O/ 8% UO2
       44group     latticecell
       '
       '  mixtures of tuff infinite slabs:
       arbm-ftuff  2.6344 14 0 0 0 1001 1.055 8016 40.755 11023 0.570 12000 0.354
                                13027 4.434 14000 20.193 19000 1.370 20000 1.439
                                26000 0.494 92235 0.567 92234 0.007 92236 0.136
                                92238 28.593 93237 0.033 1 1.0 538    end
       kr-83      1 0 1-20 538 end
       kr-85      1 0 1-20 538 end
       sr-90      1 0 1-20 538 end
        y-89      1 0 1-20 538 end
       mo-95      1 0 1-20 538 end
       zr-93      1 0 1-20 538 end
       zr-94      1 0 1-20 538 end
       zr-95      1 0 1-20 538 end
       nb-94      1 0 1-20 538 end
       tc-99      1 0 1-20 538 end
       rh-103     1 0 1-20 538 end
       rh-105     1 0 1-20 538 end
       ru-101     1 0 1-20 538 end
       ru-106     1 0 1-20 538 end
       pd-105     1 0 1-20 538 end
       pd-108     1 0 1-20 538 end
       ag-109     1 0 1-20 538 end
       sb-124     1 0 1-20 538 end
       xe-131     1 0 1-20 538 end
       xe-132     1 0 1-20 538 end
       xe-135     1 0 1-20 538 end
       xe-136     1 0 1-20 538 end
       cs-134     1 0 1-20 538 end
       cs-135     1 0 1-20 538 end
       cs-137     1 0 1-20 538 end
       ba-136     1 0 1-20 538 end
       la-139     1 0 1-20 538 end
       pr-141     1 0 1-20 538 end
       pr-143     1 0 1-20 538 end
       ce-144     1 0 1-20 538 end
       nd-143     1 0 1-20 538 end
       nd-145     1 0 1-20 538 end
       pm-147     1 0 1-20 538 end
       pm-148     1 0 1-20 538 end
       nd-147     1 0 1-20 538 end
       sm-147     1 0 1-20 538 end
       sm-149     1 0 1-20 538 end
       sm-150     1 0 1-20 538 end
       sm-151     1 0 1-20 538 end
       sm-152     1 0 1-20 538 end
       gd-155     1 0 1-20 538 end
       eu-153     1 0 1-20 538 end
       eu-154     1 0 1-20 538 end
       eu-155     1 0 1-20 538 end
       arbm-tuff1  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                                13027 6.130 14000 27.919 19000 1.894 20000 1.989
                                26000 0.683 2 1.0 323.    end
       arbm-tuff2  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                                13027 6.130 14000 27.919 19000 1.894 20000 1.989
                                26000 0.683 3 1.0 323.    end
```

```
'
' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
end comp
'
' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
'
'  fuel-pin-cell geometry:
'
symmslabcell  340.  280. 1 3 281. 2 end
'
' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
'
'
'  assembly and cycle parameters:
'
npin/assm=1 fuelngth=280. ncycles=1 nlib/cyc=10 volfueltot=1.1494E7
printlevel=6 inplevel=0 end
power=0.004 burn=3.6525e5 down=1.82625e3
   end
```




SCALE
program verification information
code system: scale version: 4.3
program: o0o004
creation date: 03/13/96
library: /usr1/ornl/Scale/bin
test code: origens
version: 3.0
jobname: davis
date of execution: 08/28/96
time of execution: 18:59:06

```
                        *****                                                                  *****
                        *****                                                                  *****
                        ******************************************************************************
                        ******************************************************************************
                        ******************************************************************************
1
0       -1q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0         dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0             short-lived split test fraction, qxn =    9.1188E-04
0             half-norm of matrix used, axn =    7.0000E+00
0             4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
0        1q array has     20 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        4q array has      1 entries.
0       54q array has     12 entries.
1library information...

         cross-section data taken from position number  1 of library on unit 33.

         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         ******************************************************************************
         *                                                                            *
         *            prelim lwr origen-s binary working library--id = 1143           *
         *         made from modified card-image origen-s libraries of scale 4.2      *
         *      data from the light element, actinide, and fission product libraries  *
         *        decay data, including gamma and total energy, are from endf/b-vi    *
         *                                                                            *
         *      neutron flux spectrum factors and cross sections were produced from   *
         *     the "presas2" case updating all nuclides on the scale "burnup" library *
         *                                                                            *
         *                  fission product yields are from endf/b-v                  *
         *                                                                            *
         *              photon libraries use an 18-energy-group structure             *
         *             the photon data are from the master photon data base,          *
         *              produced to include bremsstrahlung from uo2 matrix            *
         *                                                                            *
         *        see information above this box (if present) for later updates       *
         *                                                                            *
         ******************************************************************************
         *                                                                            *
```

```
0       ********************************************************************************
0                .other identification and sizes of library.
0                 data set name:  ft33f001
0              8/28/1996    date library was produced
0                   1697    total number of nuclides in library
                     689    number of light-element nuclides
                     129    number of actinide nuclides
                     879    number of fission product nuclides
0                   7993    number of nonzero off-diagonal matrix elements
0       ********************************************************************************
1
    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2          light elements          page    1
0                                       nuclide concentrations, grams
                                        basis =single reactor assembly
             initial  1E-18 d
    na 23   1.73E+05  1.73E+05
    al 27   1.35E+06  1.35E+06
 total      1.52E+06  1.52E+06
1
    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              actinides          page    2
0                                       nuclide concentrations, grams
                                        basis =single reactor assembly
             initial  1E-18 d
     u234   2.12E+03  2.12E+03
     u235   1.72E+05  1.72E+05
     u236   4.12E+04  4.12E+04
     u238   8.66E+06  8.66E+06
    np237   9.99E+03  9.99E+03
 total      8.88E+06  8.88E+06
1   sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                  page    3
       power=    .00mw, burnup=    146.mwd, flux= 3.00E+08n/cm**2-sec
0                                       basis =
0   (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                 initial      9131.3 d     18262.5 d     27393.8 d     36525.0 d     36525.1 d
    productions 1.023114E+06  1.023298E+06  1.023481E+06  1.023664E+06  1.023847E+06  1.023847E+06
    absorptions 8.461686E+05  8.464511E+05  8.467263E+05  8.469958E+05  8.472601E+05  8.472601E+05
    k infinity  1.209113E+00  1.208927E+00  1.208751E+00  1.208582E+00  1.208421E+00  1.208421E+00
0                 initial      9131.3 d     18262.5 d     27393.8 d     36525.0 d     36525.1 d
    actinide
    absorptions 8.424028E+05  8.425110E+05  8.426190E+05  8.427266E+05  8.428336E+05  8.428336E+05
    non-actinide
    abs. fracs. 4.450440E-03  4.654825E-03  4.850745E-03  5.040407E-03  5.224466E-03  5.224407E-03
1   sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2           fission products       page    4
0                               fraction of total absorption rate
       power=    .00mw, burnup=    146.mwd, flux= 3.00E+08n/cm**2-sec
0            initial  9131.3 d 18262.5 d 27393.8 d 36525.0 d 36525.1 d

    sm149     .00E+00  1.79E-04  3.52E-04  5.20E-04  6.81E-04  6.81E-04
    sm151     .00E+00  6.99E-06  1.27E-05  1.75E-05  2.13E-05  2.13E-05
    nd143     .00E+00  3.65E-06  7.30E-06  1.09E-05  1.46E-05  1.46E-05
    gd155     .00E+00  1.80E-06  4.20E-06  6.58E-06  8.93E-06  8.93E-06
    rh103     .00E+00  1.72E-06  3.45E-06  5.18E-06  6.91E-06  6.91E-06
    eu151     .00E+00  5.14E-07  1.93E-06  4.09E-06  6.84E-06  6.84E-06
    gd157     .00E+00  1.83E-06  3.56E-06  5.22E-06  6.79E-06  6.79E-06
    cd113     .00E+00  1.58E-06  3.12E-06  4.64E-06  6.13E-06  6.13E-06
    xe131     .00E+00  1.18E-06  2.37E-06  3.55E-06  4.73E-06  4.73E-06
    cs133     .00E+00  9.18E-07  1.84E-06  2.76E-06  3.67E-06  3.67E-06
    tc 99     .00E+00  6.79E-07  1.36E-06  2.04E-06  2.71E-06  2.71E-06
    sm147     .00E+00  5.79E-07  1.26E-06  1.95E-06  2.63E-06  2.63E-06
    xe135     .00E+00  2.28E-06  2.28E-06  2.28E-06  2.28E-06  2.24E-06
```

nd145	.00E+00	5.21E-07	1.04E-06	1.56E-06	2.08E-06	2.08E-06
mo 95	.00E+00	3.57E-07	7.19E-07	1.08E-06	1.44E-06	1.44E-06
sm152	.00E+00	2.78E-07	5.57E-07	8.37E-07	1.12E-06	1.12E-06
kr 83	.00E+00	2.23E-07	4.45E-07	6.67E-07	8.89E-07	8.89E-07
cs135	.00E+00	2.06E-07	4.12E-07	6.18E-07	8.24E-07	8.24E-07
ru101	.00E+00	1.62E-07	3.25E-07	4.87E-07	6.49E-07	6.49E-07
pr141	.00E+00	1.51E-07	3.03E-07	4.55E-07	6.07E-07	6.07E-07
eu153	.00E+00	1.39E-07	2.79E-07	4.18E-07	5.57E-07	5.57E-07
la139	.00E+00	1.24E-07	2.48E-07	3.72E-07	4.96E-07	4.96E-07
pm147	.00E+00	2.74E-07	2.75E-07	2.74E-07	2.74E-07	2.74E-07
pd105	.00E+00	5.33E-08	1.07E-07	1.60E-07	2.13E-07	2.13E-07
zr 93	.00E+00	5.14E-08	1.03E-07	1.54E-07	2.05E-07	2.05E-07
eu155	.00E+00	1.55E-07	1.59E-07	1.60E-07	1.60E-07	1.60E-07
i129	.00E+00	3.83E-08	7.66E-08	1.15E-07	1.53E-07	1.53E-07
nd144	.00E+00	3.54E-08	7.25E-08	1.10E-07	1.47E-07	1.47E-07
ba137	.00E+00	1.42E-08	4.80E-08	9.28E-08	1.44E-07	1.44E-07
mo 97	.00E+00	2.82E-08	5.64E-08	8.46E-08	1.13E-07	1.13E-07
ag109	.00E+00	2.03E-08	4.08E-08	6.17E-08	8.29E-08	8.29E-08
sm150	.00E+00	4.77E-09	1.88E-08	4.19E-08	7.36E-08	7.36E-08
zr 91	.00E+00	1.32E-08	2.64E-08	3.97E-08	5.29E-08	5.29E-08
y 89	.00E+00	1.26E-08	2.53E-08	3.80E-08	5.06E-08	5.06E-08
ru102	.00E+00	1.14E-08	2.29E-08	3.43E-08	4.57E-08	4.57E-08
ce142	.00E+00	1.03E-08	2.05E-08	3.08E-08	4.10E-08	4.10E-08
nd148	.00E+00	9.97E-09	1.99E-08	2.99E-08	3.98E-08	3.98E-08
nd146	.00E+00	8.31E-09	1.66E-08	2.49E-08	3.32E-08	3.32E-08
ba138	.00E+00	7.07E-09	1.41E-08	2.12E-08	2.83E-08	2.83E-08
pd108	.00E+00	6.90E-09	1.39E-08	2.09E-08	2.79E-08	2.79E-08
in115	.00E+00	6.91E-09	1.38E-08	2.07E-08	2.77E-08	2.77E-08
ce140	.00E+00	6.61E-09	1.32E-08	1.98E-08	2.65E-08	2.65E-08
xe132	.00E+00	6.04E-09	1.21E-08	1.81E-08	2.42E-08	2.42E-08
mo 98	.00E+00	4.23E-09	8.46E-09	1.27E-08	1.69E-08	1.69E-08
mo100	.00E+00	4.04E-09	8.09E-09	1.21E-08	1.62E-08	1.62E-08
pd107	.00E+00	3.99E-09	8.01E-09	1.20E-08	1.61E-08	1.61E-08
xe134	.00E+00	3.92E-09	7.84E-09	1.18E-08	1.57E-08	1.57E-08
sr 90	.00E+00	7.80E-09	1.20E-08	1.43E-08	1.55E-08	1.55E-08
zr 92	.00E+00	3.19E-09	6.38E-09	9.56E-09	1.27E-08	1.27E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 5
0 fraction of total absorption rate
power= .00mw, burnup= 146.mwd, flux= 3.00E+08n/cm**2-sec
0 initial 9131.3 d 18262.5 d 27393.8 d 36525.0 d 36525.1 d

i127	.00E+00	2.61E-09	5.23E-09	7.86E-09	1.05E-08	1.05E-08
zr 96	.00E+00	2.60E-09	5.21E-09	7.81E-09	1.04E-08	1.04E-08
ru104	.00E+00	2.48E-09	4.96E-09	7.45E-09	9.93E-09	9.93E-09
nd150	.00E+00	2.22E-09	4.44E-09	6.66E-09	8.87E-09	8.87E-09
xe136	.00E+00	2.12E-09	4.24E-09	6.36E-09	8.48E-09	8.48E-09
rh105	.00E+00	8.28E-09	8.29E-09	8.30E-09	8.31E-09	8.28E-09
br 81	.00E+00	1.61E-09	3.23E-09	4.84E-09	6.45E-09	6.45E-09
rb 85	.00E+00	1.41E-09	2.95E-09	4.51E-09	6.08E-09	6.08E-09
zr 94	.00E+00	1.38E-09	2.75E-09	4.13E-09	5.50E-09	5.50E-09
cd111	.00E+00	1.03E-09	2.06E-09	3.10E-09	4.14E-09	4.14E-09
te130	.00E+00	9.61E-10	1.92E-09	2.88E-09	3.84E-09	3.84E-09
sm154	.00E+00	9.38E-10	1.88E-09	2.81E-09	3.75E-09	3.75E-09
rb 87	.00E+00	9.12E-10	1.82E-09	2.73E-09	3.64E-09	3.64E-09
cs137	.00E+00	1.66E-09	2.59E-09	3.11E-09	3.41E-09	3.41E-09
zr 90	.00E+00	3.18E-10	1.07E-09	2.05E-09	3.15E-09	3.15E-09
pr143	.00E+00	2.66E-09	2.65E-09	2.65E-09	2.65E-09	2.65E-09
se 77	.00E+00	6.36E-10	1.27E-09	1.91E-09	2.54E-09	2.54E-09
xe133	.00E+00	1.99E-09	1.99E-09	1.99E-09	1.99E-09	1.99E-09
pd106	.00E+00	4.38E-10	9.04E-10	1.37E-09	1.84E-09	1.84E-09

kr 84	.00E+00	4.35E-10	8.69E-10	1.30E-09	1.74E-09	1.74E-09
ce141	.00E+00	1.58E-09	1.58E-09	1.57E-09	1.57E-09	1.57E-09
se 79	.00E+00	3.26E-10	6.52E-10	9.77E-10	1.30E-09	1.30E-09
eu152	.00E+00	4.41E-11	2.61E-10	6.77E-10	1.27E-09	1.27E-09
sb121	.00E+00	3.16E-10	6.32E-10	9.48E-10	1.27E-09	1.27E-09
sb123	.00E+00	2.57E-10	5.15E-10	7.73E-10	1.03E-09	1.03E-09
pm149	.00E+00	9.62E-10	9.62E-10	9.61E-10	9.61E-10	9.55E-10
kr 86	.00E+00	2.37E-10	4.73E-10	7.09E-10	9.45E-10	9.45E-10
nd147	.00E+00	9.44E-10	9.44E-10	9.43E-10	9.43E-10	9.39E-10
te128	.00E+00	2.13E-10	4.26E-10	6.40E-10	8.53E-10	8.53E-10
gd156	.00E+00	1.67E-10	3.41E-10	5.19E-10	7.04E-10	7.04E-10
se 80	.00E+00	1.52E-10	3.05E-10	4.57E-10	6.09E-10	6.09E-10
ce144	.00E+00	6.00E-10	5.99E-10	5.99E-10	5.99E-10	5.99E-10
kr 85	.00E+00	4.56E-10	5.46E-10	5.64E-10	5.67E-10	5.67E-10
dy161	.00E+00	1.33E-10	2.68E-10	4.05E-10	5.43E-10	5.43E-10
te125	.00E+00	1.14E-10	2.49E-10	3.84E-10	5.19E-10	5.19E-10
tb159	.00E+00	9.14E-11	1.83E-10	2.76E-10	3.68E-10	3.68E-10
ru103	.00E+00	3.56E-10	3.56E-10	3.56E-10	3.56E-10	3.56E-10
cd112	.00E+00	8.70E-11	1.74E-10	2.61E-10	3.49E-10	3.49E-10
li 6	.00E+00	8.64E-11	1.73E-10	2.59E-10	3.45E-10	3.45E-10
sn117	.00E+00	6.89E-11	1.38E-10	2.07E-10	2.76E-10	2.76E-10
eu154	.00E+00	4.64E-11	1.14E-10	1.85E-10	2.56E-10	2.56E-10
gd152	.00E+00	3.47E-12	2.91E-11	9.94E-11	2.34E-10	2.34E-10
sn119	.00E+00	5.64E-11	1.13E-10	1.69E-10	2.26E-10	2.26E-10
sn115	.00E+00	5.15E-11	1.03E-10	1.55E-10	2.06E-10	2.06E-10
sr 88	.00E+00	4.36E-11	8.71E-11	1.31E-10	1.74E-10	1.74E-10
zr 95	.00E+00	1.68E-10	1.68E-10	1.68E-10	1.68E-10	1.67E-10
nb 95	.00E+00	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10
y 91	.00E+00	1.42E-10	1.42E-10	1.42E-10	1.42E-10	1.42E-10
gd158	.00E+00	3.01E-11	6.33E-11	9.95E-11	1.39E-10	1.39E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 6
0 fraction of total absorption rate
power= .00mw, burnup= 146.mwd, flux= 3.00E+08n/cm**2-sec
0 initial 9131.3 d 18262.5 d 27393.8 d 36525.0 d 36525.1 d

cd114	.00E+00	3.12E-11	6.30E-11	9.55E-11	1.29E-10	1.29E-10
pd110	.00E+00	3.17E-11	6.35E-11	9.55E-11	1.28E-10	1.28E-10
se 82	.00E+00	2.95E-11	5.90E-11	8.85E-11	1.18E-10	1.18E-10
pm151	.00E+00	1.09E-10	1.09E-10	1.09E-10	1.09E-10	1.05E-10
sn126	.00E+00	2.35E-11	4.71E-11	7.07E-11	9.43E-11	9.43E-11
se 78	.00E+00	2.26E-11	4.51E-11	6.77E-11	9.02E-11	9.02E-11
ru 99	.00E+00	7.79E-12	2.43E-11	4.94E-11	8.32E-11	8.32E-11
sn124	.00E+00	1.84E-11	3.69E-11	5.53E-11	7.37E-11	7.37E-11
dy162	.00E+00	1.76E-11	3.57E-11	5.42E-11	7.32E-11	7.32E-11
dy164	.00E+00	1.59E-11	3.23E-11	4.92E-11	6.67E-11	6.67E-11
as 75	.00E+00	1.35E-11	2.69E-11	4.04E-11	5.38E-11	5.38E-11
ba140	.00E+00	4.72E-11	4.71E-11	4.71E-11	4.71E-11	4.69E-11
sm153	.00E+00	3.80E-11	3.80E-11	3.80E-11	3.80E-11	3.71E-11
eu156	.00E+00	3.39E-11	3.40E-11	3.41E-11	3.41E-11	3.41E-11
in113	.00E+00	4.30E-12	1.27E-11	2.24E-11	3.24E-11	3.24E-11
gd154	.00E+00	1.27E-12	6.56E-12	1.65E-11	3.11E-11	3.11E-11
sr 89	.00E+00	3.04E-11	3.03E-11	3.03E-11	3.03E-11	3.03E-11
sn118	.00E+00	7.57E-12	1.51E-11	2.27E-11	3.03E-11	3.03E-11
ba136	.00E+00	7.22E-12	1.45E-11	2.20E-11	2.95E-11	2.95E-11
cs134	.00E+00	7.33E-12	1.42E-11	2.11E-11	2.79E-11	2.79E-11
ru106	.00E+00	2.59E-11	2.59E-11	2.60E-11	2.61E-11	2.61E-11
cd116	.00E+00	6.38E-12	1.28E-11	1.91E-11	2.55E-11	2.55E-11
sn122	.00E+00	6.23E-12	1.25E-11	1.87E-11	2.49E-11	2.49E-11
sn120	.00E+00	4.69E-12	9.38E-12	1.41E-11	1.88E-11	1.88E-11
ce143	.00E+00	1.74E-11	1.74E-11	1.74E-11	1.74E-11	1.68E-11

kr 82	.00E+00	3.95E-12	7.99E-12	1.21E-11	1.64E-11	1.64E-11
dy163	.00E+00	3.89E-12	7.90E-12	1.20E-11	1.63E-11	1.63E-11
la140	.00E+00	1.54E-11	1.54E-11	1.54E-11	1.54E-11	1.54E-11
sb125	.00E+00	1.50E-11	1.50E-11	1.50E-11	1.50E-11	1.50E-11
y 90	.00E+00	7.40E-12	1.14E-11	1.36E-11	1.47E-11	1.47E-11
ge 73	.00E+00	3.64E-12	7.28E-12	1.09E-11	1.46E-11	1.46E-11
ru100	.00E+00	1.08E-12	3.69E-12	7.80E-12	1.34E-11	1.34E-11
mo 99	.00E+00	1.32E-11	1.32E-11	1.32E-11	1.32E-11	1.29E-11
xe130	.00E+00	2.43E-12	4.97E-12	7.62E-12	1.04E-11	1.04E-11
pm148m	.00E+00	9.61E-12	9.62E-12	9.62E-12	9.61E-12	9.60E-12
mo 96	.00E+00	1.82E-12	3.88E-12	6.16E-12	8.69E-12	8.69E-12
sm148	.00E+00	6.76E-13	2.34E-12	4.95E-12	8.51E-12	8.51E-12
nd142	.00E+00	5.22E-13	2.09E-12	4.69E-12	8.34E-12	8.34E-12
kr 87	.00E+00	2.26E-11	2.26E-11	2.26E-11	2.26E-11	8.33E-12
ba134	.00E+00	5.15E-13	2.07E-12	4.66E-12	8.28E-12	8.28E-12
te127m	.00E+00	7.36E-12	7.37E-12	7.38E-12	7.38E-12	7.38E-12
i131	.00E+00	6.77E-12	6.76E-12	6.76E-12	6.76E-12	6.74E-12
ba135	.00E+00	4.30E-13	1.69E-12	3.77E-12	6.67E-12	6.67E-12
pd104	.00E+00	3.55E-13	1.42E-12	3.21E-12	5.70E-12	5.70E-12
ge 76	.00E+00	1.33E-12	2.66E-12	3.99E-12	5.32E-12	5.32E-12
gd160	.00E+00	8.47E-13	1.70E-12	2.56E-12	3.43E-12	3.43E-12
te126	.00E+00	6.57E-13	1.34E-12	2.04E-12	2.77E-12	2.77E-12
te129m	.00E+00	1.78E-12	1.78E-12	1.78E-12	1.78E-12	1.78E-12
ho165	.00E+00	2.67E-13	5.43E-13	8.28E-13	1.12E-12	1.12E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 7
0 fraction of total absorption rate
power= .00mw, burnup= 146.mwd, flux= 3.00E+08n/cm**2-sec
0 initial 9131.3 d 18262.5 d 27393.8 d 36525.0 d 36525.1 d

cd110	.00E+00	5.15E-14	1.96E-13	4.36E-13	7.71E-13	7.71E-13
nb 93	.00E+00	1.88E-14	1.21E-13	3.39E-13	6.85E-13	6.85E-13
te124	.00E+00	1.52E-13	3.07E-13	4.63E-13	6.19E-13	6.19E-13
sr 87	.00E+00	1.52E-13	3.04E-13	4.56E-13	6.08E-13	6.08E-13
br 79	.00E+00	3.38E-14	1.35E-13	3.03E-13	5.38E-13	5.38E-13
pm148	.00E+00	3.84E-13	3.84E-13	3.84E-13	3.84E-13	3.81E-13
nb 94	.00E+00	8.77E-14	1.75E-13	2.63E-13	3.51E-13	3.51E-13
ag111	.00E+00	3.22E-13	3.23E-13	3.24E-13	3.26E-13	3.24E-13
xe129	.00E+00	1.91E-14	7.62E-14	1.71E-13	3.05E-13	3.05E-13
ge 74	.00E+00	7.33E-14	1.46E-13	2.20E-13	2.93E-13	2.93E-13
ag107	.00E+00	1.77E-14	7.10E-14	1.60E-13	2.85E-13	2.85E-13
eu157	.00E+00	2.96E-13	2.97E-13	2.98E-13	2.99E-13	2.77E-13
cd115m	.00E+00	2.36E-13	2.36E-13	2.36E-13	2.36E-13	2.36E-13
ge 72	.00E+00	4.91E-14	9.83E-14	1.48E-13	1.97E-13	1.97E-13
sr 86	.00E+00	4.35E-14	8.89E-14	1.36E-13	1.85E-13	1.85E-13
se 76	.00E+00	2.86E-14	5.77E-14	8.72E-14	1.17E-13	1.17E-13
dy160	.00E+00	8.02E-15	2.10E-14	3.90E-14	6.20E-14	6.20E-14
cs136	.00E+00	5.66E-14	5.73E-14	5.80E-14	5.87E-14	5.85E-14
xe128	.00E+00	8.66E-15	2.10E-14	3.71E-14	5.69E-14	5.69E-14
er166	.00E+00	7.11E-15	1.48E-14	2.31E-14	3.20E-14	3.20E-14
sn125	.00E+00	2.94E-14	2.94E-14	2.94E-14	2.94E-14	2.93E-14
ru105	.00E+00	3.01E-14	3.01E-14	3.01E-14	3.02E-14	2.33E-14
sn116	.00E+00	8.29E-16	3.16E-15	7.01E-15	1.24E-14	1.24E-14
sn123	.00E+00	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14
te132	.00E+00	9.49E-15	9.49E-15	9.49E-15	9.48E-15	9.33E-15
rb 88	.00E+00	1.27E-14	1.27E-14	1.27E-14	1.27E-14	8.83E-15
kr 80	.00E+00	2.07E-15	4.15E-15	6.24E-15	8.35E-15	8.35E-15
i135	.00E+00	1.00E-14	1.00E-14	1.00E-14	1.00E-14	8.23E-15
te122	.00E+00	5.79E-16	1.78E-15	3.59E-15	6.03E-15	6.03E-15
sb126	.00E+00	3.03E-15	3.07E-15	3.11E-15	3.16E-15	3.14E-15
sb124	.00E+00	2.11E-15	2.13E-15	2.14E-15	2.15E-15	2.15E-15

in117m	.00E+00	2.07E-15	2.07E-15	2.07E-15	2.07E-15	1.84E-15
tb160	.00E+00	5.53E-16	8.12E-16	1.07E-15	1.33E-15	1.33E-15
te134	.00E+00	5.77E-15	5.77E-15	5.77E-15	5.76E-15	9.16E-16
i130	.00E+00	7.42E-16	7.74E-16	8.06E-16	8.38E-16	7.58E-16
be 9	.00E+00	1.71E-16	3.42E-16	5.12E-16	6.83E-16	6.83E-16
pr142	.00E+00	1.73E-16	3.46E-16	5.19E-16	6.92E-16	6.47E-16
te123	.00E+00	1.47E-16	3.00E-16	4.56E-16	6.15E-16	6.15E-16
in117	.00E+00	6.08E-16	6.08E-16	6.09E-16	6.10E-16	5.46E-16
rb 86	.00E+00	2.48E-16	2.59E-16	2.69E-16	2.79E-16	2.78E-16
li 7	.00E+00	6.66E-17	1.33E-16	2.00E-16	2.66E-16	2.66E-16
er167	.00E+00	3.10E-17	7.07E-17	1.20E-16	1.78E-16	1.78E-16
dy165	.00E+00	2.15E-16	2.22E-16	2.29E-16	2.35E-16	1.39E-16
ge 75	.00E+00	8.51E-17	8.51E-17	8.50E-17	8.50E-17	3.45E-17
cd118	.00E+00	1.19E-16	1.19E-16	1.19E-16	1.19E-16	2.59E-17
cd108	.00E+00	1.44E-18	3.07E-18	4.91E-18	6.96E-18	6.96E-18
cs134m	.00E+00	1.28E-18	2.56E-18	3.84E-18	5.12E-18	3.30E-18
sn114	.00E+00	7.65E-20	3.92E-19	1.03E-18	2.02E-18	2.02E-18
in119m	.00E+00	2.97E-17	2.97E-17	2.97E-17	2.97E-17	4.89E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 8
0 fraction of total absorption rate
power= .00mw, burnup= 146.mwd, flux= 3.00E+08n/cm**2-sec
0 initial 9131.3 d 18262.5 d 27393.8 d 36525.0 d 36525.1 d

cd109	.00E+00	2.26E-19	2.69E-19	3.12E-19	3.59E-19	3.59E-19
in119	.00E+00	2.32E-18	2.32E-18	2.33E-18	2.33E-18	3.32E-21

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 9
power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 3.00E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	9131.3 d	18262.5 d	27393.8 d	36525.0 d	36525.1 d
h 1	.00E+00	2.20E-06	4.41E-06	6.61E-06	8.81E-06	8.81E-06
h 2	.00E+00	6.53E-09	1.31E-08	1.96E-08	2.61E-08	2.61E-08
h 3	.00E+00	2.57E-11	3.21E-11	3.37E-11	3.41E-11	3.41E-11
h 4	.00E+00	1.04E-34	1.30E-34	1.36E-34	1.38E-34	.00E+00
he 3	.00E+00	2.22E-11	6.37E-11	1.10E-10	1.58E-10	1.58E-10
he 4	.00E+00	3.64E-07	7.28E-07	1.09E-06	1.46E-06	1.46E-06
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	.00E+00	4.37E-08	8.75E-08	1.31E-07	1.75E-07	1.75E-07
ne 21	.00E+00	3.95E-14	1.58E-13	3.55E-13	6.32E-13	6.32E-13
ne 22	.00E+00	2.42E-10	5.27E-10	8.12E-10	1.10E-09	1.10E-09
ne 23	.00E+00	7.29E-15	7.29E-15	7.29E-15	7.29E-15	7.29E-30
na 22	.00E+00	4.27E-11	4.28E-11	4.28E-11	4.28E-11	4.28E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	.00E+00	3.64E-08	3.64E-08	3.64E-08	3.64E-08	3.34E-08
na 24m	.00E+00	5.99E-15	5.99E-15	5.99E-15	5.99E-15	5.99E-30
na 25	.00E+00	1.56E-27	3.34E-27	5.35E-27	7.58E-27	7.59E-42
mg 24	.00E+00	3.78E-04	7.55E-04	1.13E-03	1.51E-03	1.51E-03
mg 25	.00E+00	5.17E-11	1.11E-10	1.78E-10	2.52E-10	2.52E-10
mg 26	.00E+00	6.53E-09	1.31E-08	1.96E-08	2.61E-08	2.61E-08
mg 27	.00E+00	2.18E-12	2.18E-12	2.18E-12	2.18E-12	6.43E-16
mg 28	.00E+00	4.42E-24	4.41E-24	4.41E-24	4.41E-24	4.15E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	.00E+00	2.70E-10	2.70E-10	2.70E-10	2.70E-10	6.11E-25
al 29	.00E+00	9.50E-27	3.80E-26	8.55E-26	1.52E-25	1.25E-30
al 30	.00E+00	4.37E-39	3.49E-38	1.18E-37	2.79E-37	.00E+00
si 28	.00E+00	1.10E-03	2.20E-03	3.30E-03	4.40E-03	4.40E-03
si 29	.00E+00	3.53E-11	1.41E-10	3.17E-10	5.64E-10	5.64E-10
si 30	.00E+00	1.21E-18	9.70E-18	3.27E-17	7.76E-17	7.76E-17
si 31	.00E+00	8.68E-31	6.95E-30	2.34E-29	5.55E-29	3.41E-29

si 32	.00E+00	3.76E-38	5.90E-37	2.93E-36	9.08E-36	9.08E-36
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		3.00E+08	3.00E+08	3.00E+08	3.00E+08	3.00E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 10
power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 3.00E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	9131.3 d	18262.5 d	27393.8 d	36525.0 d	36525.1 d
he 4	.00E+00	1.75E-03	4.36E-03	7.69E-03	1.16E-02	1.16E-02
pb206	.00E+00	4.36E-11	6.13E-10	2.75E-09	7.80E-09	7.80E-09
pb207	.00E+00	1.04E-09	7.07E-09	2.06E-08	4.27E-08	4.27E-08
pb208	.00E+00	5.82E-10	2.86E-09	6.86E-09	1.25E-08	1.25E-08
pb209	.00E+00	8.70E-16	3.48E-15	7.84E-15	1.39E-14	1.40E-14
pb210	.00E+00	2.20E-10	1.49E-09	4.32E-09	8.96E-09	8.96E-09
pb211	.00E+00	1.17E-14	3.77E-14	7.01E-14	1.05E-13	1.05E-13
pb212	.00E+00	1.04E-13	2.27E-13	3.47E-13	4.63E-13	4.63E-13
pb214	.00E+00	2.33E-15	9.28E-15	2.08E-14	3.68E-14	3.57E-14
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	1.35E-11	1.08E-10	3.66E-10	8.67E-10	8.67E-10
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	.00E+00	1.35E-13	9.16E-13	2.66E-12	5.51E-12	5.51E-12
bi211	.00E+00	6.93E-16	2.23E-15	4.15E-15	6.25E-15	6.29E-15
bi212	.00E+00	9.86E-15	2.15E-14	3.29E-14	4.40E-14	4.40E-14
bi213	.00E+00	2.03E-16	8.14E-16	1.83E-15	3.25E-15	3.16E-15
bi214	.00E+00	1.73E-15	6.89E-15	1.54E-14	2.74E-14	2.69E-14
po210	.00E+00	3.73E-12	2.53E-11	7.35E-11	1.52E-10	1.52E-10
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	.00E+00	7.66E-21	2.47E-20	4.59E-20	6.91E-20	6.95E-20
po212	.00E+00	5.18E-25	1.13E-24	1.73E-24	2.31E-24	2.31E-24
po213	.00E+00	3.06E-25	1.22E-24	2.75E-24	4.89E-24	4.75E-24
po214	.00E+00	2.38E-22	9.48E-22	2.13E-21	3.76E-21	3.71E-21
po215	.00E+00	9.61E-21	3.10E-20	5.76E-20	8.66E-20	8.66E-20
po216	.00E+00	3.94E-19	8.59E-19	1.31E-18	1.75E-18	1.76E-18
po218	.00E+00	2.69E-16	1.07E-15	2.41E-15	4.26E-15	4.27E-15
ra222	.00E+00	1.72E-27	3.73E-27	5.67E-27	7.56E-27	7.56E-27
ra223	.00E+00	5.33E-12	1.72E-11	3.20E-11	4.81E-11	4.81E-11
ra224	.00E+00	8.58E-13	1.87E-12	2.86E-12	3.83E-12	3.83E-12
ra225	.00E+00	9.50E-14	3.81E-13	8.56E-13	1.52E-12	1.52E-12
ra226	.00E+00	7.31E-08	2.91E-07	6.53E-07	1.16E-06	1.16E-06
ra228	.00E+00	3.62E-14	8.81E-14	1.41E-13	1.94E-13	1.94E-13
ac225	.00E+00	6.42E-14	2.57E-13	5.79E-13	1.03E-12	1.03E-12
ac227	.00E+00	3.71E-09	1.19E-08	2.22E-08	3.34E-08	3.34E-08
ac228	.00E+00	4.41E-18	1.08E-17	1.72E-17	2.36E-17	2.36E-17
th226	.00E+00	8.41E-26	1.82E-25	2.77E-25	3.69E-25	3.68E-25
th227	.00E+00	8.61E-12	2.77E-11	5.16E-11	7.76E-11	7.76E-11
th228	.00E+00	1.64E-10	3.58E-10	5.46E-10	7.31E-10	7.31E-10
th229	.00E+00	1.85E-08	7.40E-08	1.67E-07	2.96E-07	2.96E-07
th230	.00E+00	6.39E-04	1.28E-03	1.92E-03	2.55E-03	2.55E-03
th231	.00E+00	3.02E-09	3.03E-09	3.03E-09	3.03E-09	3.03E-09
th232	.00E+00	1.29E-04	2.58E-04	3.87E-04	5.16E-04	5.16E-04
th233	.00E+00	1.20E-15	2.39E-15	3.59E-15	4.78E-15	1.52E-16
th234	.00E+00	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	.00E+00	1.80E-05	3.60E-05	5.40E-05	7.19E-05	7.19E-05
pa232	.00E+00	3.09E-13	6.18E-13	9.27E-13	1.24E-12	1.19E-12
pa233	.00E+00	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	.00E+00	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	.00E+00	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 11
power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 3.00E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	9131.3 d	18262.5 d	27393.8 d	36525.0 d	36525.1 d
u230	.00E+00	8.16E-23	1.76E-22	2.68E-22	3.58E-22	3.57E-22
u231	.00E+00	2.72E-19	5.45E-19	8.17E-19	1.09E-18	1.08E-18
u232	.00E+00	5.98E-09	1.29E-08	1.96E-08	2.62E-08	2.62E-08
u233	.00E+00	3.40E-04	6.81E-04	1.02E-03	1.36E-03	1.36E-03
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.74E+02	1.74E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	.00E+00	3.24E-06	3.24E-06	3.24E-06	3.24E-06	3.21E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	.00E+00	3.29E-07	3.29E-07	3.29E-07	3.29E-07	1.24E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	9.08E-12	9.08E-12	9.08E-12	9.08E-12	9.08E-12
np236m	.00E+00	2.16E-12	2.16E-12	2.16E-12	2.16E-12	2.04E-12
np236	.00E+00	5.12E-09	1.02E-08	1.54E-08	2.05E-08	2.05E-08
np237	4.22E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	.00E+00	1.58E-06	1.58E-06	1.58E-06	1.58E-06	1.54E-06
np239	.00E+00	4.75E-05	4.75E-05	4.75E-05	4.75E-05	4.67E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	.00E+00	9.74E-15	9.74E-15	9.74E-15	9.73E-15	2.81E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	.00E+00	1.17E-09	1.17E-09	1.17E-09	1.17E-09	1.17E-09
pu237	.00E+00	4.46E-14	8.15E-14	1.12E-13	1.37E-13	1.37E-13
pu238	.00E+00	4.28E-03	7.80E-03	1.07E-02	1.30E-02	1.30E-02
pu239	.00E+00	1.28E-01	2.55E-01	3.82E-01	5.09E-01	5.09E-01
pu240	.00E+00	1.57E-05	6.26E-05	1.41E-04	2.50E-04	2.50E-04
pu241	.00E+00	2.04E-09	1.29E-08	3.57E-08	7.14E-08	7.14E-08
pu242	.00E+00	1.13E-13	1.59E-12	7.29E-12	2.12E-11	2.12E-11
pu243	.00E+00	2.47E-22	3.50E-21	1.60E-20	4.65E-20	3.59E-20
pu244	.00E+00	.00E+00	.00E+00	2.80E-45	5.75E-44	5.75E-44
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	1.85E-25	2.42E-24	1.03E-23	2.78E-23	2.49E-23
am240	.00E+00	8.49E-23	1.11E-21	4.71E-21	1.27E-20	1.24E-20
am241	.00E+00	6.44E-10	8.43E-09	3.57E-08	9.66E-08	9.66E-08
am242m	.00E+00	8.43E-15	2.22E-13	1.41E-12	5.08E-12	5.08E-12
am242	.00E+00	2.27E-17	2.99E-16	1.27E-15	3.46E-15	3.20E-15
am243	.00E+00	2.54E-18	9.78E-17	8.28E-16	3.74E-15	3.74E-15
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	2.00E-26	7.70E-25	6.52E-24	2.94E-23	2.59E-23
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		3.00E+08	3.00E+08	3.00E+08	3.00E+08	3.00E-07

0 1q array has 20 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 4q array has 1 entries.
0 54q array has 12 entries.
1library information...

cross-section data taken from position number 2 of library on unit 33.

pass 1

```
        pass   0
        *scale-system control module sas2 library*
        used a time-dependent neutron spectrum, for each of the above passes
          pass 0 applies start-up fuel densiities
          pass n applies mid time densities of nth library interval
        first library updated was...
        pass   1
        pass   0
        *scale-system control module sas2 library*
        used a time-dependent neutron spectrum, for each of the above passes
          pass 0 applies start-up fuel densiities
          pass n applies mid time densities of nth library interval
        first library updated was...
        ******************************************************************************
        *                                                                            *
        *            prelim lwr origen-s binary working library--id = 1143            *
        *         made from modified card-image origen-s libraries of scale 4.2       *
        *      data from the light element, actinide, and fission product libraries   *
        *        decay data, including gamma and total energy, are from endf/b-vi     *
        *                                                                            *
        *      neutron flux spectrum factors and cross sections were produced from    *
        *     the "presas2" case updating all nuclides on the scale "burnup" library  *
        *                                                                            *
        *                  fission product yields are from endf/b-v                  *
        *                                                                            *
        *              photon libraries use an 18-energy-group structure             *
        *             the photon data are from the master photon data base,          *
        *              produced to include bremsstrahlung from uo2 matrix            *
        *                                                                            *
        *        see information above this box (if present) for later updates       *
        *                                                                            *
        ******************************************************************************
        *                                                                            *
0       ******************************************************************************
0                 .other identification and sizes of library.
0                  data set name:  ft33f001
0               8/28/1996    date library was produced
0                    1697    total number of nuclides in library
                      689    number of light-element nuclides
                      129    number of actinide nuclides
                      879    number of fission product nuclides
0                    7993    number of nonzero off-diagonal matrix elements
0       ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   12
        power=    .00mw, burnup=    292.mwd, flux= 2.81E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                  initial      45656.3 d      54787.6 d      63918.8 d      73050.1 d      73050.2 d
     productions  1.091229E+06  1.091412E+06  1.091594E+06  1.091776E+06  1.091958E+06  1.091958E+06
     absorptions  8.948173E+05  8.950878E+05  8.953530E+05  8.956128E+05  8.958677E+05  8.958677E+05
     k infinity   1.219499E+00  1.219335E+00  1.219177E+00  1.219027E+00  1.218883E+00  1.218883E+00
0                  initial      45656.3 d      54787.6 d      63918.8 d      73050.1 d      73050.2 d
     actinide
     absorptions  8.907244E+05  8.908325E+05  8.909400E+05  8.910474E+05  8.911544E+05  8.911544E+05
     non-actinide
     abs. fracs.  4.573882E-03  4.754007E-03  4.928768E-03  5.097508E-03  5.261123E-03  5.261123E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products    page   13
0                                 fraction of total absorption rate
        power=    .00mw, burnup=    292.mwd, flux= 2.81E+08n/cm**2-sec
0              initial 45656.3 d 54787.6 d 63918.8 d 73050.1 d 73050.2 d
```

sm149	6.90E-04	8.48E-04	1.00E-03	1.15E-03	1.29E-03	1.29E-03
sm151	2.16E-05	2.48E-05	2.75E-05	2.97E-05	3.14E-05	3.14E-05
nd143	1.47E-05	1.84E-05	2.21E-05	2.58E-05	2.95E-05	2.95E-05
eu151	6.92E-06	1.02E-05	1.39E-05	1.79E-05	2.22E-05	2.22E-05
gd155	9.06E-06	1.14E-05	1.37E-05	1.60E-05	1.83E-05	1.83E-05
rh103	6.89E-06	8.61E-06	1.03E-05	1.21E-05	1.38E-05	1.38E-05
gd157	6.88E-06	8.39E-06	9.82E-06	1.12E-05	1.25E-05	1.25E-05
cd113	6.21E-06	7.69E-06	9.15E-06	1.06E-05	1.20E-05	1.20E-05
xe131	4.70E-06	5.87E-06	7.04E-06	8.21E-06	9.38E-06	9.38E-06
cs133	3.64E-06	4.55E-06	5.46E-06	6.37E-06	7.28E-06	7.28E-06
tc 99	2.69E-06	3.36E-06	4.03E-06	4.70E-06	5.36E-06	5.36E-06
sm147	2.61E-06	3.28E-06	3.96E-06	4.63E-06	5.31E-06	5.31E-06
nd145	2.08E-06	2.59E-06	3.11E-06	3.63E-06	4.15E-06	4.15E-06
mo 95	1.44E-06	1.80E-06	2.15E-06	2.51E-06	2.87E-06	2.87E-06
xe135	2.27E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06	2.27E-06
sm152	1.11E-06	1.39E-06	1.67E-06	1.95E-06	2.23E-06	2.23E-06
kr 83	8.97E-07	1.12E-06	1.34E-06	1.57E-06	1.79E-06	1.79E-06
cs135	8.20E-07	1.03E-06	1.23E-06	1.43E-06	1.64E-06	1.64E-06
ru101	6.39E-07	7.99E-07	9.58E-07	1.12E-06	1.28E-06	1.28E-06
pr141	6.10E-07	7.63E-07	9.15E-07	1.07E-06	1.22E-06	1.22E-06
eu153	5.56E-07	6.95E-07	8.34E-07	9.73E-07	1.11E-06	1.11E-06
la139	4.99E-07	6.24E-07	7.49E-07	8.73E-07	9.98E-07	9.98E-07
pd105	2.13E-07	2.66E-07	3.19E-07	3.72E-07	4.26E-07	4.26E-07
zr 93	2.04E-07	2.54E-07	3.05E-07	3.56E-07	4.07E-07	4.07E-07
ba137	1.45E-07	2.01E-07	2.58E-07	3.16E-07	3.74E-07	3.74E-07
i129	1.55E-07	1.94E-07	2.32E-07	2.71E-07	3.10E-07	3.10E-07
nd144	1.48E-07	1.86E-07	2.23E-07	2.60E-07	2.98E-07	2.98E-07
sm150	7.38E-08	1.14E-07	1.63E-07	2.19E-07	2.83E-07	2.83E-07
pm147	2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07
mo 97	1.13E-07	1.42E-07	1.70E-07	1.98E-07	2.26E-07	2.26E-07
ag109	8.21E-08	1.03E-07	1.25E-07	1.46E-07	1.69E-07	1.69E-07
eu155	1.59E-07	1.59E-07	1.59E-07	1.60E-07	1.60E-07	1.60E-07
zr 91	5.33E-08	6.66E-08	7.99E-08	9.32E-08	1.07E-07	1.07E-07
y 89	5.11E-08	6.38E-08	7.66E-08	8.94E-08	1.02E-07	1.02E-07
ru102	4.61E-08	5.76E-08	6.91E-08	8.07E-08	9.22E-08	9.22E-08
ce142	4.15E-08	5.18E-08	6.22E-08	7.25E-08	8.29E-08	8.29E-08
nd148	4.00E-08	5.00E-08	6.00E-08	6.99E-08	7.99E-08	7.99E-08
nd146	3.35E-08	4.19E-08	5.02E-08	5.86E-08	6.69E-08	6.69E-08
ba138	2.86E-08	3.57E-08	4.29E-08	5.00E-08	5.71E-08	5.71E-08
pd108	2.76E-08	3.46E-08	4.17E-08	4.88E-08	5.60E-08	5.60E-08
in115	2.77E-08	3.46E-08	4.15E-08	4.84E-08	5.54E-08	5.54E-08
ce140	2.68E-08	3.35E-08	4.01E-08	4.68E-08	5.35E-08	5.35E-08
xe132	2.41E-08	3.01E-08	3.62E-08	4.22E-08	4.82E-08	4.82E-08
mo 98	1.67E-08	2.09E-08	2.50E-08	2.92E-08	3.34E-08	3.34E-08
pd107	1.62E-08	2.03E-08	2.44E-08	2.85E-08	3.27E-08	3.27E-08
mo100	1.61E-08	2.01E-08	2.42E-08	2.82E-08	3.22E-08	3.22E-08
xe134	1.58E-08	1.98E-08	2.37E-08	2.77E-08	3.16E-08	3.16E-08
zr 92	1.28E-08	1.61E-08	1.93E-08	2.25E-08	2.57E-08	2.57E-08
i127	1.04E-08	1.31E-08	1.57E-08	1.83E-08	2.09E-08	2.09E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 14
0 fraction of total absorption rate
power= .00mw, burnup= 292.mwd, flux= 2.81E+08n/cm**2-sec
0 initial 45656.3 d 54787.6 d 63918.8 d 73050.1 d 73050.2 d

zr 96	1.02E-08	1.27E-08	1.53E-08	1.78E-08	2.04E-08	2.04E-08
ru104	9.92E-09	1.24E-08	1.49E-08	1.74E-08	1.98E-08	1.98E-08
nd150	8.88E-09	1.11E-08	1.33E-08	1.55E-08	1.77E-08	1.77E-08
xe136	8.55E-09	1.07E-08	1.28E-08	1.50E-08	1.71E-08	1.71E-08
sr 90	1.57E-08	1.63E-08	1.67E-08	1.69E-08	1.70E-08	1.70E-08

br 81	6.44E-09	8.04E-09	9.65E-09	1.13E-08	1.29E-08	1.29E-08
rb 85	6.08E-09	7.65E-09	9.22E-09	1.08E-08	1.24E-08	1.24E-08
zr 94	5.46E-09	6.83E-09	8.19E-09	9.55E-09	1.09E-08	1.09E-08
cd111	4.18E-09	5.24E-09	6.29E-09	7.36E-09	8.42E-09	8.42E-09
rh105	8.35E-09	8.38E-09	8.38E-09	8.39E-09	8.40E-09	8.37E-09
zr 90	3.17E-09	4.35E-09	5.57E-09	6.81E-09	8.05E-09	8.05E-09
te130	3.88E-09	4.85E-09	5.82E-09	6.79E-09	7.76E-09	7.76E-09
sm154	3.78E-09	4.72E-09	5.66E-09	6.61E-09	7.55E-09	7.55E-09
rb 87	3.64E-09	4.54E-09	5.45E-09	6.36E-09	7.26E-09	7.26E-09
se 77	2.57E-09	3.21E-09	3.86E-09	4.50E-09	5.14E-09	5.14E-09
eu152	1.29E-09	2.04E-09	2.92E-09	3.91E-09	4.98E-09	4.98E-09
cs137	3.40E-09	3.56E-09	3.66E-09	3.71E-09	3.74E-09	3.74E-09
pd106	1.83E-09	2.29E-09	2.76E-09	3.22E-09	3.69E-09	3.69E-09
kr 84	1.72E-09	2.15E-09	2.58E-09	3.01E-09	3.44E-09	3.44E-09
pr143	2.67E-09	2.67E-09	2.67E-09	2.66E-09	2.66E-09	2.66E-09
se 79	1.32E-09	1.65E-09	1.98E-09	2.31E-09	2.63E-09	2.63E-09
sb121	1.26E-09	1.57E-09	1.89E-09	2.20E-09	2.52E-09	2.52E-09
sb123	1.03E-09	1.28E-09	1.54E-09	1.79E-09	2.05E-09	2.05E-09
xe133	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09
kr 86	9.54E-10	1.19E-09	1.43E-09	1.67E-09	1.90E-09	1.90E-09
gd152	2.37E-10	4.57E-10	7.73E-10	1.20E-09	1.74E-09	1.74E-09
te128	8.53E-10	1.07E-09	1.28E-09	1.49E-09	1.70E-09	1.70E-09
ce141	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09
gd156	6.94E-10	8.81E-10	1.07E-09	1.27E-09	1.47E-09	1.47E-09
se 80	6.15E-10	7.68E-10	9.22E-10	1.08E-09	1.23E-09	1.23E-09
dy161	5.49E-10	6.89E-10	8.31E-10	9.75E-10	1.12E-09	1.12E-09
te125	5.19E-10	6.54E-10	7.89E-10	9.24E-10	1.06E-09	1.06E-09
pm149	9.66E-10	9.73E-10	9.72E-10	9.72E-10	9.72E-10	9.65E-10
nd147	9.31E-10	9.35E-10	9.35E-10	9.34E-10	9.34E-10	9.30E-10
tb159	3.68E-10	4.61E-10	5.54E-10	6.48E-10	7.42E-10	7.42E-10
cd112	3.51E-10	4.39E-10	5.27E-10	6.15E-10	7.03E-10	7.03E-10
li 6	3.49E-10	4.37E-10	5.24E-10	6.11E-10	6.98E-10	6.98E-10
ce144	6.01E-10	6.01E-10	6.01E-10	6.01E-10	6.01E-10	6.00E-10
kr 85	5.72E-10	5.72E-10	5.72E-10	5.72E-10	5.72E-10	5.72E-10
sn117	2.78E-10	3.47E-10	4.16E-10	4.86E-10	5.55E-10	5.55E-10
eu154	2.59E-10	3.28E-10	3.99E-10	4.70E-10	5.41E-10	5.41E-10
sn119	2.28E-10	2.85E-10	3.42E-10	3.99E-10	4.56E-10	4.56E-10
sn115	2.09E-10	2.61E-10	3.13E-10	3.65E-10	4.17E-10	4.17E-10
ru103	3.57E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.57E-10
sr 88	1.75E-10	2.19E-10	2.63E-10	3.07E-10	3.50E-10	3.50E-10
gd158	1.38E-10	1.80E-10	2.24E-10	2.70E-10	3.19E-10	3.19E-10
ru 99	8.29E-11	1.25E-10	1.76E-10	2.36E-10	3.04E-10	3.04E-10
cd114	1.27E-10	1.60E-10	1.94E-10	2.29E-10	2.64E-10	2.64E-10
pd110	1.27E-10	1.59E-10	1.91E-10	2.23E-10	2.56E-10	2.56E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 15
0 fraction of total absorption rate
power= .00mw, burnup= 292.mwd, flux= 2.81E+08n/cm**2-sec
0 initial 45656.3 d 54787.6 d 63918.8 d 73050.1 d 73050.2 d

se 82	1.19E-10	1.49E-10	1.78E-10	2.08E-10	2.38E-10	2.38E-10
sn126	9.54E-11	1.19E-10	1.43E-10	1.67E-10	1.91E-10	1.91E-10
se 78	9.04E-11	1.13E-10	1.36E-10	1.58E-10	1.81E-10	1.81E-10
zr 95	1.66E-10	1.66E-10	1.66E-10	1.66E-10	1.66E-10	1.66E-10
nb 95	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10
dy162	7.34E-11	9.26E-11	1.12E-10	1.32E-10	1.53E-10	1.53E-10
sn124	7.29E-11	9.12E-11	1.09E-10	1.28E-10	1.46E-10	1.46E-10
dy164	6.75E-11	8.56E-11	1.04E-10	1.23E-10	1.43E-10	1.43E-10
y 91	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10
gd154	3.14E-11	5.07E-11	7.48E-11	1.03E-10	1.37E-10	1.37E-10
as 75	5.39E-11	6.73E-11	8.08E-11	9.42E-11	1.08E-10	1.08E-10

pm151	1.06E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.06E-10
in113	3.23E-11	4.24E-11	5.25E-11	6.26E-11	7.28E-11	7.28E-11
ba136	2.94E-11	3.70E-11	4.46E-11	5.24E-11	6.02E-11	6.02E-11
sn118	2.98E-11	3.73E-11	4.47E-11	5.22E-11	5.97E-11	5.97E-11
cs134	2.81E-11	3.45E-11	4.12E-11	4.80E-11	5.48E-11	5.48E-11
ru100	1.36E-11	2.07E-11	2.93E-11	3.94E-11	5.09E-11	5.09E-11
cd116	2.53E-11	3.16E-11	3.79E-11	4.42E-11	5.05E-11	5.05E-11
sn122	2.51E-11	3.13E-11	3.76E-11	4.39E-11	5.01E-11	5.01E-11
ba140	4.71E-11	4.73E-11	4.73E-11	4.73E-11	4.73E-11	4.71E-11
sn120	1.88E-11	2.35E-11	2.82E-11	3.29E-11	3.76E-11	3.76E-11
sm153	3.73E-11	3.82E-11	3.82E-11	3.82E-11	3.83E-11	3.73E-11
eu156	3.45E-11	3.44E-11	3.45E-11	3.46E-11	3.46E-11	3.46E-11
kr 82	1.65E-11	2.08E-11	2.53E-11	2.98E-11	3.45E-11	3.45E-11
dy163	1.63E-11	2.07E-11	2.51E-11	2.97E-11	3.43E-11	3.43E-11
nd142	8.44E-12	1.32E-11	1.89E-11	2.58E-11	3.36E-11	3.36E-11
ba134	8.30E-12	1.29E-11	1.85E-11	2.51E-11	3.27E-11	3.27E-11
sm148	8.53E-12	1.30E-11	1.83E-11	2.46E-11	3.19E-11	3.19E-11
sr 89	3.06E-11	3.06E-11	3.06E-11	3.06E-11	3.06E-11	3.06E-11
ge 73	1.47E-11	1.83E-11	2.20E-11	2.57E-11	2.93E-11	2.93E-11
ba135	6.67E-12	1.04E-11	1.49E-11	2.03E-11	2.65E-11	2.65E-11
ru106	2.58E-11	2.57E-11	2.58E-11	2.59E-11	2.59E-11	2.59E-11
xe130	1.05E-11	1.34E-11	1.64E-11	1.95E-11	2.28E-11	2.28E-11
pd104	5.64E-12	8.78E-12	1.26E-11	1.71E-11	2.24E-11	2.24E-11
mo 96	8.66E-12	1.14E-11	1.44E-11	1.76E-11	2.10E-11	2.10E-11
ce143	1.69E-11	1.75E-11	1.75E-11	1.75E-11	1.75E-11	1.69E-11
y 90	1.49E-11	1.55E-11	1.58E-11	1.60E-11	1.61E-11	1.61E-11
la140	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11
sb125	1.50E-11	1.50E-11	1.50E-11	1.50E-11	1.50E-11	1.50E-11
mo 99	1.29E-11	1.31E-11	1.31E-11	1.31E-11	1.31E-11	1.29E-11
ge 76	5.33E-12	6.66E-12	8.00E-12	9.33E-12	1.07E-11	1.07E-11
pm148m	9.71E-12	9.56E-12	9.56E-12	9.56E-12	9.56E-12	9.55E-12
kr 87	8.44E-12	2.29E-11	2.29E-11	2.29E-11	2.29E-11	8.43E-12
te127m	7.44E-12	7.45E-12	7.45E-12	7.46E-12	7.46E-12	7.46E-12
gd160	3.43E-12	4.30E-12	5.17E-12	6.05E-12	6.94E-12	6.94E-12
i131	6.75E-12	6.77E-12	6.77E-12	6.77E-12	6.77E-12	6.75E-12
te126	2.77E-12	3.52E-12	4.30E-12	5.09E-12	5.91E-12	5.91E-12
nb 93	6.88E-13	1.17E-12	1.78E-12	2.52E-12	3.40E-12	3.40E-12
cd110	7.78E-13	1.21E-12	1.73E-12	2.36E-12	3.08E-12	3.08E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 16
0 fraction of total absorption rate
power= .00mw, burnup= 292.mwd, flux= 2.81E+08n/cm**2-sec
0 initial 45656.3 d 54787.6 d 63918.8 d 73050.1 d 73050.2 d

ho165	1.12E-12	1.42E-12	1.73E-12	2.05E-12	2.37E-12	2.37E-12
br 79	5.40E-13	8.43E-13	1.21E-12	1.65E-12	2.16E-12	2.16E-12
te129m	1.79E-12	1.79E-12	1.79E-12	1.79E-12	1.79E-12	1.79E-12
te124	6.26E-13	7.85E-13	9.45E-13	1.11E-12	1.27E-12	1.27E-12
sr 87	6.12E-13	7.65E-13	9.19E-13	1.07E-12	1.23E-12	1.23E-12
xe129	3.05E-13	4.77E-13	6.87E-13	9.35E-13	1.22E-12	1.22E-12
ag107	2.88E-13	4.50E-13	6.49E-13	8.85E-13	1.16E-12	1.16E-12
nb 94	3.49E-13	4.36E-13	5.24E-13	6.11E-13	6.98E-13	6.98E-13
ge 74	2.96E-13	3.70E-13	4.44E-13	5.18E-13	5.92E-13	5.92E-13
sr 86	1.87E-13	2.38E-13	2.91E-13	3.46E-13	4.03E-13	4.03E-13
ge 72	1.99E-13	2.49E-13	2.99E-13	3.48E-13	3.98E-13	3.98E-13
pm148	3.76E-13	3.74E-13	3.74E-13	3.73E-13	3.73E-13	3.70E-13
ag111	3.22E-13	3.24E-13	3.25E-13	3.27E-13	3.28E-13	3.26E-13
eu157	2.79E-13	3.01E-13	3.01E-13	3.02E-13	3.03E-13	2.81E-13
se 76	1.19E-13	1.49E-13	1.80E-13	2.12E-13	2.44E-13	2.44E-13
cd115m	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.37E-13
dy160	6.18E-14	8.95E-14	1.22E-13	1.60E-13	2.02E-13	2.02E-13

xe128	5.74E-14	8.09E-14	1.08E-13	1.39E-13	1.74E-13	1.74E-13
er166	3.23E-14	4.19E-14	5.20E-14	6.27E-14	7.41E-14	7.41E-14
cs136	5.81E-14	5.91E-14	5.98E-14	6.05E-14	6.11E-14	6.09E-14
sn116	1.22E-14	1.89E-14	2.70E-14	3.66E-14	4.77E-14	4.77E-14
sn125	2.91E-14	2.93E-14	2.93E-14	2.93E-14	2.93E-14	2.92E-14
ru105	2.31E-14	2.98E-14	2.99E-14	2.99E-14	2.99E-14	2.31E-14
te122	6.00E-15	9.01E-15	1.26E-14	1.68E-14	2.17E-14	2.17E-14
kr 80	8.41E-15	1.06E-14	1.27E-14	1.49E-14	1.71E-14	1.71E-14
sn123	1.02E-14	1.02E-14	1.02E-14	1.02E-14	1.02E-14	1.02E-14
te132	9.40E-15	9.55E-15	9.55E-15	9.54E-15	9.54E-15	9.39E-15
rb 88	8.94E-15	1.29E-14	1.29E-14	1.29E-14	1.29E-14	8.93E-15
i135	8.33E-15	1.01E-14	1.01E-14	1.01E-14	1.01E-14	8.32E-15
sb126	3.16E-15	3.22E-15	3.26E-15	3.30E-15	3.35E-15	3.33E-15
tb160	1.35E-15	1.60E-15	1.86E-15	2.12E-15	2.39E-15	2.38E-15
sb124	2.15E-15	2.17E-15	2.18E-15	2.19E-15	2.21E-15	2.20E-15
in117m	1.86E-15	2.10E-15	2.10E-15	2.10E-15	2.11E-15	1.87E-15
be 9	6.71E-16	8.39E-16	1.01E-15	1.17E-15	1.34E-15	1.34E-15
pr142	6.51E-16	8.67E-16	1.04E-15	1.21E-15	1.39E-15	1.30E-15
te123	6.17E-16	7.80E-16	9.46E-16	1.12E-15	1.29E-15	1.29E-15
te134	9.28E-16	5.84E-15	5.83E-15	5.83E-15	5.83E-15	9.26E-16
i130	7.60E-16	8.74E-16	9.05E-16	9.37E-16	9.69E-16	8.77E-16
in117	5.53E-16	6.17E-16	6.18E-16	6.19E-16	6.19E-16	5.55E-16
li 7	2.69E-16	3.37E-16	4.04E-16	4.71E-16	5.38E-16	5.38E-16
er167	1.79E-16	2.47E-16	3.25E-16	4.13E-16	5.12E-16	5.12E-16
rb 86	2.80E-16	2.91E-16	3.02E-16	3.12E-16	3.22E-16	3.21E-16
dy165	1.41E-16	2.43E-16	2.50E-16	2.57E-16	2.64E-16	1.56E-16
ge 75	3.50E-17	8.62E-17	8.62E-17	8.61E-17	8.61E-17	3.50E-17
cd118	2.62E-17	1.20E-16	1.21E-16	1.21E-16	1.21E-16	2.62E-17
cd108	7.01E-18	9.31E-18	1.19E-17	1.47E-17	1.78E-17	1.78E-17
sn114	2.05E-18	3.40E-18	5.12E-18	7.19E-18	9.62E-18	9.62E-18
cs134m	3.34E-18	6.38E-18	7.65E-18	8.92E-18	1.02E-17	6.56E-18
cd109	3.62E-19	4.06E-19	4.49E-19	4.93E-19	5.36E-19	5.36E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 17
0 fraction of total absorption rate
power= .00mw, burnup= 292.mwd, flux= 2.81E+08n/cm**2-sec
0 initial 45656.3 d 54787.6 d 63918.8 d 73050.1 d 73050.2 d

in119m	4.96E-19	3.01E-17	3.01E-17	3.01E-17	3.01E-17	4.96E-19
in119	3.35E-21	2.36E-18	2.36E-18	2.36E-18	2.36E-18	3.35E-21

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 18
power= 4.000E-03mw, burnup=2.9220E+02mwd, flux= 2.81E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	45656.3 d	54787.6 d	63918.8 d	73050.1 d	73050.2 d
h 1	8.81E-06	1.10E-05	1.31E-05	1.53E-05	1.74E-05	1.74E-05
h 2	2.61E-08	3.25E-08	3.89E-08	4.53E-08	5.16E-08	5.16E-08
h 3	3.41E-11	3.37E-11	3.36E-11	3.37E-11	3.37E-11	3.37E-11
h 4	.00E+00	1.37E-34	1.36E-34	1.37E-34	1.37E-34	.00E+00
he 3	1.58E-10	2.05E-10	2.52E-10	2.98E-10	3.45E-10	3.45E-10
he 4	1.46E-06	1.81E-06	2.17E-06	2.52E-06	2.88E-06	2.88E-06
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.75E-07	2.18E-07	2.60E-07	3.03E-07	3.46E-07	3.46E-07
ne 21	6.32E-13	9.70E-13	1.37E-12	1.84E-12	2.37E-12	2.37E-12
ne 22	1.10E-09	1.38E-09	1.65E-09	1.93E-09	2.21E-09	2.21E-09
ne 23	7.29E-30	7.11E-15	7.11E-15	7.11E-15	7.11E-15	7.11E-30
na 22	4.28E-11	4.18E-11	4.18E-11	4.18E-11	4.18E-11	4.18E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.34E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08	2.82E-08
na 24m	5.99E-30	5.05E-15	5.05E-15	5.05E-15	5.05E-15	5.05E-30

	na 25	7.59E-42	9.69E-27	1.22E-26	1.49E-26	1.78E-26	1.78E-41
	mg 24	1.51E-03	1.83E-03	2.15E-03	2.47E-03	2.78E-03	2.78E-03
	mg 25	2.52E-10	3.32E-10	4.19E-10	5.12E-10	6.12E-10	6.12E-10
	mg 26	2.61E-08	3.25E-08	3.89E-08	4.53E-08	5.16E-08	5.16E-08
	mg 27	6.43E-16	2.12E-12	2.12E-12	2.12E-12	2.12E-12	6.27E-16
	mg 28	4.15E-24	4.32E-24	4.32E-24	4.32E-24	4.32E-24	4.06E-24
	al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
	al 28	6.11E-25	2.28E-10	2.28E-10	2.28E-10	2.28E-10	5.16E-25
	al 29	1.25E-30	2.29E-25	3.26E-25	4.38E-25	5.66E-25	4.65E-30
	al 30	.00E+00	5.28E-37	9.10E-37	1.44E-36	2.13E-36	.00E+00
	si 28	4.40E-03	5.32E-03	6.25E-03	7.18E-03	8.10E-03	8.10E-03
	si 29	5.64E-10	8.77E-10	1.25E-09	1.68E-09	2.17E-09	2.17E-09
	si 30	7.76E-17	1.52E-16	2.61E-16	4.12E-16	6.11E-16	6.11E-16
	si 31	3.41E-29	1.09E-28	1.87E-28	2.96E-28	4.38E-28	2.69E-28
	si 32	9.08E-36	2.18E-35	4.45E-35	8.06E-35	1.35E-34	1.35E-34
	totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0	flux		2.81E+08	2.81E+08	2.81E+08	2.81E+08	2.81E-07
1							

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 19
power= 4.000E-03mw, burnup=2.9220E+02mwd, flux= 2.81E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 45656.3 d	54787.6 d	63918.8 d	73050.1 d	73050.2 d	
he 4	1.16E-02	1.61E-02	2.10E-02	2.62E-02	3.18E-02	3.18E-02
pb206	7.80E-09	1.72E-08	3.24E-08	5.50E-08	8.64E-08	8.64E-08
pb207	4.27E-08	7.39E-08	1.15E-07	1.65E-07	2.24E-07	2.24E-07
pb208	1.25E-08	1.98E-08	2.87E-08	3.91E-08	5.11E-08	5.11E-08
pb209	1.40E-14	2.18E-14	3.13E-14	4.26E-14	5.56E-14	5.59E-14
pb210	8.96E-09	1.55E-08	2.39E-08	3.43E-08	4.65E-08	4.65E-08
pb211	1.05E-13	1.42E-13	1.79E-13	2.17E-13	2.54E-13	2.54E-13
pb212	4.63E-13	5.75E-13	6.86E-13	7.95E-13	9.04E-13	9.04E-13
pb214	3.57E-14	5.74E-14	8.23E-14	1.12E-13	1.45E-13	1.41E-13
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	8.67E-10	1.69E-09	2.92E-09	4.64E-09	6.92E-09	6.92E-09
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	5.51E-12	9.52E-12	1.47E-11	2.11E-11	2.86E-11	2.86E-11
bi211	6.29E-15	8.42E-15	1.06E-14	1.29E-14	1.51E-14	1.52E-14
bi212	4.40E-14	5.46E-14	6.50E-14	7.54E-14	8.57E-14	8.58E-14
bi213	3.16E-15	5.08E-15	7.31E-15	9.94E-15	1.30E-14	1.26E-14
bi214	2.69E-14	4.26E-14	6.11E-14	8.29E-14	1.08E-13	1.06E-13
po210	1.52E-10	2.63E-10	4.06E-10	5.83E-10	7.91E-10	7.91E-10
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	6.95E-20	9.31E-20	1.17E-19	1.42E-19	1.67E-19	1.68E-19
po212	2.31E-24	2.87E-24	3.42E-24	3.96E-24	4.51E-24	4.51E-24
po213	4.75E-24	7.64E-24	1.10E-23	1.49E-23	1.95E-23	1.89E-23
po214	3.71E-21	5.86E-21	8.41E-21	1.14E-20	1.48E-20	1.46E-20
po215	8.66E-20	1.17E-19	1.47E-19	1.78E-19	2.09E-19	2.09E-19
po216	1.76E-18	2.18E-18	2.60E-18	3.01E-18	3.42E-18	3.42E-18
po218	4.27E-15	6.64E-15	9.52E-15	1.29E-14	1.68E-14	1.68E-14
ra222	7.56E-27	9.09E-27	1.08E-26	1.25E-26	1.42E-26	1.42E-26
ra223	4.81E-11	6.48E-11	8.18E-11	9.89E-11	1.16E-10	1.16E-10
ra224	3.83E-12	4.75E-12	5.66E-12	6.56E-12	7.46E-12	7.46E-12
ra225	1.52E-12	2.38E-12	3.42E-12	4.65E-12	6.07E-12	6.07E-12
ra226	1.16E-06	1.80E-06	2.58E-06	3.51E-06	4.56E-06	4.56E-06
ra228	1.94E-13	2.47E-13	2.99E-13	3.52E-13	4.05E-13	4.05E-13
ac225	1.03E-12	1.61E-12	2.31E-12	3.14E-12	4.10E-12	4.10E-12
ac227	3.34E-08	4.50E-08	5.68E-08	6.87E-08	8.06E-08	8.06E-08
ac228	2.36E-17	3.01E-17	3.65E-17	4.30E-17	4.95E-17	4.95E-17
th226	3.68E-25	4.43E-25	5.28E-25	6.12E-25	6.95E-25	6.94E-25
th227	7.76E-11	1.05E-10	1.32E-10	1.60E-10	1.87E-10	1.87E-10

th228	7.31E-10	9.07E-10	1.08E-09	1.25E-09	1.42E-09	1.42E-09
th229	2.96E-07	4.62E-07	6.65E-07	9.04E-07	1.18E-06	1.18E-06
th230	2.55E-03	3.19E-03	3.83E-03	4.47E-03	5.11E-03	5.11E-03
th231	3.03E-09	3.03E-09	3.03E-09	3.04E-09	3.04E-09	3.04E-09
th232	5.16E-04	6.46E-04	7.75E-04	9.04E-04	1.03E-03	1.03E-03
th233	1.52E-16	5.94E-15	7.13E-15	8.32E-15	9.50E-15	3.02E-16
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	7.19E-05	8.99E-05	1.08E-04	1.26E-04	1.44E-04	1.44E-04
pa232	1.19E-12	1.55E-12	1.85E-12	2.16E-12	2.47E-12	2.37E-12
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 20
power= 4.000E-03mw, burnup=2.9220E+02mwd, flux= 2.81E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 45656.3 d	54787.6 d	63918.8 d	73050.1 d	73050.2 d	
u230	3.57E-22	4.30E-22	5.12E-22	5.93E-22	6.74E-22	6.72E-22
u231	1.08E-18	1.32E-18	1.58E-18	1.85E-18	2.11E-18	2.08E-18
u232	2.62E-08	3.25E-08	3.87E-08	4.49E-08	5.10E-08	5.10E-08
u233	1.36E-03	1.70E-03	2.04E-03	2.38E-03	2.73E-03	2.73E-03
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.07E+00	9.07E+00
u235	7.30E+02	7.29E+02	7.29E+02	7.29E+02	7.29E+02	7.29E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.21E-06	3.15E-06	3.15E-06	3.15E-06	3.15E-06	3.13E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.24E-08	3.22E-07	3.22E-07	3.22E-07	3.22E-07	1.21E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	9.08E-12	8.80E-12	8.80E-12	8.80E-12	8.80E-12	8.80E-12
np236m	2.04E-12	2.09E-12	2.09E-12	2.09E-12	2.09E-12	1.98E-12
np236	2.05E-08	2.54E-08	3.04E-08	3.54E-08	4.03E-08	4.03E-08
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.54E-06	1.56E-06	1.56E-06	1.56E-06	1.56E-06	1.52E-06
np239	4.67E-05	4.65E-05	4.65E-05	4.65E-05	4.65E-05	4.58E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.81E-15	9.48E-15	9.48E-15	9.48E-15	9.48E-15	2.74E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.17E-09	1.14E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09
pu237	1.37E-13	1.53E-13	1.69E-13	1.83E-13	1.94E-13	1.94E-13
pu238	1.30E-02	1.49E-02	1.65E-02	1.78E-02	1.88E-02	1.88E-02
pu239	5.09E-01	6.33E-01	7.57E-01	8.81E-01	1.00E+00	1.00E+00
pu240	2.50E-04	3.89E-04	5.58E-04	7.56E-04	9.85E-04	9.85E-04
pu241	7.14E-08	1.18E-07	1.78E-07	2.50E-07	3.35E-07	3.35E-07
pu242	2.12E-11	4.79E-11	9.30E-11	1.63E-10	2.64E-10	2.64E-10
pu243	3.59E-20	1.03E-19	1.99E-19	3.48E-19	5.66E-19	4.37E-19
pu244	5.75E-44	6.57E-43	4.73E-42	2.49E-41	1.05E-40	1.05E-40
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	2.49E-23	5.68E-23	1.03E-22	1.69E-22	2.59E-22	2.32E-22
am240	1.24E-20	2.60E-20	4.72E-20	7.75E-20	1.18E-19	1.16E-19
am241	9.66E-08	2.04E-07	3.69E-07	6.07E-07	9.28E-07	9.28E-07
am242m	5.08E-12	1.33E-11	2.87E-11	5.43E-11	9.37E-11	9.37E-11
am242	3.20E-15	7.27E-15	1.32E-14	2.19E-14	3.36E-14	3.11E-14
am243	3.74E-15	1.18E-14	3.01E-14	6.59E-14	1.29E-13	1.29E-13
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	2.59E-23	9.12E-23	2.32E-22	5.07E-22	9.93E-22	8.75E-22
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

```
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.81E+08  2.81E+08  2.81E+08  2.81E+08  2.81E-07
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number  3 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *          made from modified card-image origen-s libraries of scale 4.2       *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *        see information above this box (if present) for later updates         *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                 8/28/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
                        879    number of fission product nuclides
0                      7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                page   21
       power=    .00mw, burnup=    438.mwd, flux= 2.73E+08n/cm**2-sec
0                                    basis =
```

(note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)

	initial	82181. d	91313. d	100444. d	109575. d	109575. d
productions	1.123503E+06	1.123684E+06	1.123866E+06	1.124046E+06	1.124226E+06	1.124226E+06
absorptions	9.183541E+05	9.186095E+05	9.188597E+05	9.191057E+05	9.193471E+05	9.193471E+05
k infinity	1.223387E+00	1.223245E+00	1.223109E+00	1.222978E+00	1.222853E+00	1.222853E+00

	initial	82181. d	91313. d	100444. d	109575. d	109575. d
actinide absorptions	9.137518E+05	9.138591E+05	9.139662E+05	9.140729E+05	9.141796E+05	9.141796E+05
non-actinide abs. fracs.	5.011499E-03	5.171359E-03	5.325615E-03	5.475700E-03	5.620897E-03	5.620897E-03

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 22

fraction of total absorption rate

power= .00mw, burnup= 438.mwd, flux= 2.73E+08n/cm**2-sec

	initial	82181. d	91313. d	100444. d	109575. d	109575. d
sm149	1.30E-03	1.44E-03	1.57E-03	1.70E-03	1.82E-03	1.82E-03
nd143	2.96E-05	3.33E-05	3.70E-05	4.07E-05	4.43E-05	4.43E-05
eu151	2.23E-05	2.69E-05	3.16E-05	3.64E-05	4.14E-05	4.14E-05
sm151	3.16E-05	3.31E-05	3.43E-05	3.53E-05	3.61E-05	3.61E-05
gd155	1.84E-05	2.06E-05	2.28E-05	2.50E-05	2.71E-05	2.71E-05
rh103	1.38E-05	1.55E-05	1.72E-05	1.89E-05	2.06E-05	2.06E-05
cd113	1.20E-05	1.34E-05	1.48E-05	1.61E-05	1.74E-05	1.74E-05
gd157	1.26E-05	1.38E-05	1.50E-05	1.61E-05	1.72E-05	1.72E-05
xe131	9.36E-06	1.05E-05	1.17E-05	1.29E-05	1.40E-05	1.40E-05
cs133	7.26E-06	8.16E-06	9.07E-06	9.97E-06	1.09E-05	1.09E-05
tc 99	5.34E-06	6.01E-06	6.67E-06	7.34E-06	8.00E-06	8.00E-06
sm147	5.29E-06	5.96E-06	6.63E-06	7.30E-06	7.98E-06	7.98E-06
nd145	4.15E-06	4.66E-06	5.18E-06	5.69E-06	6.21E-06	6.21E-06
mo 95	2.87E-06	3.23E-06	3.58E-06	3.94E-06	4.30E-06	4.30E-06
sm152	2.23E-06	2.51E-06	2.79E-06	3.07E-06	3.36E-06	3.36E-06
kr 83	1.80E-06	2.02E-06	2.25E-06	2.47E-06	2.69E-06	2.69E-06
cs135	1.64E-06	1.84E-06	2.04E-06	2.25E-06	2.45E-06	2.45E-06
xe135	2.29E-06	2.32E-06	2.32E-06	2.32E-06	2.32E-06	2.29E-06
ru101	1.27E-06	1.43E-06	1.59E-06	1.74E-06	1.90E-06	1.90E-06
pr141	1.22E-06	1.38E-06	1.53E-06	1.68E-06	1.83E-06	1.83E-06
eu153	1.11E-06	1.25E-06	1.39E-06	1.53E-06	1.67E-06	1.67E-06
la139	1.00E-06	1.13E-06	1.25E-06	1.37E-06	1.50E-06	1.50E-06
pd105	4.25E-07	4.78E-07	5.31E-07	5.85E-07	6.38E-07	6.38E-07
ba137	3.76E-07	4.35E-07	4.95E-07	5.54E-07	6.14E-07	6.14E-07
sm150	2.83E-07	3.54E-07	4.33E-07	5.18E-07	6.10E-07	6.10E-07
zr 93	4.05E-07	4.56E-07	5.06E-07	5.57E-07	6.07E-07	6.07E-07
i129	3.11E-07	3.50E-07	3.89E-07	4.27E-07	4.66E-07	4.66E-07
nd144	2.99E-07	3.36E-07	3.74E-07	4.11E-07	4.49E-07	4.49E-07
mo 97	2.27E-07	2.55E-07	2.83E-07	3.12E-07	3.40E-07	3.40E-07
pm147	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07
ag109	1.68E-07	1.90E-07	2.13E-07	2.35E-07	2.58E-07	2.58E-07
eu155	1.60E-07	1.60E-07	1.60E-07	1.60E-07	1.60E-07	1.60E-07
zr 91	1.07E-07	1.20E-07	1.33E-07	1.47E-07	1.60E-07	1.60E-07
y 89	1.02E-07	1.15E-07	1.28E-07	1.41E-07	1.54E-07	1.54E-07
ru102	9.25E-08	1.04E-07	1.16E-07	1.27E-07	1.39E-07	1.39E-07
ce142	8.33E-08	9.37E-08	1.04E-07	1.14E-07	1.25E-07	1.25E-07
nd148	8.00E-08	9.00E-08	1.00E-07	1.10E-07	1.20E-07	1.20E-07
nd146	6.72E-08	7.55E-08	8.39E-08	9.23E-08	1.01E-07	1.01E-07
ba138	5.74E-08	6.45E-08	7.17E-08	7.89E-08	8.60E-08	8.60E-08
pd108	5.57E-08	6.28E-08	7.01E-08	7.74E-08	8.47E-08	8.47E-08
in115	5.54E-08	6.23E-08	6.92E-08	7.61E-08	8.30E-08	8.30E-08
ce140	5.37E-08	6.04E-08	6.71E-08	7.38E-08	8.05E-08	8.05E-08
xe132	4.82E-08	5.42E-08	6.02E-08	6.62E-08	7.22E-08	7.22E-08
mo 98	3.32E-08	3.74E-08	4.15E-08	4.56E-08	4.98E-08	4.98E-08
pd107	3.27E-08	3.69E-08	4.11E-08	4.53E-08	4.96E-08	4.96E-08

mo100	3.21E-08	3.62E-08	4.02E-08	4.42E-08	4.82E-08	4.82E-08
xe134	3.17E-08	3.57E-08	3.96E-08	4.36E-08	4.75E-08	4.75E-08
zr 92	2.57E-08	2.90E-08	3.22E-08	3.54E-08	3.86E-08	3.86E-08
i127	2.09E-08	2.35E-08	2.61E-08	2.87E-08	3.14E-08	3.14E-08

0 fraction of total absorption rate

power= .00mw, burnup= 438.mwd, flux= 2.73E+08n/cm**2-sec

	initial	82181. d	91313. d	100444. d	109575. d	109575. d
zr 96	2.02E-08	2.27E-08	2.52E-08	2.77E-08	3.03E-08	3.03E-08
ru104	1.98E-08	2.23E-08	2.48E-08	2.73E-08	2.97E-08	2.97E-08
nd150	1.77E-08	1.99E-08	2.22E-08	2.44E-08	2.66E-08	2.66E-08
xe136	1.71E-08	1.93E-08	2.14E-08	2.36E-08	2.57E-08	2.57E-08
br 81	1.28E-08	1.45E-08	1.61E-08	1.77E-08	1.93E-08	1.93E-08
rb 85	1.23E-08	1.39E-08	1.55E-08	1.70E-08	1.86E-08	1.86E-08
sr 90	1.70E-08	1.71E-08	1.71E-08	1.71E-08	1.71E-08	1.71E-08
zr 94	1.09E-08	1.22E-08	1.36E-08	1.49E-08	1.63E-08	1.63E-08
zr 90	8.07E-09	9.33E-09	1.06E-08	1.18E-08	1.31E-08	1.31E-08
cd111	8.46E-09	9.53E-09	1.06E-08	1.17E-08	1.28E-08	1.28E-08
te130	7.79E-09	8.76E-09	9.74E-09	1.07E-08	1.17E-08	1.17E-08
sm154	7.57E-09	8.52E-09	9.46E-09	1.04E-08	1.14E-08	1.14E-08
rb 87	7.26E-09	8.16E-09	9.07E-09	9.97E-09	1.09E-08	1.09E-08
eu152	5.00E-09	6.14E-09	7.34E-09	8.58E-09	9.85E-09	9.85E-09
rh105	8.40E-09	8.43E-09	8.44E-09	8.45E-09	8.46E-09	8.44E-09
se 77	5.16E-09	5.81E-09	6.45E-09	7.09E-09	7.74E-09	7.74E-09
pd106	3.68E-09	4.14E-09	4.61E-09	5.08E-09	5.55E-09	5.55E-09
gd152	1.75E-09	2.42E-09	3.22E-09	4.16E-09	5.24E-09	5.24E-09
kr 84	3.42E-09	3.85E-09	4.28E-09	4.70E-09	5.13E-09	5.13E-09
se 79	2.65E-09	2.98E-09	3.31E-09	3.64E-09	3.97E-09	3.97E-09
sb121	2.51E-09	2.83E-09	3.14E-09	3.46E-09	3.77E-09	3.77E-09
cs137	3.73E-09	3.75E-09	3.76E-09	3.76E-09	3.76E-09	3.76E-09
sb123	2.05E-09	2.30E-09	2.56E-09	2.81E-09	3.07E-09	3.07E-09
kr 86	1.91E-09	2.15E-09	2.39E-09	2.63E-09	2.86E-09	2.86E-09
pr143	2.67E-09	2.67E-09	2.67E-09	2.67E-09	2.67E-09	2.67E-09
te128	1.70E-09	1.92E-09	2.13E-09	2.34E-09	2.56E-09	2.56E-09
gd156	1.47E-09	1.67E-09	1.88E-09	2.10E-09	2.32E-09	2.32E-09
xe133	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.02E-09
se 80	1.23E-09	1.39E-09	1.54E-09	1.69E-09	1.85E-09	1.85E-09
dy161	1.12E-09	1.27E-09	1.42E-09	1.57E-09	1.72E-09	1.72E-09
te125	1.06E-09	1.19E-09	1.33E-09	1.46E-09	1.60E-09	1.60E-09
ce141	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09
tb159	7.42E-10	8.36E-10	9.31E-10	1.03E-09	1.12E-09	1.12E-09
cd112	7.05E-10	7.93E-10	8.82E-10	9.71E-10	1.06E-09	1.06E-09
li 6	7.01E-10	7.89E-10	8.76E-10	9.63E-10	1.05E-09	1.05E-09
pm149	9.70E-10	9.76E-10	9.76E-10	9.76E-10	9.76E-10	9.70E-10
nd147	9.27E-10	9.30E-10	9.30E-10	9.30E-10	9.30E-10	9.26E-10
sn117	5.57E-10	6.26E-10	6.96E-10	7.66E-10	8.36E-10	8.36E-10
eu154	5.43E-10	6.12E-10	6.82E-10	7.53E-10	8.24E-10	8.24E-10
sn119	4.58E-10	5.15E-10	5.72E-10	6.29E-10	6.87E-10	6.87E-10
ru 99	3.03E-10	3.80E-10	4.65E-10	5.59E-10	6.61E-10	6.61E-10
sn115	4.19E-10	4.71E-10	5.24E-10	5.76E-10	6.29E-10	6.29E-10
ce144	6.01E-10	6.01E-10	6.01E-10	6.01E-10	6.01E-10	6.01E-10
kr 85	5.74E-10	5.74E-10	5.73E-10	5.73E-10	5.73E-10	5.73E-10
gd158	3.19E-10	3.70E-10	4.23E-10	4.78E-10	5.35E-10	5.35E-10
sr 88	3.51E-10	3.95E-10	4.39E-10	4.83E-10	5.26E-10	5.26E-10
cd114	2.63E-10	2.98E-10	3.34E-10	3.71E-10	4.08E-10	4.08E-10
pd110	2.55E-10	2.87E-10	3.20E-10	3.53E-10	3.86E-10	3.86E-10
ru103	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10

0 fraction of total absorption rate

power= .00mw, burnup= 438.mwd, flux= 2.73E+08n/cm**2-sec

0	initial	82181. d	91313. d	100444. d	109575. d	109575. d
se 82	2.38E-10	2.68E-10	2.98E-10	3.28E-10	3.57E-10	3.57E-10
gd154	1.37E-10	1.76E-10	2.18E-10	2.66E-10	3.18E-10	3.18E-10
sn126	1.92E-10	2.16E-10	2.40E-10	2.65E-10	2.89E-10	2.89E-10
se 78	1.81E-10	2.03E-10	2.26E-10	2.48E-10	2.71E-10	2.71E-10
dy162	1.53E-10	1.74E-10	1.95E-10	2.17E-10	2.39E-10	2.39E-10
dy164	1.44E-10	1.64E-10	1.85E-10	2.06E-10	2.28E-10	2.28E-10
sn124	1.45E-10	1.63E-10	1.82E-10	2.00E-10	2.18E-10	2.18E-10
zr 95	1.65E-10	1.65E-10	1.65E-10	1.65E-10	1.65E-10	1.65E-10
as 75	1.08E-10	1.21E-10	1.35E-10	1.48E-10	1.61E-10	1.61E-10
nb 95	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10
y 91	1.44E-10	1.44E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10
in113	7.27E-11	8.28E-11	9.30E-11	1.03E-10	1.13E-10	1.13E-10
ru100	5.12E-11	6.42E-11	7.87E-11	9.47E-11	1.12E-10	1.12E-10
pm151	1.06E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.06E-10
ba136	6.02E-11	6.81E-11	7.61E-11	8.42E-11	9.24E-11	9.24E-11
sn118	5.93E-11	6.67E-11	7.41E-11	8.15E-11	8.89E-11	8.89E-11
cs134	5.49E-11	6.13E-11	6.81E-11	7.48E-11	8.15E-11	8.15E-11
nd142	3.38E-11	4.27E-11	5.27E-11	6.38E-11	7.58E-11	7.58E-11
cd116	5.03E-11	5.66E-11	6.29E-11	6.92E-11	7.55E-11	7.55E-11
sn122	5.03E-11	5.66E-11	6.29E-11	6.91E-11	7.54E-11	7.54E-11
ba134	3.27E-11	4.13E-11	5.09E-11	6.15E-11	7.31E-11	7.31E-11
sm148	3.19E-11	4.00E-11	4.90E-11	5.89E-11	6.98E-11	6.98E-11
ba135	2.65E-11	3.35E-11	4.13E-11	5.00E-11	5.95E-11	5.95E-11
sn120	3.76E-11	4.23E-11	4.70E-11	5.17E-11	5.64E-11	5.64E-11
dy163	3.44E-11	3.91E-11	4.40E-11	4.90E-11	5.41E-11	5.41E-11
kr 82	3.46E-11	3.93E-11	4.41E-11	4.91E-11	5.41E-11	5.41E-11
pd104	2.23E-11	2.81E-11	3.47E-11	4.19E-11	4.98E-11	4.98E-11
ba140	4.72E-11	4.73E-11	4.73E-11	4.73E-11	4.73E-11	4.71E-11
ge 73	2.94E-11	3.31E-11	3.68E-11	4.04E-11	4.41E-11	4.41E-11
sm153	3.74E-11	3.83E-11	3.84E-11	3.84E-11	3.84E-11	3.75E-11
xe130	2.29E-11	2.62E-11	2.97E-11	3.33E-11	3.70E-11	3.70E-11
mo 96	2.10E-11	2.46E-11	2.85E-11	3.25E-11	3.69E-11	3.69E-11
eu156	3.48E-11	3.48E-11	3.49E-11	3.50E-11	3.50E-11	3.50E-11
sr 89	3.07E-11	3.07E-11	3.07E-11	3.07E-11	3.07E-11	3.07E-11
ru106	2.58E-11	2.58E-11	2.59E-11	2.60E-11	2.60E-11	2.60E-11
ce143	1.69E-11	1.75E-11	1.75E-11	1.75E-11	1.75E-11	1.70E-11
y 90	1.62E-11	1.62E-11	1.63E-11	1.63E-11	1.63E-11	1.63E-11
ge 76	1.07E-11	1.20E-11	1.33E-11	1.47E-11	1.60E-11	1.60E-11
la140	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11
sb125	1.50E-11	1.50E-11	1.50E-11	1.50E-11	1.50E-11	1.50E-11
mo 99	1.29E-11	1.31E-11	1.31E-11	1.31E-11	1.31E-11	1.29E-11
gd160	6.94E-12	7.83E-12	8.73E-12	9.63E-12	1.05E-11	1.05E-11
pm148m	9.59E-12	9.54E-12	9.54E-12	9.54E-12	9.53E-12	9.52E-12
te126	5.92E-12	6.76E-12	7.63E-12	8.51E-12	9.42E-12	9.42E-12
kr 87	8.47E-12	2.30E-11	2.30E-11	2.29E-11	2.29E-11	9.14E-12
nb 93	3.41E-12	4.42E-12	5.57E-12	6.85E-12	8.26E-12	8.26E-12
te127m	7.48E-12	7.49E-12	7.50E-12	7.50E-12	7.51E-12	7.51E-12
cd110	3.09E-12	3.91E-12	4.83E-12	5.86E-12	6.99E-12	6.99E-12
i131	6.75E-12	6.77E-12	6.77E-12	6.77E-12	6.77E-12	6.75E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 25
0 fraction of total absorption rate

power= .00mw, burnup= 438.mwd, flux= 2.73E+08n/cm**2-sec

0	initial	82181. d	91313. d	100444. d	109575. d	109575. d
br 79	2.16E-12	2.73E-12	3.37E-12	4.07E-12	4.85E-12	4.85E-12
ho165	2.38E-12	2.71E-12	3.05E-12	3.40E-12	3.76E-12	3.76E-12
xe129	1.22E-12	1.55E-12	1.91E-12	2.31E-12	2.75E-12	2.75E-12

ag107	1.16E-12	1.47E-12	1.82E-12	2.21E-12	2.63E-12	2.63E-12
te124	1.27E-12	1.44E-12	1.60E-12	1.77E-12	1.93E-12	1.93E-12
sr 87	1.23E-12	1.38E-12	1.54E-12	1.69E-12	1.84E-12	1.84E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
nb 94	6.97E-13	7.84E-13	8.71E-13	9.59E-13	1.05E-12	1.05E-12
ge 74	5.94E-13	6.68E-13	7.42E-13	8.17E-13	8.91E-13	8.91E-13
sr 86	4.05E-13	4.64E-13	5.24E-13	5.87E-13	6.51E-13	6.51E-13
ge 72	4.00E-13	4.50E-13	5.00E-13	5.50E-13	6.01E-13	6.01E-13
dy160	2.02E-13	2.49E-13	3.01E-13	3.58E-13	4.20E-13	4.20E-13
se 76	2.45E-13	2.78E-13	3.11E-13	3.44E-13	3.78E-13	3.78E-13
pm148	3.68E-13	3.69E-13	3.69E-13	3.69E-13	3.69E-13	3.65E-13
xe128	1.74E-13	2.13E-13	2.55E-13	3.00E-13	3.49E-13	3.49E-13
ag111	3.25E-13	3.28E-13	3.29E-13	3.31E-13	3.32E-13	3.30E-13
eu157	2.82E-13	3.04E-13	3.05E-13	3.06E-13	3.07E-13	2.87E-13
cd115m	2.38E-13	2.38E-13	2.38E-13	2.38E-13	2.38E-13	2.38E-13
er166	7.43E-14	8.63E-14	9.88E-14	1.12E-13	1.26E-13	1.26E-13
sn116	4.74E-14	5.99E-14	7.38E-14	8.91E-14	1.06E-13	1.06E-13
cs136	6.07E-14	6.17E-14	6.24E-14	6.30E-14	6.37E-14	6.35E-14
te122	2.16E-14	2.70E-14	3.30E-14	3.96E-14	4.68E-14	4.68E-14
sn125	2.91E-14	2.93E-14	2.93E-14	2.93E-14	2.93E-14	2.92E-14
kr 80	1.71E-14	1.94E-14	2.16E-14	2.38E-14	2.61E-14	2.61E-14
ru105	2.30E-14	2.98E-14	2.99E-14	2.99E-14	2.99E-14	2.36E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.42E-15	9.57E-15	9.56E-15	9.56E-15	9.56E-15	9.42E-15
rb 88	8.98E-15	1.29E-14	1.29E-14	1.29E-14	1.29E-14	9.27E-15
i135	8.36E-15	1.02E-14	1.02E-14	1.02E-14	1.01E-14	8.48E-15
sb126	3.34E-15	3.40E-15	3.44E-15	3.48E-15	3.53E-15	3.51E-15
tb160	2.39E-15	2.65E-15	2.92E-15	3.18E-15	3.45E-15	3.45E-15
sb124	2.20E-15	2.22E-15	2.23E-15	2.24E-15	2.26E-15	2.25E-15
te123	1.29E-15	1.47E-15	1.65E-15	1.84E-15	2.03E-15	2.03E-15
be 9	1.33E-15	1.50E-15	1.66E-15	1.83E-15	2.00E-15	2.00E-15
pr142	1.30E-15	1.56E-15	1.73E-15	1.91E-15	2.08E-15	1.95E-15
in117m	1.88E-15	2.12E-15	2.12E-15	2.12E-15	2.12E-15	1.91E-15
te134	9.31E-16	5.86E-15	5.86E-15	5.85E-15	5.85E-15	1.07E-15
er167	5.13E-16	6.23E-16	7.43E-16	8.74E-16	1.02E-15	1.02E-15
i130	8.78E-16	1.00E-15	1.03E-15	1.07E-15	1.10E-15	1.00E-15
li 7	5.41E-16	6.08E-16	6.76E-16	7.43E-16	8.10E-16	8.10E-16
in117	5.57E-16	6.23E-16	6.23E-16	6.24E-16	6.25E-16	5.68E-16
rb 86	3.22E-16	3.33E-16	3.43E-16	3.53E-16	3.64E-16	3.63E-16
dy165	1.57E-16	2.71E-16	2.78E-16	2.84E-16	2.91E-16	1.80E-16
ge 75	3.52E-17	8.66E-17	8.66E-17	8.65E-17	8.65E-17	3.77E-17
cd108	1.78E-17	2.13E-17	2.50E-17	2.91E-17	3.35E-17	3.35E-17
cd118	2.63E-17	1.21E-16	1.21E-16	1.21E-16	1.21E-16	2.96E-17
sn114	9.67E-18	1.25E-17	1.56E-17	1.91E-17	2.30E-17	2.30E-17
cs134m	6.60E-18	1.14E-17	1.27E-17	1.40E-17	1.52E-17	1.02E-17
cd109	5.38E-19	5.82E-19	6.22E-19	6.66E-19	7.09E-19	7.09E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 26
0 fraction of total absorption rate
power= .00mw, burnup= 438.mwd, flux= 2.73E+08n/cm**2-sec
0 initial 82181. d 91313. d 100444. d 109575. d 109575. d

in119m	4.98E-19	3.03E-17	3.03E-17	3.03E-17	3.03E-17	6.92E-19
in119	3.36E-21	2.37E-18	2.37E-18	2.38E-18	2.38E-18	3.36E-21

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 27
power= 4.000E-03mw, burnup=4.3830E+02mwd, flux= 2.73E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	82181. d	91313. d	100444. d	109575. d	109575. d	
h 1	1.74E-05	1.95E-05	2.17E-05	2.38E-05	2.60E-05	2.60E-05

	h 2	5.16E-08	5.80E-08	6.43E-08	7.06E-08	7.70E-08	7.70E-08
	h 3	3.37E-11	3.36E-11	3.36E-11	3.37E-11	3.38E-11	3.38E-11
	h 4	.00E+00	1.37E-34	1.37E-34	1.37E-34	1.37E-34	.00E+00
	he 3	3.45E-10	3.92E-10	4.38E-10	4.84E-10	5.31E-10	5.31E-10
	he 4	2.88E-06	3.23E-06	3.58E-06	3.94E-06	4.29E-06	4.29E-06
	he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	ne 20	3.46E-07	3.88E-07	4.30E-07	4.73E-07	5.15E-07	5.15E-07
	ne 21	2.37E-12	2.96E-12	3.60E-12	4.31E-12	5.07E-12	5.07E-12
	ne 22	2.21E-09	2.49E-09	2.76E-09	3.04E-09	3.32E-09	3.32E-09
	ne 23	7.11E-30	7.06E-15	7.06E-15	7.06E-15	7.06E-15	7.06E-30
	na 22	4.18E-11	4.15E-11	4.15E-11	4.15E-11	4.15E-11	4.15E-11
	na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
	na 24	2.82E-08	2.85E-08	2.85E-08	2.85E-08	2.85E-08	2.63E-08
	na 24m	5.05E-30	4.69E-15	4.69E-15	4.69E-15	4.69E-15	4.69E-30
	na 25	1.78E-41	2.06E-26	2.38E-26	2.72E-26	3.07E-26	3.07E-41
	mg 24	2.78E-03	3.08E-03	3.38E-03	3.67E-03	3.97E-03	3.97E-03
	mg 25	6.12E-10	7.17E-10	8.28E-10	9.46E-10	1.07E-09	1.07E-09
	mg 26	5.16E-08	5.80E-08	6.43E-08	7.06E-08	7.70E-08	7.70E-08
	mg 27	6.27E-16	2.11E-12	2.11E-12	2.11E-12	2.11E-12	1.16E-15
	mg 28	4.06E-24	4.30E-24	4.30E-24	4.30E-24	4.29E-24	4.06E-24
	al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
	al 28	5.16E-25	2.11E-10	2.11E-10	2.11E-10	2.11E-10	3.88E-24
	al 29	4.65E-30	7.00E-25	8.56E-25	1.03E-24	1.21E-24	2.45E-29
	al 30	.00E+00	2.97E-36	4.05E-36	5.35E-36	6.89E-36	.00E+00
	si 28	8.10E-03	8.96E-03	9.82E-03	1.07E-02	1.15E-02	1.15E-02
	si 29	2.17E-09	2.72E-09	3.33E-09	3.99E-09	4.70E-09	4.70E-09
	si 30	6.11E-16	8.64E-16	1.18E-15	1.56E-15	2.00E-15	2.00E-15
	si 31	2.69E-28	6.20E-28	8.45E-28	1.12E-27	1.44E-27	9.16E-28
	si 32	1.35E-34	2.11E-34	3.14E-34	4.49E-34	6.22E-34	6.22E-34
	totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0	flux		2.73E+08	2.73E+08	2.73E+08	2.73E+08	2.73E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 28
power= 4.000E-03mw, burnup=4.3830E+02mwd, flux= 2.73E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	82181. d	91313. d	100444. d	109575. d	109575. d
he 4	3.18E-02	3.76E-02	4.37E-02	5.00E-02	5.65E-02	5.65E-02
pb206	8.64E-08	1.28E-07	1.82E-07	2.48E-07	3.30E-07	3.30E-07
pb207	2.24E-07	2.93E-07	3.72E-07	4.60E-07	5.57E-07	5.57E-07
pb208	5.11E-08	6.46E-08	7.96E-08	9.61E-08	1.14E-07	1.14E-07
pb209	5.59E-14	7.03E-14	8.67E-14	1.05E-13	1.25E-13	1.25E-13
pb210	4.65E-08	6.07E-08	7.67E-08	9.46E-08	1.14E-07	1.14E-07
pb211	2.54E-13	2.92E-13	3.30E-13	3.68E-13	4.05E-13	4.05E-13
pb212	9.04E-13	1.01E-12	1.12E-12	1.22E-12	1.33E-12	1.33E-12
pb214	1.41E-13	1.83E-13	2.25E-13	2.72E-13	3.22E-13	3.12E-13
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	6.92E-09	9.85E-09	1.35E-08	1.80E-08	2.33E-08	2.33E-08
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.86E-11	3.74E-11	4.72E-11	5.83E-11	7.04E-11	7.04E-11
bi211	1.52E-14	1.73E-14	1.96E-14	2.18E-14	2.40E-14	2.42E-14
bi212	8.58E-14	9.59E-14	1.06E-13	1.16E-13	1.26E-13	1.26E-13
bi213	1.26E-14	1.64E-14	2.02E-14	2.45E-14	2.91E-14	2.83E-14
bi214	1.06E-13	1.36E-13	1.67E-13	2.02E-13	2.39E-13	2.36E-13
po210	7.91E-10	1.03E-09	1.30E-09	1.61E-09	1.94E-09	1.94E-09
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	1.68E-19	1.91E-19	2.16E-19	2.41E-19	2.66E-19	2.68E-19
po212	4.51E-24	5.04E-24	5.57E-24	6.11E-24	6.64E-24	6.64E-24
po213	1.89E-23	2.47E-23	3.04E-23	3.68E-23	4.38E-23	4.25E-23
po214	1.46E-20	1.87E-20	2.30E-20	2.78E-20	3.29E-20	3.25E-20

po215	2.09E-19	2.40E-19	2.71E-19	3.02E-19	3.33E-19	3.33E-19
po216	3.42E-18	3.83E-18	4.23E-18	4.64E-18	5.04E-18	5.04E-18
po218	1.68E-14	2.12E-14	2.61E-14	3.14E-14	3.73E-14	3.73E-14
rn218	1.31E-29	1.45E-29	1.60E-29	1.75E-29	1.91E-29	1.91E-29
rn219	4.65E-16	5.34E-16	6.03E-16	6.72E-16	7.41E-16	7.41E-16
rn220	1.31E-15	1.47E-15	1.62E-15	1.78E-15	1.93E-15	1.93E-15
rn222	2.99E-11	3.77E-11	4.63E-11	5.58E-11	6.62E-11	6.62E-11
ra222	1.42E-26	1.57E-26	1.74E-26	1.90E-26	2.07E-26	2.07E-26
ra223	1.16E-10	1.33E-10	1.50E-10	1.68E-10	1.85E-10	1.85E-10
ra224	7.46E-12	8.35E-12	9.23E-12	1.01E-11	1.10E-11	1.10E-11
ra225	6.07E-12	7.68E-12	9.47E-12	1.14E-11	1.36E-11	1.36E-11
ra226	4.56E-06	5.75E-06	7.08E-06	8.53E-06	1.01E-05	1.01E-05
ra228	4.05E-13	4.58E-13	5.11E-13	5.64E-13	6.17E-13	6.17E-13
ac225	4.10E-12	5.18E-12	6.40E-12	7.73E-12	9.19E-12	9.19E-12
ac227	8.06E-08	9.26E-08	1.05E-07	1.16E-07	1.28E-07	1.28E-07
ac228	4.95E-17	5.59E-17	6.24E-17	6.88E-17	7.53E-17	7.53E-17
th226	6.94E-25	7.67E-25	8.48E-25	9.28E-25	1.01E-24	1.01E-24
th227	1.87E-10	2.15E-10	2.43E-10	2.71E-10	2.98E-10	2.98E-10
th228	1.42E-09	1.59E-09	1.76E-09	1.93E-09	2.10E-09	2.10E-09
th229	1.18E-06	1.49E-06	1.84E-06	2.23E-06	2.65E-06	2.65E-06
th230	5.11E-03	5.74E-03	6.38E-03	7.02E-03	7.66E-03	7.66E-03
th231	3.04E-09	3.04E-09	3.04E-09	3.04E-09	3.05E-09	3.05E-09
th232	1.03E-03	1.16E-03	1.29E-03	1.42E-03	1.55E-03	1.55E-03
th233	3.02E-16	1.07E-14	1.18E-14	1.30E-14	1.42E-14	5.89E-16
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	1.44E-04	1.62E-04	1.80E-04	1.98E-04	2.16E-04	2.16E-04
pa232	2.37E-12	2.78E-12	3.09E-12	3.40E-12	3.71E-12	3.57E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 29
power= 4.000E-03mw, burnup=4.3830E+02mwd, flux= 2.73E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	82181. d	91313. d	100444. d	109575. d	109575. d
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	6.72E-22	7.43E-22	8.22E-22	9.00E-22	9.78E-22	9.76E-22
u231	2.08E-18	2.34E-18	2.60E-18	2.86E-18	3.12E-18	3.08E-18
u232	5.10E-08	5.70E-08	6.30E-08	6.91E-08	7.51E-08	7.51E-08
u233	2.73E-03	3.07E-03	3.41E-03	3.75E-03	4.09E-03	4.09E-03
u234	9.07E+00	9.07E+00	9.07E+00	9.07E+00	9.08E+00	9.08E+00
u235	7.29E+02	7.29E+02	7.29E+02	7.28E+02	7.28E+02	7.28E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.13E-06	3.12E-06	3.12E-06	3.12E-06	3.12E-06	3.10E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.21E-08	3.19E-07	3.19E-07	3.19E-07	3.19E-07	1.55E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.80E-12	8.69E-12	8.68E-12	8.68E-12	8.68E-12	8.68E-12
np236m	1.98E-12	2.07E-12	2.07E-12	2.06E-12	2.06E-12	1.96E-12
np236	4.03E-08	4.52E-08	5.01E-08	5.50E-08	5.99E-08	5.99E-08
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.52E-06	1.56E-06	1.56E-06	1.56E-06	1.56E-06	1.52E-06
np239	4.58E-05	4.61E-05	4.61E-05	4.61E-05	4.61E-05	4.54E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.74E-15	9.37E-15	9.37E-15	9.37E-15	9.37E-15	2.98E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.12E-09	1.12E-09	1.12E-09	1.12E-09	1.12E-09
pu237	1.94E-13	2.01E-13	2.09E-13	2.15E-13	2.21E-13	2.21E-13

```
      pu238   1.88E-02  1.97E-02  2.04E-02  2.09E-02  2.14E-02  2.14E-02
      pu239   1.00E+00  1.13E+00  1.25E+00  1.37E+00  1.49E+00  1.49E+00
      pu240   9.85E-04  1.24E-03  1.53E-03  1.84E-03  2.19E-03  2.19E-03
      pu241   3.35E-07  4.29E-07  5.36E-07  6.56E-07  7.88E-07  7.88E-07
      pu242   2.64E-10  4.05E-10  5.94E-10  8.39E-10  1.15E-09  1.15E-09
      pu243   4.37E-19  8.58E-19  1.26E-18  1.78E-18  2.43E-18  1.92E-18
      pu244   1.05E-40  3.68E-40  1.13E-39  3.08E-39  7.71E-39  7.71E-39
      pu245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am239   2.32E-22  3.70E-22  5.12E-22  6.86E-22  8.94E-22  8.09E-22
      am240   1.16E-19  1.69E-19  2.34E-19  3.14E-19  4.09E-19  4.00E-19
      am241   9.28E-07  1.34E-06  1.86E-06  2.49E-06  3.25E-06  3.25E-06
      am242m  9.37E-11  1.50E-10  2.28E-10  3.31E-10  4.63E-10  4.63E-10
      am242   3.11E-14  4.86E-14  6.76E-14  9.08E-14  1.19E-13  1.11E-13
      am243   1.29E-13  2.32E-13  3.91E-13  6.25E-13  9.56E-13  9.56E-13
      am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am244   8.75E-22  1.77E-21  2.99E-21  4.77E-21  7.29E-21  6.49E-21
      am245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
    totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0     flux              2.73E+08  2.73E+08  2.73E+08  2.73E+08  2.73E-07
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

         cross-section data taken from position number  4 of library on unit 33.

         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         ********************************************************************************
         *                                                                              *
         *            prelim lwr origen-s binary working library--id = 1143             *
         *          made from modified card-image origen-s libraries of scale 4.2       *
         *       data from the light element, actinide, and fission product libraries   *
         *         decay data, including gamma and total energy, are from endf/b-vi     *
         *                                                                              *
         *       neutron flux spectrum factors and cross sections were produced from    *
         *      the "presas2" case updating all nuclides on the scale "burnup" library  *
         *                                                                              *
         *                  fission product yields are from endf/b-v                    *
         *                                                                              *
         *                 photon libraries use an 18-energy-group structure            *
         *                the photon data are from the master photon data base,         *
         *                 produced to include bremsstrahlung from uo2 matrix           *
```

```
         *                                                                          *
         *        see information above this box (if present) for later updates     *
         *                                                                          *
         ******************************************************************************
         *                                                                          *
0        ******************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/28/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   30
        power=    .00mw, burnup=    584.mwd, flux= 2.70E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      118706. d      127838. d      136969. d      146100. d      146100. d
     productions   1.136002E+06   1.136182E+06   1.136361E+06   1.136540E+06   1.136719E+06   1.136719E+06
     absorptions   9.278001E+05   9.280391E+05   9.282740E+05   9.285046E+05   9.287318E+05   9.287318E+05
     k infinity    1.224404E+00   1.224282E+00   1.224166E+00   1.224054E+00   1.223947E+00   1.223947E+00
0                   initial      118706. d      127838. d      136969. d      146100. d      146100. d
     actinide
     absorptions   9.226709E+05   9.227775E+05   9.228838E+05   9.229898E+05   9.230958E+05   9.230958E+05
     non-actinide
     abs. fracs.   5.528271E-03   5.669594E-03   5.806684E-03   5.939364E-03   6.068587E-03   6.068587E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products    page   31
0                                  fraction of total absorption rate
        power=    .00mw, burnup=    584.mwd, flux= 2.70E+08n/cm**2-sec
0              initial 118706. d 127838. d 136969. d 146100. d 146100. d

     sm149     1.83E-03  1.95E-03  2.06E-03  2.17E-03  2.28E-03  2.28E-03
     eu151     4.15E-05  4.65E-05  5.17E-05  5.69E-05  6.21E-05  6.21E-05
     nd143     4.44E-05  4.81E-05  5.18E-05  5.55E-05  5.91E-05  5.91E-05
     sm151     3.62E-05  3.68E-05  3.74E-05  3.79E-05  3.82E-05  3.82E-05
     gd155     2.72E-05  2.93E-05  3.14E-05  3.35E-05  3.55E-05  3.55E-05
     rh103     2.06E-05  2.23E-05  2.41E-05  2.58E-05  2.75E-05  2.75E-05
     cd113     1.74E-05  1.87E-05  2.00E-05  2.12E-05  2.25E-05  2.25E-05
     gd157     1.72E-05  1.82E-05  1.92E-05  2.02E-05  2.11E-05  2.11E-05
     xe131     1.40E-05  1.52E-05  1.63E-05  1.75E-05  1.87E-05  1.87E-05
     cs133     1.09E-05  1.18E-05  1.27E-05  1.36E-05  1.45E-05  1.45E-05
     tc 99     7.99E-06  8.66E-06  9.32E-06  9.98E-06  1.06E-05  1.06E-05
     sm147     7.97E-06  8.64E-06  9.31E-06  9.97E-06  1.06E-05  1.06E-05
     nd145     6.21E-06  6.72E-06  7.24E-06  7.76E-06  8.27E-06  8.27E-06
     mo 95     4.30E-06  4.65E-06  5.01E-06  5.37E-06  5.72E-06  5.72E-06
     sm152     3.35E-06  3.64E-06  3.92E-06  4.21E-06  4.49E-06  4.49E-06
     kr 83     2.70E-06  2.92E-06  3.14E-06  3.37E-06  3.59E-06  3.59E-06
     cs135     2.45E-06  2.65E-06  2.86E-06  3.06E-06  3.27E-06  3.27E-06
     ru101     1.90E-06  2.05E-06  2.21E-06  2.37E-06  2.53E-06  2.53E-06
     pr141     1.83E-06  1.99E-06  2.14E-06  2.29E-06  2.44E-06  2.44E-06
     xe135     2.29E-06  2.32E-06  2.32E-06  2.32E-06  2.32E-06  2.28E-06
     eu153     1.67E-06  1.81E-06  1.94E-06  2.08E-06  2.22E-06  2.22E-06
     la139     1.50E-06  1.63E-06  1.75E-06  1.87E-06  2.00E-06  2.00E-06
     sm150     6.10E-07  7.08E-07  8.13E-07  9.23E-07  1.04E-06  1.04E-06
     ba137     6.15E-07  6.75E-07  7.34E-07  7.94E-07  8.53E-07  8.53E-07
     pd105     6.38E-07  6.91E-07  7.44E-07  7.98E-07  8.51E-07  8.51E-07
     zr 93     6.06E-07  6.57E-07  7.07E-07  7.57E-07  8.07E-07  8.07E-07
      i129     4.67E-07  5.06E-07  5.45E-07  5.83E-07  6.22E-07  6.22E-07
```

nd144	4.50E-07	4.87E-07	5.25E-07	5.62E-07	5.99E-07	5.99E-07
mo 97	3.40E-07	3.68E-07	3.97E-07	4.25E-07	4.53E-07	4.53E-07
ag109	2.58E-07	2.81E-07	3.05E-07	3.29E-07	3.53E-07	3.53E-07
pm147	2.71E-07	2.71E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07
zr 91	1.60E-07	1.73E-07	1.87E-07	2.00E-07	2.13E-07	2.13E-07
y 89	1.54E-07	1.67E-07	1.79E-07	1.92E-07	2.05E-07	2.05E-07
ru102	1.39E-07	1.50E-07	1.62E-07	1.73E-07	1.85E-07	1.85E-07
ce142	1.25E-07	1.35E-07	1.46E-07	1.56E-07	1.66E-07	1.66E-07
eu155	1.60E-07	1.60E-07	1.60E-07	1.60E-07	1.61E-07	1.61E-07
nd148	1.20E-07	1.30E-07	1.40E-07	1.50E-07	1.60E-07	1.60E-07
nd146	1.01E-07	1.09E-07	1.17E-07	1.26E-07	1.34E-07	1.34E-07
ba138	8.61E-08	9.33E-08	1.00E-07	1.08E-07	1.15E-07	1.15E-07
pd108	8.45E-08	9.19E-08	9.93E-08	1.07E-07	1.14E-07	1.14E-07
in115	8.31E-08	9.00E-08	9.69E-08	1.04E-07	1.11E-07	1.11E-07
ce140	8.07E-08	8.74E-08	9.41E-08	1.01E-07	1.07E-07	1.07E-07
xe132	7.22E-08	7.82E-08	8.42E-08	9.02E-08	9.62E-08	9.62E-08
pd107	4.96E-08	5.39E-08	5.82E-08	6.25E-08	6.68E-08	6.68E-08
mo 98	4.97E-08	5.38E-08	5.80E-08	6.21E-08	6.62E-08	6.62E-08
mo100	4.82E-08	5.22E-08	5.62E-08	6.02E-08	6.42E-08	6.42E-08
xe134	4.76E-08	5.15E-08	5.55E-08	5.94E-08	6.34E-08	6.34E-08
zr 92	3.86E-08	4.18E-08	4.50E-08	4.82E-08	5.14E-08	5.14E-08
i127	3.13E-08	3.40E-08	3.66E-08	3.92E-08	4.18E-08	4.18E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 32
0 fraction of total absorption rate
power= .00mw, burnup= 584.mwd, flux= 2.70E+08n/cm**2-sec
0 initial 118706. d 127838. d 136969. d 146100. d 146100. d

zr 96	3.02E-08	3.27E-08	3.52E-08	3.77E-08	4.02E-08	4.02E-08
ru104	2.97E-08	3.22E-08	3.47E-08	3.72E-08	3.96E-08	3.96E-08
nd150	2.66E-08	2.88E-08	3.10E-08	3.32E-08	3.54E-08	3.54E-08
xe136	2.57E-08	2.79E-08	3.00E-08	3.21E-08	3.43E-08	3.43E-08
br 81	1.92E-08	2.08E-08	2.24E-08	2.40E-08	2.56E-08	2.56E-08
rb 85	1.86E-08	2.02E-08	2.17E-08	2.33E-08	2.48E-08	2.48E-08
zr 94	1.63E-08	1.76E-08	1.90E-08	2.03E-08	2.17E-08	2.17E-08
zr 90	1.31E-08	1.44E-08	1.56E-08	1.69E-08	1.81E-08	1.81E-08
cd111	1.28E-08	1.39E-08	1.50E-08	1.61E-08	1.72E-08	1.72E-08
sr 90	1.71E-08	1.71E-08	1.71E-08	1.71E-08	1.71E-08	1.71E-08
te130	1.17E-08	1.27E-08	1.36E-08	1.46E-08	1.56E-08	1.56E-08
eu152	9.87E-09	1.12E-08	1.25E-08	1.39E-08	1.52E-08	1.52E-08
sm154	1.14E-08	1.23E-08	1.33E-08	1.42E-08	1.52E-08	1.52E-08
rb 87	1.09E-08	1.18E-08	1.27E-08	1.36E-08	1.45E-08	1.45E-08
gd152	5.25E-09	6.47E-09	7.84E-09	9.36E-09	1.10E-08	1.10E-08
se 77	7.75E-09	8.39E-09	9.04E-09	9.68E-09	1.03E-08	1.03E-08
rh105	8.45E-09	8.48E-09	8.49E-09	8.50E-09	8.51E-09	8.47E-09
pd106	5.54E-09	6.01E-09	6.48E-09	6.96E-09	7.43E-09	7.43E-09
kr 84	5.12E-09	5.55E-09	5.97E-09	6.39E-09	6.82E-09	6.82E-09
se 79	3.97E-09	4.30E-09	4.63E-09	4.96E-09	5.29E-09	5.29E-09
sb121	3.77E-09	4.08E-09	4.40E-09	4.71E-09	5.03E-09	5.03E-09
sb123	3.07E-09	3.32E-09	3.58E-09	3.83E-09	4.09E-09	4.09E-09
kr 86	2.87E-09	3.11E-09	3.34E-09	3.58E-09	3.82E-09	3.82E-09
cs137	3.76E-09	3.76E-09	3.76E-09	3.76E-09	3.76E-09	3.76E-09
te128	2.56E-09	2.77E-09	2.98E-09	3.19E-09	3.41E-09	3.41E-09
gd156	2.32E-09	2.55E-09	2.78E-09	3.01E-09	3.25E-09	3.25E-09
pr143	2.67E-09	2.67E-09	2.67E-09	2.66E-09	2.66E-09	2.66E-09
se 80	1.85E-09	2.00E-09	2.16E-09	2.31E-09	2.47E-09	2.47E-09
dy161	1.73E-09	1.88E-09	2.04E-09	2.19E-09	2.35E-09	2.35E-09
te125	1.60E-09	1.74E-09	1.87E-09	2.01E-09	2.14E-09	2.14E-09
xe133	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.02E-09
ce141	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09
tb159	1.12E-09	1.22E-09	1.31E-09	1.41E-09	1.51E-09	1.51E-09

cd112	1.06E-09	1.15E-09	1.24E-09	1.33E-09	1.42E-09	1.42E-09
li 6	1.05E-09	1.14E-09	1.23E-09	1.31E-09	1.40E-09	1.40E-09
ru 99	6.61E-10	7.72E-10	8.91E-10	1.02E-09	1.16E-09	1.16E-09
sn117	8.36E-10	9.06E-10	9.76E-10	1.05E-09	1.12E-09	1.12E-09
eu154	8.25E-10	8.95E-10	9.66E-10	1.04E-09	1.11E-09	1.11E-09
pm149	9.72E-10	9.77E-10	9.77E-10	9.77E-10	9.76E-10	9.69E-10
nd147	9.25E-10	9.28E-10	9.28E-10	9.28E-10	9.27E-10	9.23E-10
sn119	6.88E-10	7.45E-10	8.02E-10	8.59E-10	9.17E-10	9.17E-10
sn115	6.30E-10	6.82E-10	7.35E-10	7.87E-10	8.40E-10	8.40E-10
gd158	5.35E-10	5.94E-10	6.54E-10	7.17E-10	7.80E-10	7.80E-10
sr 88	5.27E-10	5.71E-10	6.14E-10	6.58E-10	7.02E-10	7.02E-10
ce144	6.01E-10	6.01E-10	6.01E-10	6.00E-10	6.00E-10	6.00E-10
gd154	3.18E-10	3.75E-10	4.37E-10	5.03E-10	5.74E-10	5.74E-10
kr 85	5.74E-10	5.73E-10	5.73E-10	5.73E-10	5.73E-10	5.73E-10
cd114	4.07E-10	4.45E-10	4.83E-10	5.22E-10	5.61E-10	5.61E-10
pd110	3.86E-10	4.19E-10	4.52E-10	4.86E-10	5.19E-10	5.19E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 33
0 fraction of total absorption rate
power= .00mw, burnup= 584.mwd, flux= 2.70E+08n/cm**2-sec
0 initial 118706. d 127838. d 136969. d 146100. d 146100. d

se 82	3.58E-10	3.87E-10	4.17E-10	4.47E-10	4.76E-10	4.76E-10
sn126	2.89E-10	3.14E-10	3.38E-10	3.62E-10	3.87E-10	3.87E-10
se 78	2.71E-10	2.94E-10	3.16E-10	3.39E-10	3.61E-10	3.61E-10
ru103	3.58E-10	3.59E-10	3.59E-10	3.59E-10	3.59E-10	3.58E-10
dy162	2.39E-10	2.61E-10	2.84E-10	3.07E-10	3.31E-10	3.31E-10
dy164	2.29E-10	2.51E-10	2.74E-10	2.97E-10	3.21E-10	3.21E-10
sn124	2.18E-10	2.36E-10	2.54E-10	2.72E-10	2.90E-10	2.90E-10
as 75	1.61E-10	1.75E-10	1.88E-10	2.02E-10	2.15E-10	2.15E-10
ru100	1.12E-10	1.31E-10	1.52E-10	1.74E-10	1.97E-10	1.97E-10
zr 95	1.65E-10	1.65E-10	1.65E-10	1.65E-10	1.65E-10	1.64E-10
in113	1.13E-10	1.23E-10	1.33E-10	1.44E-10	1.54E-10	1.54E-10
nb 95	1.53E-10	1.53E-10	1.53E-10	1.52E-10	1.52E-10	1.52E-10
y 91	1.44E-10	1.44E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10
nd142	7.60E-11	8.91E-11	1.03E-10	1.19E-10	1.35E-10	1.35E-10
ba134	7.31E-11	8.57E-11	9.93E-11	1.14E-10	1.29E-10	1.29E-10
ba136	9.23E-11	1.01E-10	1.09E-10	1.17E-10	1.26E-10	1.26E-10
sm148	6.98E-11	8.16E-11	9.43E-11	1.08E-10	1.22E-10	1.22E-10
sn118	8.88E-11	9.61E-11	1.04E-10	1.11E-10	1.18E-10	1.18E-10
cs134	8.16E-11	8.81E-11	9.48E-11	1.02E-10	1.08E-10	1.08E-10
pm151	1.07E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.06E-10
ba135	5.95E-11	6.98E-11	8.09E-11	9.28E-11	1.06E-10	1.06E-10
sn122	7.55E-11	8.18E-11	8.81E-11	9.44E-11	1.01E-10	1.01E-10
cd116	7.54E-11	8.17E-11	8.80E-11	9.43E-11	1.01E-10	1.01E-10
pd104	4.98E-11	5.84E-11	6.76E-11	7.76E-11	8.82E-11	8.82E-11
dy163	5.41E-11	5.94E-11	6.47E-11	7.01E-11	7.57E-11	7.57E-11
kr 82	5.41E-11	5.93E-11	6.45E-11	6.98E-11	7.52E-11	7.52E-11
sn120	5.64E-11	6.11E-11	6.58E-11	7.05E-11	7.52E-11	7.52E-11
ge 73	4.42E-11	4.78E-11	5.15E-11	5.52E-11	5.89E-11	5.89E-11
mo 96	3.69E-11	4.14E-11	4.62E-11	5.11E-11	5.63E-11	5.63E-11
xe130	3.70E-11	4.08E-11	4.47E-11	4.88E-11	5.29E-11	5.29E-11
ba140	4.71E-11	4.73E-11	4.73E-11	4.73E-11	4.73E-11	4.71E-11
sm153	3.75E-11	3.84E-11	3.85E-11	3.85E-11	3.85E-11	3.74E-11
eu156	3.51E-11	3.51E-11	3.52E-11	3.53E-11	3.54E-11	3.53E-11
sr 89	3.07E-11	3.07E-11	3.07E-11	3.07E-11	3.07E-11	3.06E-11
ru106	2.60E-11	2.60E-11	2.61E-11	2.62E-11	2.62E-11	2.62E-11
ge 76	1.60E-11	1.73E-11	1.86E-11	2.00E-11	2.13E-11	2.13E-11
ce143	1.70E-11	1.75E-11	1.75E-11	1.75E-11	1.75E-11	1.69E-11
y 90	1.63E-11	1.63E-11	1.63E-11	1.63E-11	1.63E-11	1.63E-11
la140	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11

nb 93	8.26E-12	9.81E-12	1.15E-11	1.33E-11	1.52E-11	1.52E-11
sb125	1.50E-11	1.50E-11	1.51E-11	1.51E-11	1.51E-11	1.51E-11
gd160	1.05E-11	1.15E-11	1.24E-11	1.33E-11	1.42E-11	1.42E-11
te126	9.43E-12	1.04E-11	1.13E-11	1.23E-11	1.33E-11	1.33E-11
mo 99	1.29E-11	1.31E-11	1.31E-11	1.31E-11	1.31E-11	1.28E-11
cd110	7.00E-12	8.23E-12	9.57E-12	1.10E-11	1.26E-11	1.26E-11
pm148m	9.54E-12	9.53E-12	9.53E-12	9.52E-12	9.52E-12	9.51E-12
br 79	4.85E-12	5.69E-12	6.60E-12	7.57E-12	8.61E-12	8.61E-12
kr 87	9.16E-12	2.30E-11	2.30E-11	2.29E-11	2.29E-11	7.83E-12
te127m	7.51E-12	7.52E-12	7.53E-12	7.53E-12	7.54E-12	7.54E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 34

0 fraction of total absorption rate

power= .00mw, burnup= 584.mwd, flux= 2.70E+08n/cm**2-sec

0 initial 118706. d 127838. d 136969. d 146100. d 146100. d

i131	6.75E-12	6.77E-12	6.77E-12	6.77E-12	6.77E-12	6.75E-12
ho165	3.76E-12	4.12E-12	4.50E-12	4.88E-12	5.27E-12	5.27E-12
xe129	2.75E-12	3.22E-12	3.74E-12	4.29E-12	4.88E-12	4.88E-12
ag107	2.63E-12	3.09E-12	3.59E-12	4.13E-12	4.71E-12	4.71E-12
te124	1.94E-12	2.10E-12	2.27E-12	2.44E-12	2.61E-12	2.61E-12
sr 87	1.85E-12	2.00E-12	2.15E-12	2.31E-12	2.46E-12	2.46E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
nb 94	1.05E-12	1.13E-12	1.22E-12	1.31E-12	1.39E-12	1.39E-12
ge 74	8.92E-13	9.66E-13	1.04E-12	1.11E-12	1.19E-12	1.19E-12
sr 86	6.52E-13	7.18E-13	7.86E-13	8.56E-13	9.27E-13	9.27E-13
ge 72	6.02E-13	6.52E-13	7.02E-13	7.52E-13	8.03E-13	8.03E-13
dy160	4.20E-13	4.87E-13	5.59E-13	6.36E-13	7.18E-13	7.18E-13
xe128	3.50E-13	4.03E-13	4.60E-13	5.20E-13	5.84E-13	5.84E-13
se 76	3.79E-13	4.13E-13	4.48E-13	4.84E-13	5.19E-13	5.19E-13
pm148	3.65E-13	3.67E-13	3.67E-13	3.67E-13	3.67E-13	3.63E-13
ag111	3.30E-13	3.33E-13	3.34E-13	3.35E-13	3.37E-13	3.35E-13
eu157	2.87E-13	3.08E-13	3.09E-13	3.10E-13	3.11E-13	2.86E-13
cd115m	2.38E-13	2.39E-13	2.39E-13	2.39E-13	2.39E-13	2.39E-13
sn116	1.06E-13	1.24E-13	1.43E-13	1.65E-13	1.87E-13	1.87E-13
er166	1.26E-13	1.40E-13	1.55E-13	1.70E-13	1.86E-13	1.86E-13
te122	4.68E-14	5.45E-14	6.29E-14	7.19E-14	8.15E-14	8.15E-14
cs136	6.34E-14	6.43E-14	6.50E-14	6.57E-14	6.64E-14	6.61E-14
kr 80	2.61E-14	2.84E-14	3.07E-14	3.30E-14	3.54E-14	3.54E-14
sn125	2.91E-14	2.93E-14	2.93E-14	2.93E-14	2.93E-14	2.91E-14
ru105	2.36E-14	2.99E-14	2.99E-14	3.00E-14	3.00E-14	2.27E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.43E-15	9.57E-15	9.57E-15	9.56E-15	9.56E-15	9.40E-15
rb 88	9.29E-15	1.29E-14	1.29E-14	1.29E-14	1.29E-14	8.66E-15
i135	8.49E-15	1.02E-14	1.02E-14	1.02E-14	1.02E-14	8.23E-15
tb160	3.45E-15	3.72E-15	3.98E-15	4.25E-15	4.52E-15	4.52E-15
sb126	3.52E-15	3.57E-15	3.62E-15	3.66E-15	3.70E-15	3.69E-15
te123	2.03E-15	2.23E-15	2.43E-15	2.63E-15	2.84E-15	2.84E-15
be 9	1.99E-15	2.16E-15	2.32E-15	2.49E-15	2.65E-15	2.65E-15
pr142	1.96E-15	2.25E-15	2.42E-15	2.60E-15	2.77E-15	2.58E-15
sb124	2.25E-15	2.27E-15	2.28E-15	2.29E-15	2.31E-15	2.31E-15
in117m	1.91E-15	2.13E-15	2.13E-15	2.13E-15	2.14E-15	1.86E-15
er167	1.02E-15	1.17E-15	1.34E-15	1.52E-15	1.71E-15	1.71E-15
i130	1.00E-15	1.13E-15	1.16E-15	1.19E-15	1.22E-15	1.10E-15
li 7	8.12E-16	8.79E-16	9.47E-16	1.01E-15	1.08E-15	1.08E-15
te134	1.07E-15	5.86E-15	5.86E-15	5.85E-15	5.85E-15	8.07E-16
in117	5.69E-16	6.26E-16	6.27E-16	6.28E-16	6.28E-16	5.54E-16
rb 86	3.63E-16	3.74E-16	3.84E-16	3.94E-16	4.04E-16	4.03E-16
dy165	1.80E-16	2.98E-16	3.05E-16	3.11E-16	3.18E-16	1.80E-16
cd108	3.35E-17	3.83E-17	4.35E-17	4.91E-17	5.51E-17	5.51E-17
sn114	2.31E-17	2.73E-17	3.19E-17	3.69E-17	4.22E-17	4.22E-17

	ge 75	3.78E-17	8.67E-17	8.66E-17	8.66E-17	8.66E-17	3.28E-17
	cd118	2.97E-17	1.22E-16	1.22E-16	1.22E-16	1.22E-16	2.35E-17
	cs134m	1.02E-17	1.65E-17	1.78E-17	1.90E-17	2.03E-17	1.26E-17
	cd109	7.10E-19	7.54E-19	7.94E-19	8.38E-19	8.81E-19	8.81E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 35
0 fraction of total absorption rate
power= .00mw, burnup= 584.mwd, flux= 2.70E+08n/cm**2-sec
0 initial 118706. d 127838. d 136969. d 146100. d 146100. d

	in119m	6.93E-19	3.04E-17	3.04E-17	3.04E-17	3.04E-17	3.60E-19

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 36
power= 4.000E-03mw, burnup=5.8440E+02mwd, flux= 2.70E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	118706. d	127838. d	136969. d	146100. d	146100. d
h	1	2.60E-05	2.81E-05	3.02E-05	3.24E-05	3.45E-05	3.45E-05
h	2	7.70E-08	8.33E-08	8.96E-08	9.60E-08	1.02E-07	1.02E-07
h	3	3.38E-11	3.38E-11	3.39E-11	3.39E-11	3.40E-11	3.40E-11
h	4	.00E+00	1.37E-34	1.38E-34	1.38E-34	1.38E-34	.00E+00
he	3	5.31E-10	5.77E-10	6.24E-10	6.70E-10	7.16E-10	7.16E-10
he	4	4.29E-06	4.64E-06	4.99E-06	5.35E-06	5.70E-06	5.70E-06
he	6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne	20	5.15E-07	5.58E-07	6.00E-07	6.42E-07	6.85E-07	6.85E-07
ne	21	5.07E-12	5.89E-12	6.77E-12	7.70E-12	8.69E-12	8.69E-12
ne	22	3.32E-09	3.59E-09	3.87E-09	4.15E-09	4.42E-09	4.42E-09
ne	23	7.06E-30	7.06E-15	7.05E-15	7.05E-15	7.05E-15	7.05E-30
na	22	4.15E-11	4.15E-11	4.15E-11	4.15E-11	4.15E-11	4.15E-11
na	23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na	24	2.63E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.52E-08
na	24m	4.69E-30	4.55E-15	4.55E-15	4.55E-15	4.55E-15	4.55E-30
na	25	3.07E-41	3.43E-26	3.81E-26	4.21E-26	4.63E-26	4.63E-41
mg	24	3.97E-03	4.25E-03	4.54E-03	4.83E-03	5.12E-03	5.12E-03
mg	25	1.07E-09	1.20E-09	1.33E-09	1.47E-09	1.62E-09	1.62E-09
mg	26	7.70E-08	8.33E-08	8.96E-08	9.60E-08	1.02E-07	1.02E-07
mg	27	1.16E-15	2.11E-12	2.11E-12	2.11E-12	2.11E-12	3.33E-16
mg	28	4.06E-24	4.30E-24	4.29E-24	4.29E-24	4.29E-24	4.02E-24
al	27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al	28	3.88E-24	2.05E-10	2.05E-10	2.05E-10	2.05E-10	2.31E-25
al	29	2.45E-29	1.40E-24	1.61E-24	1.84E-24	2.07E-24	6.92E-30
al	30	.00E+00	8.66E-36	1.07E-35	1.31E-35	1.58E-35	.00E+00
si	28	1.15E-02	1.24E-02	1.32E-02	1.41E-02	1.49E-02	1.49E-02
si	29	4.70E-09	5.47E-09	6.30E-09	7.17E-09	8.10E-09	8.10E-09
si	30	2.00E-15	2.53E-15	3.14E-15	3.84E-15	4.63E-15	4.63E-15
si	31	9.16E-28	1.82E-27	2.25E-27	2.75E-27	3.32E-27	1.96E-27
si	32	6.22E-34	8.37E-34	1.10E-33	1.42E-33	1.79E-33	1.79E-33
totals		5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux			2.70E+08	2.70E+08	2.70E+08	2.70E+08	2.70E-07

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 37
power= 4.000E-03mw, burnup=5.8440E+02mwd, flux= 2.70E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	118706. d	127838. d	136969. d	146100. d	146100. d
he	4	5.65E-02	6.32E-02	7.00E-02	7.69E-02	8.40E-02	8.40E-02
pb206		3.30E-07	4.28E-07	5.43E-07	6.77E-07	8.32E-07	8.32E-07
pb207		5.57E-07	6.64E-07	7.81E-07	9.07E-07	1.04E-06	1.04E-06
pb208		1.14E-07	1.34E-07	1.55E-07	1.77E-07	2.01E-07	2.01E-07
pb209		1.25E-13	1.46E-13	1.69E-13	1.94E-13	2.21E-13	2.22E-13
pb210		1.14E-07	1.36E-07	1.59E-07	1.84E-07	2.11E-07	2.11E-07

pb211	4.05E-13	4.43E-13	4.81E-13	5.19E-13	5.56E-13	5.56E-13
pb212	1.33E-12	1.44E-12	1.54E-12	1.65E-12	1.76E-12	1.76E-12
pb214	3.12E-13	3.77E-13	4.36E-13	4.98E-13	5.65E-13	5.48E-13
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.33E-08	2.96E-08	3.70E-08	4.55E-08	5.52E-08	5.52E-08
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	7.04E-11	8.37E-11	9.81E-11	1.14E-10	1.30E-10	1.30E-10
bi211	2.42E-14	2.63E-14	2.85E-14	3.07E-14	3.30E-14	3.32E-14
bi212	1.26E-13	1.36E-13	1.47E-13	1.57E-13	1.67E-13	1.67E-13
bi213	2.83E-14	3.41E-14	3.95E-14	4.54E-14	5.16E-14	5.00E-14
bi214	2.36E-13	2.80E-13	3.23E-13	3.70E-13	4.19E-13	4.12E-13
po210	1.94E-09	2.31E-09	2.71E-09	3.14E-09	3.59E-09	3.59E-09
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.68E-19	2.90E-19	3.15E-19	3.40E-19	3.64E-19	3.67E-19
po212	6.64E-24	7.17E-24	7.70E-24	8.23E-24	8.76E-24	8.76E-24
po213	4.25E-23	5.13E-23	5.95E-23	6.82E-23	7.75E-23	7.52E-23
po214	3.25E-20	3.85E-20	4.45E-20	5.09E-20	5.77E-20	5.67E-20
po215	3.33E-19	3.64E-19	3.95E-19	4.26E-19	4.57E-19	4.57E-19
po216	5.04E-18	5.44E-18	5.85E-18	6.25E-18	6.65E-18	6.65E-18
po218	3.73E-14	4.36E-14	5.04E-14	5.76E-14	6.53E-14	6.54E-14
rn218	1.91E-29	2.05E-29	2.20E-29	2.35E-29	2.50E-29	2.50E-29
rn219	7.41E-16	8.10E-16	8.79E-16	9.48E-16	1.02E-15	1.02E-15
rn220	1.93E-15	2.09E-15	2.24E-15	2.40E-15	2.55E-15	2.55E-15
rn222	6.62E-11	7.74E-11	8.95E-11	1.02E-10	1.16E-10	1.16E-10
ra222	2.07E-26	2.22E-26	2.39E-26	2.55E-26	2.72E-26	2.71E-26
ra223	1.85E-10	2.02E-10	2.19E-10	2.37E-10	2.54E-10	2.54E-10
ra224	1.10E-11	1.19E-11	1.28E-11	1.36E-11	1.45E-11	1.45E-11
ra225	1.36E-11	1.60E-11	1.85E-11	2.12E-11	2.41E-11	2.41E-11
ra226	1.01E-05	1.18E-05	1.37E-05	1.56E-05	1.77E-05	1.77E-05
ra228	6.17E-13	6.70E-13	7.23E-13	7.75E-13	8.28E-13	8.28E-13
ac225	9.19E-12	1.08E-11	1.25E-11	1.43E-11	1.63E-11	1.63E-11
ac227	1.28E-07	1.40E-07	1.52E-07	1.64E-07	1.76E-07	1.76E-07
ac228	7.53E-17	8.17E-17	8.82E-17	9.46E-17	1.01E-16	1.01E-16
th226	1.01E-24	1.08E-24	1.16E-24	1.24E-24	1.33E-24	1.32E-24
th227	2.98E-10	3.26E-10	3.54E-10	3.82E-10	4.10E-10	4.10E-10
th228	2.10E-09	2.27E-09	2.43E-09	2.60E-09	2.77E-09	2.77E-09
th229	2.65E-06	3.10E-06	3.60E-06	4.12E-06	4.69E-06	4.69E-06
th230	7.66E-03	8.30E-03	8.93E-03	9.57E-03	1.02E-02	1.02E-02
th231	3.05E-09	3.05E-09	3.05E-09	3.05E-09	3.06E-09	3.05E-09
th232	1.55E-03	1.68E-03	1.81E-03	1.94E-03	2.07E-03	2.07E-03
th233	5.89E-16	1.54E-14	1.66E-14	1.78E-14	1.89E-14	4.62E-16
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	2.16E-04	2.34E-04	2.52E-04	2.70E-04	2.88E-04	2.88E-04
pa232	3.57E-12	4.02E-12	4.32E-12	4.63E-12	4.94E-12	4.73E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 38
power= 4.000E-03mw, burnup=5.8440E+02mwd, flux= 2.70E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 118706. d	127838. d	136969. d	146100. d	146100. d	
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	9.76E-22	1.05E-21	1.13E-21	1.21E-21	1.28E-21	1.28E-21
u231	3.08E-18	3.36E-18	3.62E-18	3.88E-18	4.14E-18	4.08E-18
u232	7.51E-08	8.11E-08	8.70E-08	9.30E-08	9.90E-08	9.90E-08
u233	4.09E-03	4.42E-03	4.76E-03	5.10E-03	5.44E-03	5.44E-03
u234	9.08E+00	9.08E+00	9.08E+00	9.09E+00	9.09E+00	9.09E+00
u235	7.28E+02	7.28E+02	7.28E+02	7.28E+02	7.27E+02	7.27E+02

u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.10E-06	3.11E-06	3.11E-06	3.11E-06	3.11E-06	3.08E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.55E-08	3.18E-07	3.18E-07	3.18E-07	3.18E-07	9.32E-09
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.68E-12	8.65E-12	8.64E-12	8.64E-12	8.64E-12	8.64E-12
np236m	1.96E-12	2.06E-12	2.06E-12	2.06E-12	2.05E-12	1.93E-12
np236	5.99E-08	6.47E-08	6.96E-08	7.45E-08	7.93E-08	7.93E-08
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.52E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.51E-06
np239	4.54E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.51E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.98E-15	9.33E-15	9.33E-15	9.33E-15	9.32E-15	2.45E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.12E-09	1.12E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09
pu237	2.21E-13	2.25E-13	2.29E-13	2.32E-13	2.35E-13	2.35E-13
pu238	2.14E-02	2.18E-02	2.21E-02	2.23E-02	2.25E-02	2.25E-02
pu239	1.49E+00	1.61E+00	1.74E+00	1.86E+00	1.98E+00	1.98E+00
pu240	2.19E-03	2.56E-03	2.96E-03	3.39E-03	3.85E-03	3.85E-03
pu241	7.88E-07	9.30E-07	1.08E-06	1.25E-06	1.43E-06	1.43E-06
pu242	1.15E-09	1.54E-09	2.01E-09	2.59E-09	3.27E-09	3.27E-09
pu243	1.92E-18	3.24E-18	4.24E-18	5.45E-18	6.89E-18	5.22E-18
pu244	7.71E-39	1.79E-38	3.87E-38	7.94E-38	1.55E-37	1.55E-37
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	8.09E-22	1.13E-21	1.41E-21	1.74E-21	2.10E-21	1.87E-21
am240	4.00E-19	5.19E-19	6.48E-19	7.96E-19	9.63E-19	9.37E-19
am241	3.25E-06	4.13E-06	5.16E-06	6.34E-06	7.67E-06	7.67E-06
am242m	4.63E-10	6.28E-10	8.31E-10	1.08E-09	1.37E-09	1.37E-09
am242	1.11E-13	1.52E-13	1.90E-13	2.34E-13	2.84E-13	2.62E-13
am243	9.56E-13	1.41E-12	2.01E-12	2.80E-12	3.81E-12	3.81E-12
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	6.49E-21	1.07E-20	1.53E-20	2.13E-20	2.90E-20	2.53E-20
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	6.93E-24	8.82E-24	1.10E-23	1.36E-23	1.65E-23	1.65E-23
cm242	2.40E-11	3.06E-11	3.83E-11	4.72E-11	5.73E-11	5.73E-11
cm243	5.99E-18	7.98E-18	1.04E-17	1.32E-17	1.65E-17	1.65E-17
cm244	7.88E-17	1.19E-16	1.74E-16	2.48E-16	3.43E-16	3.43E-16

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 39
power= 4.000E-03mw, burnup=5.8440E+02mwd, flux= 2.70E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 118706. d	127838. d	136969. d	146100. d	146100. d
cm245	3.99E-21	6.57E-21	1.04E-20	1.59E-20	2.37E-20	2.37E-20
cm246	9.35E-25	1.68E-24	2.88E-24	4.75E-24	7.57E-24	7.57E-24
cm247	3.62E-30	7.07E-30	1.31E-29	2.33E-29	3.97E-29	3.97E-29
cm248	1.44E-34	3.07E-34	6.17E-34	1.18E-33	2.15E-33	2.15E-33
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.70E+08	2.70E+08	2.70E+08	2.70E+08	2.70E-07

0 1q array has 20 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 4q array has 1 entries.

```
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number  5 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *          made from modified card-image origen-s libraries of scale 4.2       *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *                photon libraries use an 18-energy-group structure             *
          *               the photon data are from the master photon data base,          *
          *                produced to include bremsstrahlung from uo2 matrix            *
          *                                                                              *
          *         see information above this box (if present) for later updates        *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                 8/28/1996     date library was produced
0                      1697     total number of nuclides in library
                        689     number of light-element nuclides
                        129     number of actinide nuclides
                        879     number of fission product nuclides
0                      7993     number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   40
          power=    .00mw, burnup=    730.mwd, flux= 2.69E+08n/cm**2-sec
0                                    basis =
0     (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial      155232. d      164363. d      173494. d      182625. d      182625. d
      productions  1.140054E+06  1.140232E+06  1.140410E+06  1.140588E+06  1.140765E+06  1.140765E+06
      absorptions  9.312772E+05  9.315008E+05  9.317208E+05  9.319371E+05  9.321501E+05  9.321501E+05
      k infinity   1.224183E+00  1.224081E+00  1.223983E+00  1.223889E+00  1.223799E+00  1.223799E+00
0                    initial      155232. d      164363. d      173494. d      182625. d      182625. d
      actinide
      absorptions  9.256458E+05  9.257515E+05  9.258570E+05  9.259623E+05  9.260674E+05  9.260674E+05
```

non-actinide
abs. fracs. 6.047010E-03 6.172001E-03 6.293535E-03 6.411195E-03 6.525517E-03 6.525457E-03

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 41
0 fraction of total absorption rate
power= .00mw, burnup= 730.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 155232. d 164363. d 173494. d 182625. d 182625. d

sm149	2.28E-03	2.39E-03	2.49E-03	2.59E-03	2.68E-03	2.68E-03
eu151	6.21E-05	6.74E-05	7.27E-05	7.80E-05	8.34E-05	8.34E-05
nd143	5.91E-05	6.28E-05	6.65E-05	7.02E-05	7.38E-05	7.38E-05
gd155	3.55E-05	3.75E-05	3.95E-05	4.15E-05	4.34E-05	4.34E-05
sm151	3.82E-05	3.86E-05	3.88E-05	3.90E-05	3.92E-05	3.92E-05
rh103	2.75E-05	2.92E-05	3.09E-05	3.26E-05	3.44E-05	3.44E-05
cd113	2.25E-05	2.37E-05	2.48E-05	2.60E-05	2.71E-05	2.71E-05
gd157	2.11E-05	2.19E-05	2.27E-05	2.35E-05	2.42E-05	2.42E-05
xe131	1.87E-05	1.98E-05	2.10E-05	2.21E-05	2.33E-05	2.33E-05
cs133	1.45E-05	1.54E-05	1.63E-05	1.72E-05	1.81E-05	1.81E-05
sm147	1.06E-05	1.13E-05	1.20E-05	1.26E-05	1.33E-05	1.33E-05
tc 99	1.06E-05	1.13E-05	1.20E-05	1.26E-05	1.33E-05	1.33E-05
nd145	8.27E-06	8.78E-06	9.30E-06	9.81E-06	1.03E-05	1.03E-05
mo 95	5.72E-06	6.08E-06	6.43E-06	6.79E-06	7.15E-06	7.15E-06
sm152	4.49E-06	4.78E-06	5.06E-06	5.35E-06	5.64E-06	5.64E-06
kr 83	3.59E-06	3.82E-06	4.04E-06	4.26E-06	4.48E-06	4.48E-06
cs135	3.27E-06	3.47E-06	3.67E-06	3.87E-06	4.08E-06	4.08E-06
ru101	2.53E-06	2.68E-06	2.84E-06	3.00E-06	3.16E-06	3.16E-06
pr141	2.44E-06	2.60E-06	2.75E-06	2.90E-06	3.05E-06	3.05E-06
eu153	2.22E-06	2.36E-06	2.50E-06	2.64E-06	2.78E-06	2.78E-06
la139	2.00E-06	2.12E-06	2.25E-06	2.37E-06	2.50E-06	2.50E-06
xe135	2.28E-06	2.32E-06	2.32E-06	2.32E-06	2.32E-06	2.29E-06
sm150	1.04E-06	1.16E-06	1.29E-06	1.42E-06	1.56E-06	1.56E-06
ba137	8.54E-07	9.13E-07	9.73E-07	1.03E-06	1.09E-06	1.09E-06
pd105	8.51E-07	9.05E-07	9.58E-07	1.01E-06	1.07E-06	1.07E-06
zr 93	8.07E-07	8.58E-07	9.08E-07	9.58E-07	1.01E-06	1.01E-06
i129	6.22E-07	6.61E-07	7.00E-07	7.39E-07	7.78E-07	7.78E-07
nd144	6.00E-07	6.37E-07	6.74E-07	7.12E-07	7.49E-07	7.49E-07
mo 97	4.53E-07	4.81E-07	5.09E-07	5.38E-07	5.66E-07	5.66E-07
ag109	3.53E-07	3.77E-07	4.02E-07	4.27E-07	4.52E-07	4.52E-07
pm147	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07
zr 91	2.13E-07	2.27E-07	2.40E-07	2.53E-07	2.66E-07	2.66E-07
y 89	2.05E-07	2.18E-07	2.30E-07	2.43E-07	2.56E-07	2.56E-07
ru102	1.85E-07	1.96E-07	2.08E-07	2.19E-07	2.31E-07	2.31E-07
ce142	1.67E-07	1.77E-07	1.87E-07	1.98E-07	2.08E-07	2.08E-07
nd148	1.60E-07	1.70E-07	1.80E-07	1.90E-07	2.00E-07	2.00E-07
nd146	1.34E-07	1.43E-07	1.51E-07	1.59E-07	1.68E-07	1.68E-07
eu155	1.61E-07	1.61E-07	1.61E-07	1.61E-07	1.61E-07	1.61E-07
pd108	1.14E-07	1.22E-07	1.30E-07	1.37E-07	1.45E-07	1.45E-07
ba138	1.15E-07	1.22E-07	1.29E-07	1.36E-07	1.43E-07	1.43E-07
in115	1.11E-07	1.18E-07	1.25E-07	1.32E-07	1.38E-07	1.38E-07
ce140	1.07E-07	1.14E-07	1.21E-07	1.28E-07	1.34E-07	1.34E-07
xe132	9.62E-08	1.02E-07	1.08E-07	1.14E-07	1.20E-07	1.20E-07
pd107	6.68E-08	7.12E-08	7.56E-08	8.00E-08	8.44E-08	8.44E-08
mo 98	6.62E-08	7.03E-08	7.44E-08	7.86E-08	8.27E-08	8.27E-08
mo100	6.41E-08	6.81E-08	7.21E-08	7.61E-08	8.01E-08	8.01E-08
xe134	6.34E-08	6.73E-08	7.13E-08	7.52E-08	7.91E-08	7.91E-08
zr 92	5.14E-08	5.46E-08	5.78E-08	6.10E-08	6.42E-08	6.42E-08
i127	4.18E-08	4.45E-08	4.71E-08	4.97E-08	5.23E-08	5.23E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 42
0 fraction of total absorption rate
power= .00mw, burnup= 730.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 155232. d 164363. d 173494. d 182625. d 182625. d

zr 96	4.02E-08	4.27E-08	4.52E-08	4.77E-08	5.02E-08	5.02E-08
ru104	3.96E-08	4.21E-08	4.46E-08	4.71E-08	4.96E-08	4.96E-08
nd150	3.54E-08	3.76E-08	3.98E-08	4.20E-08	4.42E-08	4.42E-08
xe136	3.43E-08	3.64E-08	3.85E-08	4.07E-08	4.28E-08	4.28E-08
br 81	2.56E-08	2.72E-08	2.88E-08	3.04E-08	3.20E-08	3.20E-08
rb 85	2.48E-08	2.64E-08	2.80E-08	2.95E-08	3.11E-08	3.11E-08
zr 94	2.17E-08	2.30E-08	2.44E-08	2.57E-08	2.71E-08	2.71E-08
zr 90	1.81E-08	1.94E-08	2.07E-08	2.19E-08	2.32E-08	2.32E-08
cd111	1.72E-08	1.83E-08	1.94E-08	2.05E-08	2.16E-08	2.16E-08
eu152	1.52E-08	1.66E-08	1.80E-08	1.94E-08	2.08E-08	2.08E-08
te130	1.56E-08	1.66E-08	1.75E-08	1.85E-08	1.95E-08	1.95E-08
gd152	1.10E-08	1.29E-08	1.48E-08	1.70E-08	1.92E-08	1.92E-08
sm154	1.52E-08	1.61E-08	1.71E-08	1.80E-08	1.90E-08	1.90E-08
rb 87	1.45E-08	1.54E-08	1.63E-08	1.72E-08	1.81E-08	1.81E-08
sr 90	1.71E-08	1.71E-08	1.71E-08	1.71E-08	1.71E-08	1.71E-08
se 77	1.03E-08	1.10E-08	1.16E-08	1.23E-08	1.29E-08	1.29E-08
pd106	7.43E-09	7.90E-09	8.38E-09	8.85E-09	9.33E-09	9.33E-09
rh105	8.47E-09	8.52E-09	8.53E-09	8.54E-09	8.55E-09	8.52E-09
kr 84	6.82E-09	7.24E-09	7.66E-09	8.09E-09	8.51E-09	8.51E-09
se 79	5.29E-09	5.62E-09	5.95E-09	6.28E-09	6.61E-09	6.61E-09
sb121	5.03E-09	5.34E-09	5.66E-09	5.97E-09	6.29E-09	6.29E-09
sb123	4.09E-09	4.34E-09	4.60E-09	4.86E-09	5.11E-09	5.11E-09
kr 86	3.82E-09	4.06E-09	4.29E-09	4.53E-09	4.77E-09	4.77E-09
gd156	3.25E-09	3.50E-09	3.75E-09	4.00E-09	4.26E-09	4.26E-09
te128	3.41E-09	3.62E-09	3.83E-09	4.05E-09	4.26E-09	4.26E-09
cs137	3.76E-09	3.76E-09	3.76E-09	3.76E-09	3.76E-09	3.76E-09
se 80	2.47E-09	2.62E-09	2.77E-09	2.93E-09	3.08E-09	3.08E-09
dy161	2.35E-09	2.51E-09	2.67E-09	2.84E-09	3.00E-09	3.00E-09
te125	2.14E-09	2.28E-09	2.41E-09	2.55E-09	2.69E-09	2.69E-09
pr143	2.66E-09	2.66E-09	2.66E-09	2.66E-09	2.66E-09	2.66E-09
xe133	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.01E-09
tb159	1.51E-09	1.61E-09	1.70E-09	1.80E-09	1.90E-09	1.90E-09
ru 99	1.16E-09	1.30E-09	1.45E-09	1.62E-09	1.79E-09	1.79E-09
cd112	1.42E-09	1.51E-09	1.60E-09	1.69E-09	1.78E-09	1.78E-09
li 6	1.40E-09	1.49E-09	1.57E-09	1.66E-09	1.75E-09	1.75E-09
ce141	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09
sn117	1.12E-09	1.19E-09	1.26E-09	1.33E-09	1.40E-09	1.40E-09
eu154	1.11E-09	1.18E-09	1.25E-09	1.32E-09	1.39E-09	1.39E-09
sn119	9.17E-10	9.74E-10	1.03E-09	1.09E-09	1.15E-09	1.15E-09
gd158	7.80E-10	8.46E-10	9.13E-10	9.81E-10	1.05E-09	1.05E-09
sn115	8.40E-10	8.92E-10	9.45E-10	9.97E-10	1.05E-09	1.05E-09
pm149	9.69E-10	9.76E-10	9.76E-10	9.76E-10	9.76E-10	9.70E-10
nd147	9.23E-10	9.27E-10	9.27E-10	9.26E-10	9.26E-10	9.23E-10
gd154	5.74E-10	6.50E-10	7.30E-10	8.15E-10	9.04E-10	9.04E-10
sr 88	7.02E-10	7.45E-10	7.89E-10	8.32E-10	8.76E-10	8.76E-10
cd114	5.61E-10	6.01E-10	6.41E-10	6.82E-10	7.23E-10	7.23E-10
pd110	5.19E-10	5.53E-10	5.87E-10	6.21E-10	6.55E-10	6.55E-10
ce144	6.00E-10	6.00E-10	6.00E-10	6.00E-10	5.99E-10	5.99E-10
se 82	4.77E-10	5.06E-10	5.36E-10	5.65E-10	5.95E-10	5.95E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 43
0 fraction of total absorption rate
power= .00mw, burnup= 730.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 155232. d 164363. d 173494. d 182625. d 182625. d

kr 85	5.73E-10	5.72E-10	5.72E-10	5.72E-10	5.72E-10	5.72E-10
sn126	3.87E-10	4.11E-10	4.35E-10	4.60E-10	4.84E-10	4.84E-10
se 78	3.61E-10	3.84E-10	4.06E-10	4.29E-10	4.51E-10	4.51E-10
dy162	3.31E-10	3.55E-10	3.80E-10	4.04E-10	4.30E-10	4.30E-10
dy164	3.21E-10	3.46E-10	3.71E-10	3.96E-10	4.22E-10	4.22E-10

sn124	2.90E-10	3.09E-10	3.27E-10	3.45E-10	3.63E-10	3.63E-10
ru103	3.58E-10	3.59E-10	3.59E-10	3.59E-10	3.59E-10	3.59E-10
ru100	1.97E-10	2.22E-10	2.48E-10	2.76E-10	3.05E-10	3.05E-10
es 75	2.15E-10	2.28E-10	2.42E-10	2.55E-10	2.69E-10	2.69E-10
nd142	1.35E-10	1.52E-10	1.70E-10	1.90E-10	2.10E-10	2.10E-10
ba134	1.29E-10	1.46E-10	1.63E-10	1.82E-10	2.02E-10	2.02E-10
in113	1.54E-10	1.64E-10	1.74E-10	1.84E-10	1.94E-10	1.94E-10
sm148	1.22E-10	1.38E-10	1.54E-10	1.71E-10	1.89E-10	1.89E-10
ba135	1.06E-10	1.19E-10	1.33E-10	1.49E-10	1.65E-10	1.65E-10
zr 95	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10
ba136	1.26E-10	1.34E-10	1.43E-10	1.52E-10	1.61E-10	1.61E-10
nb 95	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.52E-10
sn118	1.18E-10	1.26E-10	1.33E-10	1.41E-10	1.48E-10	1.48E-10
y 91	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10
pd104	8.82E-11	9.95E-11	1.12E-10	1.24E-10	1.38E-10	1.38E-10
cs134	1.08E-10	1.15E-10	1.22E-10	1.28E-10	1.35E-10	1.35E-10
sn122	1.01E-10	1.07E-10	1.13E-10	1.20E-10	1.26E-10	1.26E-10
cd116	1.01E-10	1.07E-10	1.13E-10	1.19E-10	1.26E-10	1.26E-10
pm151	1.06E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.07E-10
dy163	7.57E-11	8.13E-11	8.71E-11	9.29E-11	9.89E-11	9.89E-11
kr 82	7.52E-11	8.07E-11	8.62E-11	9.19E-11	9.77E-11	9.77E-11
sn120	7.52E-11	7.99E-11	8.46E-11	8.93E-11	9.40E-11	9.40E-11
mo 96	5.63E-11	6.18E-11	6.74E-11	7.33E-11	7.94E-11	7.94E-11
ge 73	5.89E-11	6.25E-11	6.62E-11	6.99E-11	7.36E-11	7.36E-11
xe130	5.29E-11	5.71E-11	6.15E-11	6.59E-11	7.05E-11	7.05E-11
ba140	4.71E-11	4.73E-11	4.72E-11	4.72E-11	4.72E-11	4.70E-11
sm153	3.75E-11	3.85E-11	3.85E-11	3.86E-11	3.86E-11	3.77E-11
eu156	3.53E-11	3.54E-11	3.55E-11	3.56E-11	3.56E-11	3.56E-11
sr 89	3.06E-11	3.07E-11	3.06E-11	3.06E-11	3.06E-11	3.06E-11
ge 76	2.13E-11	2.26E-11	2.40E-11	2.53E-11	2.66E-11	2.66E-11
ru106	2.62E-11	2.63E-11	2.63E-11	2.64E-11	2.65E-11	2.65E-11
nb 93	1.52E-11	1.73E-11	1.95E-11	2.19E-11	2.44E-11	2.44E-11
cd110	1.26E-11	1.42E-11	1.60E-11	1.79E-11	1.99E-11	1.99E-11
gd160	1.42E-11	1.52E-11	1.61E-11	1.71E-11	1.80E-11	1.80E-11
te126	1.33E-11	1.43E-11	1.54E-11	1.64E-11	1.75E-11	1.75E-11
ce143	1.69E-11	1.75E-11	1.75E-11	1.74E-11	1.74E-11	1.69E-11
y 90	1.63E-11	1.63E-11	1.63E-11	1.63E-11	1.63E-11	1.63E-11
la140	1.53E-11	1.53E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11
sb125	1.51E-11	1.51E-11	1.51E-11	1.51E-11	1.51E-11	1.51E-11
br 79	8.61E-12	9.72E-12	1.09E-11	1.21E-11	1.34E-11	1.34E-11
mo 99	1.28E-11	1.31E-11	1.31E-11	1.31E-11	1.31E-11	1.29E-11
pm148m	9.51E-12	9.52E-12	9.52E-12	9.52E-12	9.52E-12	9.51E-12
kr 87	7.83E-12	2.29E-11	2.29E-11	2.29E-11	2.29E-11	9.13E-12
xe129	4.88E-12	5.51E-12	6.18E-12	6.88E-12	7.62E-12	7.62E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 44
0 fraction of total absorption rate
power= .00mw, burnup= 730.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 155232. d 164363. d 173494. d 182625. d 182625. d

te127m	7.54E-12	7.54E-12	7.55E-12	7.55E-12	7.56E-12	7.56E-12
ag107	4.71E-12	5.32E-12	5.98E-12	6.67E-12	7.40E-12	7.40E-12
ho165	5.27E-12	5.67E-12	6.08E-12	6.49E-12	6.91E-12	6.91E-12
i131	6.75E-12	6.76E-12	6.76E-12	6.76E-12	6.76E-12	6.75E-12
te124	2.61E-12	2.78E-12	2.96E-12	3.13E-12	3.30E-12	3.30E-12
sr 87	2.46E-12	2.62E-12	2.77E-12	2.93E-12	3.08E-12	3.08E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
nb 94	1.39E-12	1.48E-12	1.57E-12	1.66E-12	1.74E-12	1.74E-12
ge 74	1.19E-12	1.26E-12	1.34E-12	1.41E-12	1.49E-12	1.49E-12
sr 86	9.28E-13	1.00E-12	1.08E-12	1.15E-12	1.23E-12	1.23E-12
dy160	7.18E-13	8.04E-13	8.96E-13	9.93E-13	1.10E-12	1.10E-12

ge 72	8.03E-13	8.53E-13	9.04E-13	9.54E-13	1.00E-12	1.00E-12
xe128	5.84E-13	6.52E-13	7.23E-13	7.98E-13	8.77E-13	8.77E-13
se 76	5.19E-13	5.56E-13	5.92E-13	6.29E-13	6.67E-13	6.67E-13
pm148	3.63E-13	3.67E-13	3.66E-13	3.66E-13	3.66E-13	3.63E-13
ag111	3.35E-13	3.38E-13	3.39E-13	3.40E-13	3.42E-13	3.40E-13
eu157	2.86E-13	3.11E-13	3.12E-13	3.13E-13	3.14E-13	2.93E-13
sn116	1.87E-13	2.11E-13	2.36E-13	2.63E-13	2.91E-13	2.91E-13
er166	1.86E-13	2.03E-13	2.20E-13	2.37E-13	2.56E-13	2.56E-13
cd115m	2.39E-13	2.39E-13	2.39E-13	2.39E-13	2.39E-13	2.39E-13
te122	8.15E-14	9.16E-14	1.02E-13	1.14E-13	1.26E-13	1.26E-13
cs136	6.61E-14	6.70E-14	6.77E-14	6.84E-14	6.90E-14	6.88E-14
kr 80	3.54E-14	3.78E-14	4.01E-14	4.25E-14	4.50E-14	4.50E-14
sn125	2.91E-14	2.93E-14	2.93E-14	2.94E-14	2.94E-14	2.92E-14
ru105	2.27E-14	3.00E-14	3.01E-14	3.01E-14	3.01E-14	2.38E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.40E-15	9.56E-15	9.56E-15	9.56E-15	9.56E-15	9.42E-15
rb 88	8.66E-15	1.29E-14	1.29E-14	1.29E-14	1.29E-14	9.26E-15
i135	8.24E-15	1.02E-14	1.02E-14	1.01E-14	1.01E-14	8.48E-15
tb160	4.52E-15	4.79E-15	5.06E-15	5.34E-15	5.61E-15	5.61E-15
sb126	3.69E-15	3.74E-15	3.79E-15	3.83E-15	3.87E-15	3.86E-15
te123	2.84E-15	3.05E-15	3.27E-15	3.50E-15	3.73E-15	3.73E-15
be 9	2.65E-15	2.82E-15	2.98E-15	3.15E-15	3.31E-15	3.31E-15
pr142	2.58E-15	2.94E-15	3.11E-15	3.28E-15	3.46E-15	3.25E-15
er167	1.71E-15	1.91E-15	2.13E-15	2.36E-15	2.60E-15	2.60E-15
sb124	2.31E-15	2.32E-15	2.33E-15	2.35E-15	2.36E-15	2.36E-15
in117m	1.86E-15	2.14E-15	2.14E-15	2.14E-15	2.14E-15	1.93E-15
li 7	1.08E-15	1.15E-15	1.22E-15	1.28E-15	1.35E-15	1.35E-15
i130	1.10E-15	1.26E-15	1.29E-15	1.32E-15	1.35E-15	1.23E-15
te134	8.08E-16	5.85E-15	5.85E-15	5.85E-15	5.85E-15	1.07E-15
in117	5.54E-16	6.29E-16	6.30E-16	6.31E-16	6.31E-16	5.74E-16
rb 86	4.03E-16	4.15E-16	4.25E-16	4.35E-16	4.45E-16	4.44E-16
dy165	1.80E-16	3.25E-16	3.31E-16	3.38E-16	3.45E-16	2.13E-16
cd108	5.51E-17	6.15E-17	6.84E-17	7.58E-17	8.36E-17	8.36E-17
sn114	4.22E-17	4.79E-17	5.39E-17	6.03E-17	6.71E-17	6.71E-17
ge 75	3.28E-17	8.66E-17	8.66E-17	8.66E-17	8.65E-17	3.78E-17
cd118	2.35E-17	1.22E-16	1.22E-16	1.22E-16	1.22E-16	2.98E-17
cs134m	1.26E-17	2.15E-17	2.28E-17	2.41E-17	2.53E-17	1.69E-17
cd109	8.78E-19	9.22E-19	9.65E-19	1.01E-18	1.05E-18	1.05E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 45

0 fraction of total absorption rate

power= .00mw, burnup= 730.mwd, flux= 2.69E+08n/cm**2-sec

0 initial 155232. d 164363. d 173494. d 182625. d 182625. d

in119m	3.60E-19	3.04E-17	3.04E-17	3.04E-17	3.04E-17	6.96E-19
in119	.00E+00	2.39E-18	2.39E-18	2.39E-18	2.39E-18	3.36E-21

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 46

power= 4.000E-03mw, burnup=7.3050E+02mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

charge	155232. d	164363. d	173494. d	182625. d	182625. d
h 1	3.45E-05	3.66E-05	3.88E-05	4.09E-05	4.30E-05	4.30E-05
h 2	1.02E-07	1.09E-07	1.15E-07	1.21E-07	1.28E-07	1.28E-07
h 3	3.40E-11	3.41E-11	3.42E-11	3.43E-11	3.43E-11	3.43E-11
h 4	.00E+00	1.39E-34	1.39E-34	1.39E-34	1.39E-34	.00E+00
he 3	7.16E-10	7.63E-10	8.09E-10	8.55E-10	9.02E-10	9.02E-10
he 4	5.70E-06	6.05E-06	6.41E-06	6.76E-06	7.11E-06	7.11E-06
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	6.85E-07	7.27E-07	7.70E-07	8.12E-07	8.54E-07	8.54E-07
ne 21	8.69E-12	9.74E-12	1.08E-11	1.20E-11	1.32E-11	1.32E-11

	ne 22	4.42E-09	4.70E-09	4.97E-09	5.25E-09	5.53E-09	5.53E-09
	ne 23	7.05E-30	7.06E-15	7.06E-15	7.06E-15	7.06E-15	7.06E-30
	na 22	4.15E-11	4.15E-11	4.15E-11	4.15E-11	4.15E-11	4.15E-11
	na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
	na 24	2.52E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08	2.54E-08
	na 24m	4.55E-30	4.52E-15	4.52E-15	4.52E-15	4.52E-15	4.52E-30
	na 25	4.63E-41	5.06E-26	5.51E-26	5.98E-26	6.46E-26	6.46E-41
	mg 24	5.12E-03	5.40E-03	5.69E-03	5.97E-03	6.26E-03	6.26E-03
	mg 25	1.62E-09	1.77E-09	1.93E-09	2.09E-09	2.26E-09	2.26E-09
	mg 26	1.02E-07	1.09E-07	1.15E-07	1.21E-07	1.28E-07	1.28E-07
	mg 27	3.33E-16	2.11E-12	2.11E-12	2.11E-12	2.11E-12	1.16E-15
	mg 28	4.02E-24	4.30E-24	4.30E-24	4.30E-24	4.30E-24	4.06E-24
	al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
	al 28	2.31E-25	2.04E-10	2.04E-10	2.04E-10	2.04E-10	3.74E-24
	al 29	6.92E-30	2.33E-24	2.59E-24	2.87E-24	3.16E-24	6.39E-29
	al 30	.00E+00	1.89E-35	2.23E-35	2.60E-35	3.02E-35	.00E+00
	si 28	1.49E-02	1.57E-02	1.65E-02	1.74E-02	1.82E-02	1.82E-02
	si 29	8.10E-09	9.09E-09	1.01E-08	1.12E-08	1.24E-08	1.24E-08
	si 30	4.63E-15	5.52E-15	6.51E-15	7.62E-15	8.84E-15	8.84E-15
	si 31	1.96E-27	3.96E-27	4.67E-27	5.46E-27	6.34E-27	4.04E-27
	si 32	1.79E-33	2.24E-33	2.75E-33	3.34E-33	4.02E-33	4.02E-33
	totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0	flux		2.70E+08	2.69E+08	2.69E+08	2.69E+08	2.69E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 47
power= 4.000E-03mw, burnup=7.3050E+02mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 155232. d	164363. d	173494. d	182625. d	182625. d	
he 4	8.40E-02	9.13E-02	9.86E-02	1.06E-01	1.14E-01	1.14E-01
pb206	8.32E-07	1.01E-06	1.21E-06	1.43E-06	1.68E-06	1.68E-06
pb207	1.04E-06	1.19E-06	1.34E-06	1.51E-06	1.68E-06	1.68E-06
pb208	2.01E-07	2.27E-07	2.54E-07	2.83E-07	3.13E-07	3.13E-07
pb209	2.22E-13	2.49E-13	2.79E-13	3.11E-13	3.44E-13	3.46E-13
pb210	2.11E-07	2.40E-07	2.70E-07	3.02E-07	3.36E-07	3.36E-07
pb211	5.56E-13	5.94E-13	6.32E-13	6.70E-13	7.07E-13	7.07E-13
pb212	1.76E-12	1.86E-12	1.97E-12	2.08E-12	2.18E-12	2.18E-12
pb214	5.48E-13	6.35E-13	7.10E-13	7.88E-13	8.70E-13	8.43E-13
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	5.52E-08	6.61E-08	7.84E-08	9.22E-08	1.07E-07	1.07E-07
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.30E-10	1.48E-10	1.66E-10	1.86E-10	2.07E-10	2.07E-10
bi211	3.32E-14	3.52E-14	3.75E-14	3.97E-14	4.19E-14	4.23E-14
bi212	1.67E-13	1.77E-13	1.87E-13	1.97E-13	2.07E-13	2.07E-13
bi213	5.00E-14	5.82E-14	6.52E-14	7.25E-14	8.03E-14	7.80E-14
bi214	4.12E-13	4.72E-13	5.27E-13	5.85E-13	6.46E-13	6.38E-13
po210	3.59E-09	4.08E-09	4.60E-09	5.14E-09	5.72E-09	5.72E-09
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.67E-19	3.89E-19	4.14E-19	4.39E-19	4.63E-19	4.67E-19
po212	8.76E-24	9.29E-24	9.82E-24	1.04E-23	1.09E-23	1.09E-23
po213	7.52E-23	8.74E-23	9.79E-23	1.09E-22	1.21E-22	1.17E-22
po214	5.67E-20	6.49E-20	7.25E-20	8.05E-20	8.89E-20	8.77E-20
po215	4.57E-19	4.88E-19	5.19E-19	5.50E-19	5.81E-19	5.81E-19
po216	6.65E-18	7.06E-18	7.46E-18	7.86E-18	8.27E-18	8.27E-18
po218	6.54E-14	7.35E-14	8.21E-14	9.12E-14	1.01E-13	1.01E-13
rn218	2.50E-29	2.65E-29	2.80E-29	2.95E-29	3.10E-29	3.11E-29
rn219	1.02E-15	1.09E-15	1.16E-15	1.22E-15	1.29E-15	1.29E-15
rn220	2.55E-15	2.71E-15	2.86E-15	3.02E-15	3.17E-15	3.17E-15
rn222	1.16E-10	1.31E-10	1.46E-10	1.62E-10	1.79E-10	1.79E-10
ra222	2.71E-26	2.88E-26	3.04E-26	3.21E-26	3.37E-26	3.37E-26

ra223	2.54E-10	2.71E-10	2.88E-10	3.05E-10	3.23E-10	3.23E-10
ra224	1.45E-11	1.54E-11	1.63E-11	1.71E-11	1.80E-11	1.80E-11
ra225	2.41E-11	2.72E-11	3.05E-11	3.39E-11	3.76E-11	3.76E-11
ra226	1.77E-05	2.00E-05	2.23E-05	2.48E-05	2.73E-05	2.73E-05
ra228	8.28E-13	8.81E-13	9.34E-13	9.87E-13	1.04E-12	1.04E-12
ac225	1.63E-11	1.84E-11	2.06E-11	2.29E-11	2.54E-11	2.54E-11
ac227	1.76E-07	1.88E-07	2.00E-07	2.12E-07	2.24E-07	2.24E-07
ac228	1.01E-16	1.08E-16	1.14E-16	1.20E-16	1.27E-16	1.27E-16
th226	1.32E-24	1.40E-24	1.48E-24	1.56E-24	1.64E-24	1.64E-24
th227	4.10E-10	4.37E-10	4.65E-10	4.93E-10	5.21E-10	5.21E-10
th228	2.77E-09	2.94E-09	3.11E-09	3.27E-09	3.44E-09	3.44E-09
th229	4.69E-06	5.29E-06	5.92E-06	6.60E-06	7.30E-06	7.30E-06
th230	1.02E-02	1.09E-02	1.15E-02	1.21E-02	1.28E-02	1.28E-02
th231	3.05E-09	3.06E-09	3.06E-09	3.06E-09	3.06E-09	3.06E-09
th232	2.07E-03	2.20E-03	2.33E-03	2.46E-03	2.59E-03	2.59E-03
th233	4.62E-16	2.01E-14	2.13E-14	2.25E-14	2.37E-14	9.81E-16
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	2.88E-04	3.06E-04	3.24E-04	3.42E-04	3.60E-04	3.60E-04
pa232	4.73E-12	5.25E-12	5.56E-12	5.87E-12	6.18E-12	5.95E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 48
power= 4.000E-03mw, burnup=7.3050E+02mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 155232. d	164363. d	173494. d	182625. d	182625. d	
pa233	1.46E-06	1.46E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.28E-21	1.36E-21	1.44E-21	1.52E-21	1.59E-21	1.59E-21
u231	4.08E-18	4.39E-18	4.65E-18	4.90E-18	5.16E-18	5.10E-18
u232	9.90E-08	1.05E-07	1.11E-07	1.17E-07	1.23E-07	1.23E-07
u233	5.44E-03	5.78E-03	6.12E-03	6.46E-03	6.80E-03	6.80E-03
u234	9.09E+00	9.09E+00	9.10E+00	9.10E+00	9.10E+00	9.10E+00
u235	7.27E+02	7.27E+02	7.27E+02	7.27E+02	7.27E+02	7.27E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.08E-06	3.11E-06	3.11E-06	3.11E-06	3.11E-06	3.08E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	9.32E-09	3.18E-07	3.18E-07	3.18E-07	3.18E-07	1.54E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.64E-12	8.64E-12	8.64E-12	8.63E-12	8.63E-12	8.63E-12
np236m	1.93E-12	2.05E-12	2.05E-12	2.05E-12	2.05E-12	1.95E-12
np236	7.93E-08	8.42E-08	8.91E-08	9.39E-08	9.88E-08	9.88E-08
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.51E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.51E-06
np239	4.51E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.52E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.45E-15	9.32E-15	9.32E-15	9.31E-15	9.31E-15	2.96E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09
pu237	2.35E-13	2.38E-13	2.40E-13	2.42E-13	2.44E-13	2.44E-13
pu238	2.25E-02	2.27E-02	2.28E-02	2.29E-02	2.30E-02	2.30E-02
pu239	1.98E+00	2.10E+00	2.22E+00	2.34E+00	2.46E+00	2.46E+00
pu240	3.85E-03	4.33E-03	4.84E-03	5.38E-03	5.95E-03	5.95E-03
pu241	1.43E-06	1.62E-06	1.82E-06	2.03E-06	2.25E-06	2.25E-06
pu242	3.27E-09	4.08E-09	5.02E-09	6.11E-09	7.36E-09	7.36E-09
pu243	5.22E-18	8.59E-18	1.06E-17	1.29E-17	1.55E-17	1.22E-17
pu244	1.55E-37	2.90E-37	5.23E-37	9.12E-37	1.54E-36	1.54E-36
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

```
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239   1.87E-21  2.51E-21  2.97E-21  3.48E-21  4.03E-21  3.65E-21
     am240   9.37E-19  1.15E-18  1.36E-18  1.59E-18  1.85E-18  1.80E-18
     am241   7.67E-06  9.17E-06  1.08E-05  1.27E-05  1.47E-05  1.47E-05
     am242m  1.37E-09  1.71E-09  2.10E-09  2.55E-09  3.07E-09  3.07E-09
     am242   2.62E-13  3.40E-13  4.03E-13  4.73E-13  5.50E-13  5.14E-13
     am243   3.81E-12  5.08E-12  6.66E-12  8.58E-12  1.09E-11  1.09E-11
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   2.53E-20  3.86E-20  5.06E-20  6.52E-20  8.28E-20  7.37E-20
     am245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   1.65E-23  1.98E-23  2.34E-23  2.75E-23  3.20E-23  3.19E-23
     cm242   5.73E-11  6.87E-11  8.14E-11  9.55E-11  1.11E-10  1.11E-10
     cm243   1.65E-17  2.02E-17  2.45E-17  2.94E-17  3.48E-17  3.48E-17
     cm244   3.43E-16  4.65E-16  6.17E-16  8.06E-16  1.04E-15  1.04E-15
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                actinides        page   49
       power= 4.000E-03mw, burnup=7.3050E+02mwd, flux= 2.69E+08n/cm**2-sec
0                                          nuclide concentrations, gram atoms
                                           basis = single reactor assembly
          charge 155232. d 164363. d 173494. d 182625. d 182625. d
     cm245   2.37E-20  3.43E-20  4.84E-20  6.71E-20  9.12E-20  9.12E-20
     cm246   7.57E-24  1.17E-23  1.76E-23  2.58E-23  3.70E-23  3.70E-23
     cm247   3.97E-29  6.53E-29  1.04E-28  1.62E-28  2.46E-28  2.46E-28
     cm248   2.15E-33  3.77E-33  6.40E-33  1.05E-32  1.69E-32  1.69E-32
     cm249    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm250    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.70E+08  2.69E+08  2.69E+08  2.69E+08  2.69E-07
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number  6 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *          made from modified card-image origen-s libraries of scale 4.2       *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
```

```
         *                                                                          *
         *      neutron flux spectrum factors and cross sections were produced from  *
         *     the "presas2" case updating all nuclides on the scale "burnup" library *
         *                                                                          *
         *                  fission product yields are from endf/b-v                *
         *                                                                          *
         *              photon libraries use an 18-energy-group structure           *
         *             the photon data are from the master photon data base,        *
         *              produced to include bremsstrahlung from uo2 matrix          *
         *                                                                          *
         *        see information above this box (if present) for later updates     *
         *                                                                          *
         ****************************************************************************
         *                                                                          *
0        ****************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/28/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ****************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   50
        power=    .00mw, burnup=    877.mwd, flux= 2.69E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      191757. d      200888. d      210019. d      219150. d      219150. d
     productions   1.141551E+06   1.141728E+06   1.141904E+06   1.142080E+06   1.142256E+06   1.142256E+06
     absorptions   9.329141E+05   9.331241E+05   9.333314E+05   9.335349E+05   9.337361E+05   9.337361E+05
     k infinity    1.223640E+00   1.223554E+00   1.223472E+00   1.223393E+00   1.223318E+00   1.223318E+00
0                   initial      191757. d      200888. d      210019. d      219150. d      219150. d
     actinide
     absorptions   9.268260E+05   9.269309E+05   9.270358E+05   9.271403E+05   9.272448E+05   9.272448E+05
     non-actinide
     abs. fracs.   6.525874E-03   6.637037E-03   6.745279E-03   6.849885E-03   6.951988E-03   6.951988E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products    page   51
0                                  fraction of total absorption rate
        power=    .00mw, burnup=    877.mwd, flux= 2.69E+08n/cm**2-sec
0              initial 191757. d 200888. d 210019. d 219150. d 219150. d

     sm149     2.68E-03  2.77E-03  2.86E-03  2.95E-03  3.03E-03  3.03E-03
     eu151     8.34E-05  8.87E-05  9.40E-05  9.94E-05  1.05E-04  1.05E-04
     nd143     7.38E-05  7.75E-05  8.12E-05  8.48E-05  8.85E-05  8.85E-05
     gd155     4.34E-05  4.53E-05  4.72E-05  4.91E-05  5.09E-05  5.09E-05
     rh103     3.44E-05  3.61E-05  3.78E-05  3.95E-05  4.12E-05  4.12E-05
     sm151     3.92E-05  3.93E-05  3.95E-05  3.95E-05  3.96E-05  3.96E-05
     cd113     2.71E-05  2.82E-05  2.93E-05  3.04E-05  3.15E-05  3.15E-05
     xe131     2.33E-05  2.45E-05  2.56E-05  2.68E-05  2.79E-05  2.79E-05
     gd157     2.42E-05  2.49E-05  2.56E-05  2.63E-05  2.69E-05  2.69E-05
     cs133     1.81E-05  1.90E-05  1.99E-05  2.08E-05  2.17E-05  2.17E-05
     sm147     1.33E-05  1.40E-05  1.46E-05  1.53E-05  1.60E-05  1.60E-05
     tc 99     1.33E-05  1.39E-05  1.46E-05  1.53E-05  1.59E-05  1.59E-05
     nd145     1.03E-05  1.08E-05  1.14E-05  1.19E-05  1.24E-05  1.24E-05
     mo 95     7.15E-06  7.50E-06  7.86E-06  8.21E-06  8.57E-06  8.57E-06
     sm152     5.64E-06  5.93E-06  6.22E-06  6.51E-06  6.80E-06  6.80E-06
     kr 83     4.48E-06  4.71E-06  4.93E-06  5.15E-06  5.37E-06  5.37E-06
     cs135     4.08E-06  4.28E-06  4.48E-06  4.69E-06  4.89E-06  4.89E-06
     ru101     3.16E-06  3.31E-06  3.47E-06  3.63E-06  3.78E-06  3.78E-06
```

pr141	3.05E-06	3.20E-06	3.36E-06	3.51E-06	3.66E-06	3.66E-06
eu153	2.78E-06	2.92E-06	3.06E-06	3.20E-06	3.34E-06	3.34E-06
la139	2.50E-06	2.62E-06	2.74E-06	2.87E-06	2.99E-06	2.99E-06
xe135	2.29E-06	2.32E-06	2.32E-06	2.32E-06	2.32E-06	2.29E-06
sm150	1.56E-06	1.70E-06	1.84E-06	2.00E-06	2.15E-06	2.15E-06
ba137	1.09E-06	1.15E-06	1.21E-06	1.27E-06	1.33E-06	1.33E-06
pd105	1.07E-06	1.12E-06	1.17E-06	1.23E-06	1.28E-06	1.28E-06
zr 93	1.01E-06	1.06E-06	1.11E-06	1.16E-06	1.21E-06	1.21E-06
i129	7.78E-07	8.17E-07	8.55E-07	8.94E-07	9.33E-07	9.33E-07
nd144	7.49E-07	7.87E-07	8.24E-07	8.61E-07	8.99E-07	8.99E-07
mo 97	5.66E-07	5.94E-07	6.22E-07	6.50E-07	6.78E-07	6.78E-07
ag109	4.52E-07	4.78E-07	5.04E-07	5.30E-07	5.56E-07	5.56E-07
zr 91	2.66E-07	2.80E-07	2.93E-07	3.06E-07	3.19E-07	3.19E-07
y 89	2.56E-07	2.68E-07	2.81E-07	2.94E-07	3.06E-07	3.06E-07
ru102	2.31E-07	2.42E-07	2.54E-07	2.65E-07	2.77E-07	2.77E-07
pm147	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07
ce142	2.08E-07	2.18E-07	2.29E-07	2.39E-07	2.49E-07	2.49E-07
nd148	2.00E-07	2.10E-07	2.19E-07	2.29E-07	2.39E-07	2.39E-07
nd146	1.68E-07	1.76E-07	1.84E-07	1.93E-07	2.01E-07	2.01E-07
pd108	1.45E-07	1.53E-07	1.61E-07	1.69E-07	1.76E-07	1.76E-07
ba138	1.43E-07	1.50E-07	1.58E-07	1.65E-07	1.72E-07	1.72E-07
in115	1.38E-07	1.45E-07	1.52E-07	1.59E-07	1.66E-07	1.66E-07
eu155	1.61E-07	1.61E-07	1.62E-07	1.62E-07	1.62E-07	1.62E-07
ce140	1.34E-07	1.41E-07	1.48E-07	1.54E-07	1.61E-07	1.61E-07
xe132	1.20E-07	1.26E-07	1.32E-07	1.38E-07	1.44E-07	1.44E-07
pd107	8.44E-08	8.88E-08	9.33E-08	9.78E-08	1.02E-07	1.02E-07
mo 98	8.27E-08	8.68E-08	9.09E-08	9.50E-08	9.91E-08	9.91E-08
mo100	8.01E-08	8.41E-08	8.81E-08	9.21E-08	9.61E-08	9.61E-08
xe134	7.91E-08	8.31E-08	8.70E-08	9.09E-08	9.49E-08	9.49E-08
zr 92	6.42E-08	6.74E-08	7.06E-08	7.38E-08	7.69E-08	7.69E-08
i127	5.23E-08	5.50E-08	5.76E-08	6.02E-08	6.29E-08	6.29E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 52
0 fraction of total absorption rate
power= .00mw, burnup= 877.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 191757. d 200888. d 210019. d 219150. d 219150. d

zr 96	5.02E-08	5.27E-08	5.52E-08	5.77E-08	6.02E-08	6.02E-08
ru104	4.96E-08	5.21E-08	5.45E-08	5.70E-08	5.95E-08	5.95E-08
nd150	4.42E-08	4.64E-08	4.86E-08	5.08E-08	5.30E-08	5.30E-08
xe136	4.28E-08	4.49E-08	4.70E-08	4.92E-08	5.13E-08	5.13E-08
br 81	3.20E-08	3.36E-08	3.52E-08	3.68E-08	3.84E-08	3.84E-08
rb 85	3.11E-08	3.26E-08	3.42E-08	3.57E-08	3.73E-08	3.73E-08
zr 94	2.71E-08	2.84E-08	2.98E-08	3.11E-08	3.25E-08	3.25E-08
gd152	1.92E-08	2.17E-08	2.42E-08	2.70E-08	2.99E-08	2.99E-08
zr 90	2.32E-08	2.44E-08	2.57E-08	2.69E-08	2.82E-08	2.82E-08
eu152	2.08E-08	2.21E-08	2.35E-08	2.49E-08	2.63E-08	2.63E-08
cd111	2.16E-08	2.28E-08	2.39E-08	2.50E-08	2.62E-08	2.62E-08
te130	1.95E-08	2.04E-08	2.14E-08	2.24E-08	2.33E-08	2.33E-08
sm154	1.90E-08	1.99E-08	2.09E-08	2.18E-08	2.28E-08	2.28E-08
rb 87	1.81E-08	1.90E-08	1.99E-08	2.08E-08	2.17E-08	2.17E-08
sr 90	1.71E-08	1.71E-08	1.71E-08	1.71E-08	1.71E-08	1.71E-08
se 77	1.29E-08	1.35E-08	1.42E-08	1.48E-08	1.55E-08	1.55E-08
pd106	9.33E-09	9.81E-09	1.03E-08	1.08E-08	1.13E-08	1.13E-08
kr 84	8.51E-09	8.94E-09	9.36E-09	9.78E-09	1.02E-08	1.02E-08
rh105	8.52E-09	8.56E-09	8.57E-09	8.57E-09	8.58E-09	8.56E-09
se 79	6.61E-09	6.94E-09	7.27E-09	7.59E-09	7.92E-09	7.92E-09
sb121	6.29E-09	6.60E-09	6.92E-09	7.23E-09	7.55E-09	7.55E-09
sb123	5.11E-09	5.37E-09	5.62E-09	5.88E-09	6.13E-09	6.13E-09
kr 86	4.77E-09	5.00E-09	5.24E-09	5.48E-09	5.71E-09	5.71E-09
gd156	4.26E-09	4.53E-09	4.79E-09	5.07E-09	5.34E-09	5.34E-09

te128	4.26E-09	4.47E-09	4.68E-09	4.90E-09	5.11E-09	5.11E-09
cs137	3.76E-09	3.76E-09	3.76E-09	3.76E-09	3.76E-09	3.76E-09
se 80	3.08E-09	3.23E-09	3.39E-09	3.54E-09	3.69E-09	3.69E-09
dy161	3.00E-09	3.17E-09	3.34E-09	3.51E-09	3.68E-09	3.68E-09
te125	2.69E-09	2.82E-09	2.96E-09	3.09E-09	3.23E-09	3.23E-09
pr143	2.66E-09	2.66E-09	2.66E-09	2.66E-09	2.66E-09	2.66E-09
ru 99	1.79E-09	1.97E-09	2.15E-09	2.35E-09	2.55E-09	2.55E-09
tb159	1.90E-09	2.00E-09	2.10E-09	2.20E-09	2.30E-09	2.30E-09
cd112	1.78E-09	1.87E-09	1.96E-09	2.05E-09	2.14E-09	2.14E-09
li 6	1.75E-09	1.83E-09	1.92E-09	2.01E-09	2.09E-09	2.09E-09
xe133	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09
sn117	1.40E-09	1.47E-09	1.54E-09	1.61E-09	1.68E-09	1.68E-09
eu154	1.39E-09	1.46E-09	1.53E-09	1.60E-09	1.67E-09	1.67E-09
ce141	1.60E-09	1.60E-09	1.60E-09	1.59E-09	1.59E-09	1.59E-09
sn119	1.15E-09	1.20E-09	1.26E-09	1.32E-09	1.38E-09	1.38E-09
gd158	1.05E-09	1.12E-09	1.19E-09	1.27E-09	1.34E-09	1.34E-09
gd154	9.04E-10	9.98E-10	1.10E-09	1.20E-09	1.31E-09	1.31E-09
sn115	1.05E-09	1.10E-09	1.15E-09	1.21E-09	1.26E-09	1.26E-09
sr 88	8.76E-10	9.19E-10	9.63E-10	1.01E-09	1.05E-09	1.05E-09
pm149	9.70E-10	9.76E-10	9.75E-10	9.75E-10	9.75E-10	9.69E-10
nd147	9.23E-10	9.26E-10	9.26E-10	9.26E-10	9.25E-10	9.22E-10
cd114	7.23E-10	7.65E-10	8.07E-10	8.50E-10	8.93E-10	8.93E-10
pd110	6.55E-10	6.90E-10	7.24E-10	7.59E-10	7.94E-10	7.94E-10
se 82	5.95E-10	6.24E-10	6.54E-10	6.84E-10	7.13E-10	7.13E-10
ce144	5.99E-10	5.99E-10	5.99E-10	5.99E-10	5.99E-10	5.98E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 53
0 fraction of total absorption rate
power= .00mw, burnup= 877.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 191757. d 200888. d 210019. d 219150. d 219150. d

sn126	4.84E-10	5.09E-10	5.33E-10	5.58E-10	5.82E-10	5.82E-10
kr 85	5.72E-10	5.71E-10	5.71E-10	5.71E-10	5.71E-10	5.71E-10
se 78	4.51E-10	4.74E-10	4.96E-10	5.19E-10	5.41E-10	5.41E-10
dy162	4.30E-10	4.55E-10	4.82E-10	5.08E-10	5.35E-10	5.35E-10
dy164	4.22E-10	4.49E-10	4.76E-10	5.03E-10	5.31E-10	5.31E-10
ru100	3.05E-10	3.36E-10	3.68E-10	4.02E-10	4.37E-10	4.37E-10
sn124	3.63E-10	3.81E-10	4.00E-10	4.18E-10	4.36E-10	4.36E-10
ru103	3.59E-10	3.59E-10	3.59E-10	3.59E-10	3.59E-10	3.59E-10
as 75	2.69E-10	2.82E-10	2.95E-10	3.09E-10	3.22E-10	3.22E-10
nd142	2.10E-10	2.32E-10	2.54E-10	2.78E-10	3.02E-10	3.02E-10
ba134	2.02E-10	2.22E-10	2.44E-10	2.66E-10	2.90E-10	2.90E-10
sm148	1.89E-10	2.09E-10	2.28E-10	2.49E-10	2.71E-10	2.71E-10
ba135	1.65E-10	1.82E-10	1.99E-10	2.18E-10	2.37E-10	2.37E-10
in113	1.94E-10	2.05E-10	2.15E-10	2.25E-10	2.35E-10	2.35E-10
pd104	1.38E-10	1.52E-10	1.66E-10	1.82E-10	1.98E-10	1.98E-10
ba136	1.61E-10	1.70E-10	1.79E-10	1.88E-10	1.97E-10	1.97E-10
sn118	1.48E-10	1.55E-10	1.63E-10	1.70E-10	1.78E-10	1.78E-10
zr 95	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10
cs134	1.35E-10	1.42E-10	1.48E-10	1.55E-10	1.62E-10	1.62E-10
nb 95	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.52E-10
sn122	1.26E-10	1.32E-10	1.39E-10	1.45E-10	1.51E-10	1.51E-10
cd116	1.26E-10	1.32E-10	1.38E-10	1.45E-10	1.51E-10	1.51E-10
y 91	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10
dy163	9.89E-11	1.05E-10	1.11E-10	1.17E-10	1.24E-10	1.24E-10
kr 82	9.77E-11	1.04E-10	1.09E-10	1.15E-10	1.22E-10	1.22E-10
sn120	9.40E-11	9.87E-11	1.03E-10	1.08E-10	1.13E-10	1.13E-10
pm151	1.07E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.07E-10
mo 96	7.94E-11	8.58E-11	9.23E-11	9.91E-11	1.06E-10	1.06E-10
xe130	7.05E-11	7.52E-11	7.99E-11	8.48E-11	8.98E-11	8.98E-11
ge 73	7.36E-11	7.72E-11	8.09E-11	8.46E-11	8.83E-11	8.83E-11

ba140	4.70E-11	4.72E-11	4.72E-11	4.72E-11	4.72E-11	4.70E-11
sm153	3.77E-11	3.86E-11	3.86E-11	3.86E-11	3.86E-11	3.78E-11
eu156	3.56E-11	3.57E-11	3.58E-11	3.59E-11	3.59E-11	3.59E-11
nb 93	2.44E-11	2.70E-11	2.97E-11	3.26E-11	3.56E-11	3.56E-11
ge 76	2.66E-11	2.79E-11	2.92E-11	3.06E-11	3.19E-11	3.19E-11
sr 89	3.06E-11	3.06E-11	3.06E-11	3.06E-11	3.06E-11	3.05E-11
cd110	1.99E-11	2.20E-11	2.43E-11	2.66E-11	2.91E-11	2.91E-11
ru106	2.65E-11	2.65E-11	2.66E-11	2.67E-11	2.67E-11	2.67E-11
te126	1.75E-11	1.87E-11	1.98E-11	2.10E-11	2.21E-11	2.21E-11
gd160	1.80E-11	1.90E-11	2.00E-11	2.09E-11	2.19E-11	2.19E-11
br 79	1.34E-11	1.48E-11	1.63E-11	1.78E-11	1.93E-11	1.93E-11
ce143	1.69E-11	1.74E-11	1.74E-11	1.74E-11	1.74E-11	1.69E-11
y 90	1.63E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11
la140	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11
sb125	1.51E-11	1.51E-11	1.51E-11	1.51E-11	1.52E-11	1.52E-11
mo 99	1.29E-11	1.31E-11	1.31E-11	1.31E-11	1.31E-11	1.28E-11
xe129	7.62E-12	8.40E-12	9.22E-12	1.01E-11	1.10E-11	1.10E-11
ag107	7.40E-12	8.18E-12	8.99E-12	9.84E-12	1.07E-11	1.07E-11
pm148m	9.51E-12	9.52E-12	9.52E-12	9.52E-12	9.52E-12	9.51E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 54
0 fraction of total absorption rate
power= .00mw, burnup= 877.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 191757. d 200888. d 210019. d 219150. d 219150. d

kr 87	9.12E-12	2.29E-11	2.29E-11	2.29E-11	2.29E-11	9.11E-12
ho165	6.91E-12	7.35E-12	7.79E-12	8.23E-12	8.69E-12	8.69E-12
te127m	7.56E-12	7.56E-12	7.57E-12	7.58E-12	7.58E-12	7.58E-12
i131	6.75E-12	6.76E-12	6.76E-12	6.76E-12	6.76E-12	6.74E-12
te124	3.30E-12	3.48E-12	3.65E-12	3.83E-12	4.01E-12	4.01E-12
sr 87	3.08E-12	3.23E-12	3.39E-12	3.54E-12	3.70E-12	3.70E-12
nb 94	1.74E-12	1.83E-12	1.92E-12	2.01E-12	2.10E-12	2.10E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
ge 74	1.49E-12	1.56E-12	1.63E-12	1.71E-12	1.78E-12	1.78E-12
sr 86	1.23E-12	1.31E-12	1.39E-12	1.48E-12	1.56E-12	1.56E-12
dy160	1.10E-12	1.20E-12	1.32E-12	1.43E-12	1.56E-12	1.56E-12
xe128	8.77E-13	9.60E-13	1.05E-12	1.14E-12	1.23E-12	1.23E-12
ge 72	1.00E-12	1.06E-12	1.11E-12	1.16E-12	1.21E-12	1.21E-12
se 76	6.67E-13	7.04E-13	7.43E-13	7.81E-13	8.21E-13	8.21E-13
sn116	2.91E-13	3.21E-13	3.52E-13	3.85E-13	4.19E-13	4.19E-13
pm148	3.63E-13	3.66E-13	3.66E-13	3.66E-13	3.66E-13	3.63E-13
ag111	3.40E-13	3.43E-13	3.44E-13	3.46E-13	3.47E-13	3.45E-13
er166	2.56E-13	2.74E-13	2.94E-13	3.14E-13	3.34E-13	3.34E-13
eu157	2.93E-13	3.15E-13	3.16E-13	3.17E-13	3.18E-13	2.96E-13
cd115m	2.39E-13	2.40E-13	2.40E-13	2.40E-13	2.40E-13	2.40E-13
te122	1.26E-13	1.38E-13	1.51E-13	1.65E-13	1.80E-13	1.80E-13
cs136	6.88E-14	6.97E-14	7.04E-14	7.11E-14	7.17E-14	7.15E-14
kr 80	4.50E-14	4.74E-14	4.99E-14	5.24E-14	5.49E-14	5.49E-14
sn125	2.92E-14	2.94E-14	2.94E-14	2.94E-14	2.94E-14	2.93E-14
ru105	2.38E-14	3.02E-14	3.02E-14	3.02E-14	3.03E-14	2.39E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.42E-15	9.55E-15	9.55E-15	9.55E-15	9.55E-15	9.41E-15
rb 88	9.26E-15	1.29E-14	1.29E-14	1.29E-14	1.29E-14	9.24E-15
i135	8.48E-15	1.01E-14	1.01E-14	1.01E-14	1.01E-14	8.47E-15
tb160	5.60E-15	5.88E-15	6.16E-15	6.43E-15	6.71E-15	6.70E-15
te123	3.73E-15	3.96E-15	4.20E-15	4.45E-15	4.70E-15	4.70E-15
sb126	3.86E-15	3.92E-15	3.96E-15	4.00E-15	4.04E-15	4.03E-15
be 9	3.31E-15	3.48E-15	3.64E-15	3.81E-15	3.97E-15	3.97E-15
pr142	3.25E-15	3.63E-15	3.80E-15	3.97E-15	4.14E-15	3.89E-15
er167	2.60E-15	2.86E-15	3.13E-15	3.41E-15	3.71E-15	3.71E-15
sb124	2.36E-15	2.37E-15	2.38E-15	2.40E-15	2.41E-15	2.41E-15

in117m	1.93E-15	2.15E-15	2.15E-15	2.15E-15	2.15E-15	1.94E-15
li 7	1.35E-15	1.42E-15	1.48E-15	1.55E-15	1.62E-15	1.62E-15
i130	1.23E-15	1.38E-15	1.41E-15	1.44E-15	1.48E-15	1.35E-15
te134	1.07E-15	5.84E-15	5.84E-15	5.84E-15	5.84E-15	1.07E-15
in117	5.73E-16	6.32E-16	6.33E-16	6.33E-16	6.34E-16	5.76E-16
rb 86	4.44E-16	4.55E-16	4.65E-16	4.75E-16	4.85E-16	4.84E-16
dy165	2.13E-16	3.52E-16	3.58E-16	3.65E-16	3.72E-16	2.29E-16
cd108	8.36E-17	9.20E-17	1.01E-16	1.10E-16	1.20E-16	1.20E-16
sn114	6.71E-17	7.42E-17	8.17E-17	8.96E-17	9.78E-17	9.78E-17
ge 75	3.77E-17	8.65E-17	8.65E-17	8.65E-17	8.65E-17	3.77E-17
cd118	2.98E-17	1.22E-16	1.22E-16	1.22E-16	1.22E-16	2.99E-17
cs134m	1.69E-17	2.66E-17	2.78E-17	2.91E-17	3.03E-17	2.02E-17
cd109	1.05E-18	1.09E-18	1.13E-18	1.17E-18	1.22E-18	1.21E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 55

0 fraction of total absorption rate

power= .00mw, burnup= 877.mwd, flux= 2.69E+08n/cm**2-sec

0 initial 191757. d 200888. d 210019. d 219150. d 219150. d

in119m	6.96E-19	3.04E-17	3.05E-17	3.05E-17	3.05E-17	6.95E-19
in119	3.36E-21	2.39E-18	2.39E-18	2.40E-18	2.40E-18	3.36E-21

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 56

power= 4.000E-03mw, burnup=8.7659E+02mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	191757. d	200888. d	210019. d	219150. d	219150. d
h	1	4.30E-05	4.52E-05	4.73E-05	4.94E-05	5.16E-05	5.16E-05
h	2	1.28E-07	1.34E-07	1.40E-07	1.47E-07	1.53E-07	1.53E-07
h	3	3.43E-11	3.44E-11	3.45E-11	3.46E-11	3.46E-11	3.46E-11
h	4	.00E+00	1.40E-34	1.40E-34	1.40E-34	1.41E-34	.00E+00
he	3	9.02E-10	9.48E-10	9.95E-10	1.04E-09	1.09E-09	1.09E-09
he	4	7.11E-06	7.47E-06	7.82E-06	8.17E-06	8.53E-06	8.53E-06
he	6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne	20	8.54E-07	8.97E-07	9.39E-07	9.82E-07	1.02E-06	1.02E-06
ne	21	1.32E-11	1.45E-11	1.58E-11	1.72E-11	1.86E-11	1.86E-11
ne	22	5.53E-09	5.80E-09	6.08E-09	6.36E-09	6.64E-09	6.64E-09
ne	23	7.06E-30	7.07E-15	7.07E-15	7.07E-15	7.07E-15	7.07E-30
na	22	4.15E-11	4.16E-11	4.16E-11	4.16E-11	4.16E-11	4.16E-11
na	23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na	24	2.54E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08	2.54E-08
na	24m	4.52E-30	4.52E-15	4.52E-15	4.52E-15	4.52E-15	4.52E-30
na	25	6.46E-41	6.96E-26	7.48E-26	8.01E-26	8.56E-26	8.55E-41
mg	24	6.26E-03	6.54E-03	6.83E-03	7.11E-03	7.40E-03	7.40E-03
mg	25	2.26E-09	2.44E-09	2.62E-09	2.80E-09	3.00E-09	3.00E-09
mg	26	1.28E-07	1.34E-07	1.40E-07	1.47E-07	1.53E-07	1.53E-07
mg	27	1.16E-15	2.11E-12	2.11E-12	2.11E-12	2.11E-12	1.17E-15
mg	28	4.06E-24	4.30E-24	4.30E-24	4.30E-24	4.30E-24	4.06E-24
al	27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al	28	3.74E-24	2.04E-10	2.04E-10	2.04E-10	2.04E-10	3.74E-24
al	29	6.39E-29	3.47E-24	3.79E-24	4.12E-24	4.47E-24	9.03E-29
al	30	.00E+00	3.48E-35	3.98E-35	4.53E-35	5.12E-35	.00E+00
si	28	1.82E-02	1.90E-02	1.99E-02	2.07E-02	2.15E-02	2.15E-02
si	29	1.24E-08	1.36E-08	1.48E-08	1.61E-08	1.75E-08	1.75E-08
si	30	8.84E-15	1.02E-14	1.16E-14	1.32E-14	1.50E-14	1.50E-14
si	31	4.04E-27	7.30E-27	8.35E-27	9.50E-27	1.07E-26	6.84E-27
si	32	4.02E-33	4.79E-33	5.65E-33	6.61E-33	7.69E-33	7.69E-33
totals		5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux			2.69E+08	2.69E+08	2.69E+08	2.69E+08	2.69E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 57

power= 4.000E-03mw, burnup=8.7659E+02mwd, flux= 2.69E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	191757. d	200888. d	210019. d	219150. d	219150. d
he 4	1.14E-01	1.21E-01	1.29E-01	1.37E-01	1.45E-01	1.45E-01
pb206	1.68E-06	1.96E-06	2.26E-06	2.60E-06	2.96E-06	2.96E-06
pb207	1.68E-06	1.87E-06	2.06E-06	2.26E-06	2.47E-06	2.47E-06
pb208	3.13E-07	3.44E-07	3.77E-07	4.12E-07	4.48E-07	4.48E-07
pb209	3.46E-13	3.79E-13	4.15E-13	4.54E-13	4.93E-13	4.97E-13
pb210	3.36E-07	3.72E-07	4.09E-07	4.47E-07	4.88E-07	4.88E-07
pb211	7.07E-13	7.45E-13	7.83E-13	8.21E-13	8.59E-13	8.58E-13
pb212	2.18E-12	2.29E-12	2.40E-12	2.50E-12	2.61E-12	2.61E-12
pb214	8.43E-13	9.56E-13	1.05E-12	1.14E-12	1.24E-12	1.20E-12
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.07E-07	1.24E-07	1.43E-07	1.63E-07	1.85E-07	1.85E-07
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.07E-10	2.29E-10	2.52E-10	2.75E-10	3.00E-10	3.00E-10
bi211	4.23E-14	4.42E-14	4.64E-14	4.87E-14	5.09E-14	5.13E-14
bi212	2.07E-13	2.17E-13	2.27E-13	2.37E-13	2.48E-13	2.48E-13
bi213	7.80E-14	8.85E-14	9.70E-14	1.06E-13	1.15E-13	1.12E-13
bi214	6.38E-13	7.10E-13	7.77E-13	8.46E-13	9.18E-13	9.06E-13
po210	5.72E-09	6.32E-09	6.95E-09	7.61E-09	8.29E-09	8.29E-09
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	4.67E-19	4.88E-19	5.13E-19	5.38E-19	5.62E-19	5.67E-19
po212	1.09E-23	1.14E-23	1.19E-23	1.25E-23	1.30E-23	1.30E-23
po213	1.17E-22	1.33E-22	1.46E-22	1.59E-22	1.73E-22	1.68E-22
po214	8.77E-20	9.77E-20	1.07E-19	1.16E-19	1.26E-19	1.25E-19
po215	5.81E-19	6.12E-19	6.43E-19	6.75E-19	7.06E-19	7.06E-19
po216	8.27E-18	8.67E-18	9.07E-18	9.48E-18	9.88E-18	9.88E-18
po218	1.01E-13	1.11E-13	1.21E-13	1.32E-13	1.43E-13	1.43E-13
rn218	3.11E-29	3.26E-29	3.41E-29	3.56E-29	3.71E-29	3.71E-29
rn219	1.29E-15	1.36E-15	1.43E-15	1.50E-15	1.57E-15	1.57E-15
rn220	3.17E-15	3.32E-15	3.48E-15	3.63E-15	3.79E-15	3.79E-15
rn222	1.79E-10	1.97E-10	2.15E-10	2.34E-10	2.54E-10	2.54E-10
ra222	3.37E-26	3.54E-26	3.70E-26	3.86E-26	4.03E-26	4.03E-26
ra223	3.23E-10	3.40E-10	3.57E-10	3.74E-10	3.92E-10	3.92E-10
ra224	1.80E-11	1.89E-11	1.98E-11	2.07E-11	2.15E-11	2.15E-11
ra225	3.76E-11	4.14E-11	4.54E-11	4.95E-11	5.39E-11	5.39E-11
ra226	2.73E-05	3.00E-05	3.28E-05	3.58E-05	3.88E-05	3.88E-05
ra228	1.04E-12	1.09E-12	1.15E-12	1.20E-12	1.25E-12	1.25E-12
ac225	2.54E-11	2.79E-11	3.06E-11	3.35E-11	3.64E-11	3.64E-11
ac227	2.24E-07	2.36E-07	2.48E-07	2.60E-07	2.72E-07	2.72E-07
ac228	1.27E-16	1.33E-16	1.40E-16	1.46E-16	1.53E-16	1.53E-16
th226	1.64E-24	1.73E-24	1.81E-24	1.89E-24	1.96E-24	1.96E-24
th227	5.21E-10	5.49E-10	5.76E-10	6.04E-10	6.32E-10	6.32E-10
th228	3.44E-09	3.61E-09	3.78E-09	3.95E-09	4.11E-09	4.11E-09
th229	7.30E-06	8.04E-06	8.82E-06	9.63E-06	1.05E-05	1.05E-05
th230	1.28E-02	1.34E-02	1.40E-02	1.47E-02	1.53E-02	1.53E-02
th231	3.06E-09	3.07E-09	3.07E-09	3.07E-09	3.07E-09	3.07E-09
th232	2.59E-03	2.71E-03	2.84E-03	2.97E-03	3.10E-03	3.10E-03
th233	9.81E-16	2.48E-14	2.60E-14	2.72E-14	2.84E-14	1.18E-15
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	3.60E-04	3.78E-04	3.96E-04	4.14E-04	4.32E-04	4.32E-04
pa232	5.95E-12	6.48E-12	6.79E-12	7.10E-12	7.41E-12	7.13E-12

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 58
power= 4.000E-03mw, burnup=8.7659E+02mwd, flux= 2.69E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	191757. d	200888. d	210019. d	219150. d	219150. d

pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.59E-21	1.67E-21	1.75E-21	1.83E-21	1.90E-21	1.90E-21
u231	5.10E-18	5.42E-18	5.68E-18	5.93E-18	6.19E-18	6.12E-18
u232	1.23E-07	1.29E-07	1.35E-07	1.41E-07	1.47E-07	1.47E-07
u233	6.80E-03	7.14E-03	7.48E-03	7.81E-03	8.15E-03	8.15E-03
u234	9.10E+00	9.11E+00	9.11E+00	9.11E+00	9.12E+00	9.12E+00
u235	7.27E+02	7.26E+02	7.26E+02	7.26E+02	7.26E+02	7.26E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.08E-06	3.11E-06	3.11E-06	3.11E-06	3.11E-06	3.09E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.54E-08	3.18E-07	3.18E-07	3.18E-07	3.17E-07	1.54E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.63E-12	8.64E-12	8.64E-12	8.64E-12	8.63E-12	8.63E-12
np236m	1.95E-12	2.05E-12	2.05E-12	2.05E-12	2.05E-12	1.95E-12
np236	9.88E-08	1.04E-07	1.08E-07	1.13E-07	1.18E-07	1.18E-07
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.51E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.51E-06
np239	4.52E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.52E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.96E-15	9.31E-15	9.31E-15	9.31E-15	9.31E-15	2.96E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09
pu237	2.44E-13	2.46E-13	2.47E-13	2.49E-13	2.50E-13	2.50E-13
pu238	2.30E-02	2.31E-02	2.32E-02	2.32E-02	2.33E-02	2.33E-02
pu239	2.46E+00	2.58E+00	2.70E+00	2.82E+00	2.94E+00	2.94E+00
pu240	5.95E-03	6.54E-03	7.17E-03	7.82E-03	8.49E-03	8.49E-03
pu241	2.25E-06	2.49E-06	2.74E-06	2.99E-06	3.26E-06	3.26E-06
pu242	7.36E-09	8.79E-09	1.04E-08	1.22E-08	1.43E-08	1.43E-08
pu243	1.22E-17	1.85E-17	2.19E-17	2.58E-17	3.01E-17	2.37E-17
pu244	1.54E-36	2.54E-36	4.08E-36	6.41E-36	9.87E-36	9.87E-36
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	3.65E-21	4.64E-21	5.31E-21	6.03E-21	6.80E-21	6.16E-21
am240	1.80E-18	2.13E-18	2.43E-18	2.76E-18	3.11E-18	3.04E-18
am241	1.47E-05	1.69E-05	1.94E-05	2.20E-05	2.48E-05	2.48E-05
am242m	3.07E-09	3.65E-09	4.30E-09	5.02E-09	5.82E-09	5.82E-09
am242	5.14E-13	6.35E-13	7.27E-13	8.27E-13	9.35E-13	8.74E-13
am243	1.09E-11	1.37E-11	1.70E-11	2.08E-11	2.53E-11	2.53E-11
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	7.37E-20	1.04E-19	1.29E-19	1.58E-19	1.92E-19	1.71E-19
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	3.19E-23	3.69E-23	4.23E-23	4.81E-23	5.44E-23	5.43E-23
cm242	1.11E-10	1.28E-10	1.47E-10	1.67E-10	1.89E-10	1.89E-10
cm243	3.48E-17	4.08E-17	4.74E-17	5.47E-17	6.26E-17	6.26E-17
cm244	1.04E-15	1.31E-15	1.65E-15	2.04E-15	2.50E-15	2.50E-15

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 59
power= 4.000E-03mw, burnup=8.7659E+02mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge 191757. d 200888. d 210019. d 219150. d 219150. d

cm245	9.12E-20	1.22E-19	1.61E-19	2.09E-19	2.68E-19	2.68E-19
cm246	3.70E-23	5.22E-23	7.23E-23	9.86E-23	1.33E-22	1.33E-22
cm247	2.46E-28	3.66E-28	5.33E-28	7.62E-28	1.07E-27	1.07E-27
cm248	1.69E-32	2.64E-32	4.04E-32	6.06E-32	8.91E-32	8.91E-32

```
     cm249    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm250    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.69E+08  2.69E+08  2.69E+08  2.69E+08  2.69E-07
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number  7 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *               photon libraries use an 18-energy-group structure              *
          *              the photon data are from the master photon data base,           *
          *               produced to include bremsstrahlung from uo2 matrix             *
          *                                                                              *
          *         see information above this box (if present) for later updates        *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                 8/28/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
                        879    number of fission product nuclides
0                      7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
0
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
```

power= .00mw, burnup= 1023.mwd, flux= 2.69E+08n/cm**2-sec

basis =

(note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)

	initial	228282. d	237413. d	246544. d	255675. d	255676. d
productions	1.142991E+06	1.143166E+06	1.143341E+06	1.143515E+06	1.143689E+06	1.143689E+06
absorptions	9.344589E+05	9.346578E+05	9.348529E+05	9.350456E+05	9.352355E+05	9.352354E+05
k infinity	1.223158E+00	1.223085E+00	1.223017E+00	1.222951E+00	1.222888E+00	1.222889E+00

	initial	228282. d	237413. d	246544. d	255675. d	255676. d
actinide absorptions	9.279626E+05	9.280671E+05	9.281709E+05	9.282748E+05	9.283785E+05	9.283785E+05
non-actinide abs. fracs.	6.951928E-03	7.051468E-03	7.147670E-03	7.241130E-03	7.331848E-03	7.331789E-03

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 61

fraction of total absorption rate

power= .00mw, burnup= 1023.mwd, flux= 2.69E+08n/cm**2-sec

	initial 228282. d	237413. d	246544. d	255675. d	255676. d
sm149	3.03E-03	3.11E-03	3.18E-03	3.26E-03	3.33E-03	3.33E-03
eu151	1.05E-04	1.10E-04	1.15E-04	1.21E-04	1.26E-04	1.26E-04
nd143	8.85E-05	9.21E-05	9.58E-05	9.94E-05	1.03E-04	1.03E-04
gd155	5.09E-05	5.27E-05	5.45E-05	5.63E-05	5.80E-05	5.80E-05
rh103	4.12E-05	4.29E-05	4.46E-05	4.64E-05	4.81E-05	4.81E-05
sm151	3.96E-05	3.97E-05	3.98E-05	3.98E-05	3.98E-05	3.98E-05
cd113	3.14E-05	3.25E-05	3.35E-05	3.45E-05	3.55E-05	3.55E-05
xe131	2.79E-05	2.91E-05	3.03E-05	3.14E-05	3.26E-05	3.26E-05
gd157	2.69E-05	2.75E-05	2.80E-05	2.86E-05	2.91E-05	2.91E-05
cs133	2.17E-05	2.26E-05	2.35E-05	2.44E-05	2.53E-05	2.53E-05
sm147	1.60E-05	1.66E-05	1.73E-05	1.80E-05	1.86E-05	1.86E-05
tc 99	1.59E-05	1.66E-05	1.73E-05	1.79E-05	1.86E-05	1.86E-05
nd145	1.24E-05	1.29E-05	1.34E-05	1.39E-05	1.44E-05	1.44E-05
mo 95	8.57E-06	8.92E-06	9.28E-06	9.63E-06	9.99E-06	9.99E-06
sm152	6.80E-06	7.09E-06	7.38E-06	7.67E-06	7.97E-06	7.97E-06
kr 83	5.37E-06	5.59E-06	5.82E-06	6.04E-06	6.26E-06	6.26E-06
cs135	4.89E-06	5.09E-06	5.30E-06	5.50E-06	5.70E-06	5.70E-06
ru101	3.79E-06	3.94E-06	4.10E-06	4.26E-06	4.41E-06	4.41E-06
pr141	3.66E-06	3.81E-06	3.96E-06	4.11E-06	4.27E-06	4.27E-06
eu153	3.34E-06	3.47E-06	3.61E-06	3.75E-06	3.89E-06	3.89E-06
la139	2.99E-06	3.12E-06	3.24E-06	3.36E-06	3.49E-06	3.49E-06
sm150	2.15E-06	2.31E-06	2.47E-06	2.64E-06	2.81E-06	2.81E-06
xe135	2.29E-06	2.32E-06	2.32E-06	2.32E-06	2.32E-06	2.29E-06
ba137	1.33E-06	1.39E-06	1.45E-06	1.51E-06	1.57E-06	1.57E-06
pd105	1.28E-06	1.33E-06	1.39E-06	1.44E-06	1.50E-06	1.50E-06
zr 93	1.21E-06	1.26E-06	1.31E-06	1.36E-06	1.41E-06	1.41E-06
i129	9.33E-07	9.72E-07	1.01E-06	1.05E-06	1.09E-06	1.09E-06
nd144	8.98E-07	9.36E-07	9.73E-07	1.01E-06	1.05E-06	1.05E-06
mo 97	6.78E-07	7.06E-07	7.34E-07	7.63E-07	7.91E-07	7.91E-07
ag109	5.56E-07	5.83E-07	6.10E-07	6.37E-07	6.65E-07	6.65E-07
zr 91	3.19E-07	3.32E-07	3.46E-07	3.59E-07	3.72E-07	3.72E-07
y 89	3.06E-07	3.19E-07	3.32E-07	3.44E-07	3.57E-07	3.57E-07
ru102	2.77E-07	2.88E-07	3.00E-07	3.11E-07	3.23E-07	3.23E-07
ce142	2.49E-07	2.59E-07	2.70E-07	2.80E-07	2.90E-07	2.90E-07
nd148	2.39E-07	2.49E-07	2.59E-07	2.69E-07	2.79E-07	2.79E-07
pm147	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.69E-07	2.69E-07
nd146	2.01E-07	2.09E-07	2.18E-07	2.26E-07	2.34E-07	2.34E-07
pd108	1.77E-07	1.85E-07	1.93E-07	2.01E-07	2.09E-07	2.09E-07
ba138	1.72E-07	1.79E-07	1.86E-07	1.93E-07	2.00E-07	2.00E-07
in115	1.66E-07	1.73E-07	1.80E-07	1.87E-07	1.94E-07	1.94E-07
ce140	1.61E-07	1.67E-07	1.74E-07	1.81E-07	1.87E-07	1.87E-07
xe132	1.44E-07	1.50E-07	1.56E-07	1.62E-07	1.68E-07	1.68E-07
eu155	1.62E-07	1.62E-07	1.62E-07	1.62E-07	1.63E-07	1.63E-07

pd107	1.02E-07	1.07E-07	1.11E-07	1.16E-07	1.21E-07	1.21E-07
mo 98	9.91E-08	1.03E-07	1.07E-07	1.11E-07	1.16E-07	1.16E-07
mo100	9.61E-08	1.00E-07	1.04E-07	1.08E-07	1.12E-07	1.12E-07
xe134	9.49E-08	9.88E-08	1.03E-07	1.07E-07	1.11E-07	1.11E-07
zr 92	7.69E-08	8.01E-08	8.33E-08	8.65E-08	8.96E-08	8.96E-08
i127	6.29E-08	6.55E-08	6.82E-08	7.08E-08	7.34E-08	7.34E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 62
0 fraction of total absorption rate
power= .00mw, burnup= 1023.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 228282. d 237413. d 246544. d 255675. d 255676. d

zr 96	6.02E-08	6.27E-08	6.52E-08	6.76E-08	7.01E-08	7.01E-08
ru104	5.95E-08	6.20E-08	6.45E-08	6.70E-08	6.95E-08	6.95E-08
nd150	5.30E-08	5.52E-08	5.74E-08	5.96E-08	6.18E-08	6.18E-08
xe136	5.13E-08	5.34E-08	5.55E-08	5.77E-08	5.98E-08	5.98E-08
br 81	3.84E-08	4.00E-08	4.16E-08	4.32E-08	4.47E-08	4.47E-08
rb 85	3.73E-08	3.88E-08	4.04E-08	4.19E-08	4.35E-08	4.35E-08
gd152	2.99E-08	3.29E-08	3.61E-08	3.95E-08	4.30E-08	4.30E-08
zr 94	3.25E-08	3.38E-08	3.52E-08	3.65E-08	3.78E-08	3.78E-08
zr 90	2.82E-08	2.94E-08	3.07E-08	3.19E-08	3.32E-08	3.32E-08
eu152	2.63E-08	2.77E-08	2.91E-08	3.05E-08	3.19E-08	3.19E-08
cd111	2.62E-08	2.73E-08	2.84E-08	2.96E-08	3.07E-08	3.07E-08
te130	2.33E-08	2.43E-08	2.53E-08	2.62E-08	2.72E-08	2.72E-08
sm154	2.28E-08	2.37E-08	2.47E-08	2.56E-08	2.66E-08	2.66E-08
rb 87	2.17E-08	2.25E-08	2.34E-08	2.43E-08	2.52E-08	2.52E-08
se 77	1.55E-08	1.61E-08	1.67E-08	1.74E-08	1.80E-08	1.80E-08
sr 90	1.71E-08	1.70E-08	1.70E-08	1.70E-08	1.70E-08	1.70E-08
pd106	1.13E-08	1.17E-08	1.22E-08	1.27E-08	1.32E-08	1.32E-08
kr 84	1.02E-08	1.06E-08	1.10E-08	1.15E-08	1.19E-08	1.19E-08
se 79	7.92E-09	8.25E-09	8.58E-09	8.91E-09	9.23E-09	9.23E-09
sb121	7.55E-09	7.86E-09	8.18E-09	8.49E-09	8.81E-09	8.81E-09
rh105	8.56E-09	8.59E-09	8.60E-09	8.61E-09	8.62E-09	8.59E-09
sb123	6.13E-09	6.39E-09	6.65E-09	6.90E-09	7.16E-09	7.16E-09
kr 86	5.71E-09	5.95E-09	6.19E-09	6.42E-09	6.66E-09	6.66E-09
gd156	5.34E-09	5.63E-09	5.91E-09	6.20E-09	6.49E-09	6.49E-09
te128	5.11E-09	5.32E-09	5.53E-09	5.75E-09	5.96E-09	5.96E-09
dy161	3.68E-09	3.85E-09	4.03E-09	4.20E-09	4.38E-09	4.38E-09
se 80	3.69E-09	3.84E-09	4.00E-09	4.15E-09	4.30E-09	4.30E-09
te125	3.23E-09	3.37E-09	3.50E-09	3.64E-09	3.78E-09	3.78E-09
cs137	3.76E-09	3.76E-09	3.75E-09	3.75E-09	3.75E-09	3.75E-09
ru 99	2.55E-09	2.77E-09	2.99E-09	3.22E-09	3.46E-09	3.46E-09
tb159	2.30E-09	2.40E-09	2.51E-09	2.61E-09	2.71E-09	2.71E-09
pr143	2.66E-09	2.66E-09	2.66E-09	2.65E-09	2.65E-09	2.65E-09
cd112	2.14E-09	2.23E-09	2.33E-09	2.42E-09	2.51E-09	2.51E-09
li 6	2.09E-09	2.18E-09	2.27E-09	2.35E-09	2.44E-09	2.44E-09
xe133	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09
sn117	1.68E-09	1.75E-09	1.82E-09	1.89E-09	1.96E-09	1.96E-09
eu154	1.67E-09	1.75E-09	1.82E-09	1.89E-09	1.96E-09	1.96E-09
gd154	1.31E-09	1.42E-09	1.54E-09	1.66E-09	1.79E-09	1.79E-09
gd158	1.34E-09	1.42E-09	1.49E-09	1.57E-09	1.65E-09	1.65E-09
sn119	1.38E-09	1.43E-09	1.49E-09	1.55E-09	1.61E-09	1.61E-09
ce141	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09
sn115	1.26E-09	1.31E-09	1.37E-09	1.42E-09	1.47E-09	1.47E-09
sr 88	1.05E-09	1.09E-09	1.14E-09	1.18E-09	1.22E-09	1.22E-09
cd114	8.93E-10	9.37E-10	9.81E-10	1.03E-09	1.07E-09	1.07E-09
pm149	9.69E-10	9.75E-10	9.74E-10	9.74E-10	9.74E-10	9.69E-10
pd110	7.94E-10	8.29E-10	8.64E-10	9.00E-10	9.35E-10	9.35E-10
nd147	9.22E-10	9.25E-10	9.25E-10	9.25E-10	9.24E-10	9.21E-10
se 82	7.13E-10	7.42E-10	7.72E-10	8.01E-10	8.31E-10	8.31E-10
sn126	5.82E-10	6.07E-10	6.31E-10	6.56E-10	6.81E-10	6.81E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 63
0 fraction of total absorption rate
power= .00mw, burnup= 1023.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 228282. d 237413. d 246544. d 255675. d 255676. d

dy164	5.31E-10	5.60E-10	5.89E-10	6.19E-10	6.49E-10	6.49E-10
dy162	5.35E-10	5.62E-10	5.90E-10	6.18E-10	6.47E-10	6.47E-10
se 78	5.41E-10	5.63E-10	5.86E-10	6.08E-10	6.31E-10	6.31E-10
ce144	5.98E-10	5.98E-10	5.98E-10	5.98E-10	5.98E-10	5.98E-10
ru100	4.37E-10	4.74E-10	5.12E-10	5.51E-10	5.92E-10	5.92E-10
kr 85	5.71E-10	5.70E-10	5.70E-10	5.70E-10	5.70E-10	5.70E-10
sn124	4.36E-10	4.54E-10	4.73E-10	4.91E-10	5.09E-10	5.09E-10
nd142	3.02E-10	3.28E-10	3.55E-10	3.82E-10	4.11E-10	4.11E-10
ba134	2.90E-10	3.14E-10	3.40E-10	3.66E-10	3.94E-10	3.94E-10
as 75	3.22E-10	3.35E-10	3.49E-10	3.62E-10	3.75E-10	3.75E-10
sm148	2.71E-10	2.94E-10	3.17E-10	3.42E-10	3.67E-10	3.67E-10
ru103	3.59E-10	3.59E-10	3.59E-10	3.59E-10	3.60E-10	3.59E-10
ba135	2.37E-10	2.57E-10	2.78E-10	3.00E-10	3.22E-10	3.22E-10
in113	2.35E-10	2.45E-10	2.56E-10	2.66E-10	2.76E-10	2.76E-10
pd104	1.98E-10	2.15E-10	2.32E-10	2.50E-10	2.69E-10	2.69E-10
ba136	1.97E-10	2.06E-10	2.16E-10	2.25E-10	2.35E-10	2.35E-10
sn118	1.78E-10	1.85E-10	1.92E-10	2.00E-10	2.07E-10	2.07E-10
cs134	1.62E-10	1.68E-10	1.75E-10	1.82E-10	1.88E-10	1.88E-10
sn122	1.51E-10	1.57E-10	1.64E-10	1.70E-10	1.76E-10	1.76E-10
cd116	1.51E-10	1.57E-10	1.64E-10	1.70E-10	1.76E-10	1.76E-10
zr 95	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10
nb 95	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.52E-10
dy163	1.24E-10	1.30E-10	1.37E-10	1.44E-10	1.51E-10	1.51E-10
kr 82	1.22E-10	1.28E-10	1.34E-10	1.40E-10	1.47E-10	1.47E-10
y 91	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10
mo 96	1.06E-10	1.13E-10	1.21E-10	1.28E-10	1.36E-10	1.36E-10
sn120	1.13E-10	1.18E-10	1.22E-10	1.27E-10	1.32E-10	1.32E-10
xe130	8.98E-11	9.49E-11	1.00E-10	1.05E-10	1.11E-10	1.11E-10
pm151	1.07E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.07E-10
ge 73	8.83E-11	9.19E-11	9.56E-11	9.93E-11	1.03E-10	1.03E-10
nb 93	3.56E-11	3.87E-11	4.20E-11	4.54E-11	4.89E-11	4.89E-11
ba140	4.70E-11	4.71E-11	4.71E-11	4.71E-11	4.71E-11	4.69E-11
cd110	2.91E-11	3.17E-11	3.44E-11	3.72E-11	4.02E-11	4.02E-11
sm153	3.78E-11	3.87E-11	3.87E-11	3.87E-11	3.87E-11	3.78E-11
ge 76	3.19E-11	3.32E-11	3.45E-11	3.58E-11	3.72E-11	3.72E-11
eu156	3.59E-11	3.60E-11	3.61E-11	3.61E-11	3.62E-11	3.62E-11
sr 89	3.05E-11	3.05E-11	3.05E-11	3.05E-11	3.05E-11	3.05E-11
te126	2.21E-11	2.34E-11	2.46E-11	2.58E-11	2.71E-11	2.71E-11
ru106	2.67E-11	2.68E-11	2.69E-11	2.69E-11	2.70E-11	2.70E-11
br 79	1.93E-11	2.10E-11	2.27E-11	2.45E-11	2.63E-11	2.63E-11
gd160	2.19E-11	2.29E-11	2.39E-11	2.49E-11	2.59E-11	2.59E-11
ce143	1.69E-11	1.74E-11	1.74E-11	1.74E-11	1.74E-11	1.69E-11
y 90	1.62E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11
la140	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11
sb125	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11
xe129	1.10E-11	1.19E-11	1.29E-11	1.39E-11	1.49E-11	1.49E-11
ag107	1.07E-11	1.17E-11	1.26E-11	1.36E-11	1.47E-11	1.47E-11
mo 99	1.28E-11	1.31E-11	1.31E-11	1.31E-11	1.31E-11	1.28E-11
ho165	8.69E-12	9.15E-12	9.63E-12	1.01E-11	1.06E-11	1.06E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 64
0 fraction of total absorption rate
power= .00mw, burnup= 1023.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 228282. d 237413. d 246544. d 255675. d 255676. d

pm148m	9.50E-12	9.52E-12	9.52E-12	9.52E-12	9.52E-12	9.50E-12

kr 87	9.11E-12	2.28E-11	2.28E-11	2.28E-11	2.28E-11	9.09E-12
te127m	7.58E-12	7.59E-12	7.59E-12	7.60E-12	7.60E-12	7.60E-12
i131	6.74E-12	6.76E-12	6.76E-12	6.76E-12	6.75E-12	6.74E-12
te124	4.00E-12	4.18E-12	4.36E-12	4.54E-12	4.72E-12	4.72E-12
sr 87	3.70E-12	3.85E-12	4.01E-12	4.16E-12	4.32E-12	4.32E-12
nb 94	2.10E-12	2.18E-12	2.27E-12	2.36E-12	2.45E-12	2.45E-12
dy160	1.56E-12	1.68E-12	1.82E-12	1.95E-12	2.10E-12	2.10E-12
ge 74	1.78E-12	1.86E-12	1.93E-12	2.00E-12	2.08E-12	2.08E-12
sr 86	1.56E-12	1.65E-12	1.74E-12	1.83E-12	1.93E-12	1.93E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
xe128	1.23E-12	1.33E-12	1.43E-12	1.53E-12	1.64E-12	1.64E-12
ge 72	1.21E-12	1.26E-12	1.31E-12	1.36E-12	1.41E-12	1.41E-12
se 76	8.20E-13	8.60E-13	9.00E-13	9.41E-13	9.81E-13	9.81E-13
sn116	4.19E-13	4.54E-13	4.91E-13	5.30E-13	5.70E-13	5.70E-13
er166	3.34E-13	3.55E-13	3.77E-13	3.99E-13	4.22E-13	4.22E-13
pm148	3.63E-13	3.66E-13	3.66E-13	3.66E-13	3.66E-13	3.63E-13
ag111	3.45E-13	3.48E-13	3.50E-13	3.51E-13	3.52E-13	3.51E-13
eu157	2.96E-13	3.18E-13	3.19E-13	3.20E-13	3.21E-13	3.00E-13
te122	1.80E-13	1.95E-13	2.10E-13	2.26E-13	2.43E-13	2.43E-13
cd115m	2.40E-13	2.40E-13	2.40E-13	2.40E-13	2.40E-13	2.40E-13
cs136	7.15E-14	7.24E-14	7.31E-14	7.37E-14	7.44E-14	7.41E-14
kr 80	5.49E-14	5.74E-14	5.99E-14	6.25E-14	6.51E-14	6.51E-14
sn125	2.93E-14	2.94E-14	2.94E-14	2.94E-14	2.94E-14	2.93E-14
ru105	2.39E-14	3.03E-14	3.03E-14	3.04E-14	3.04E-14	2.40E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.41E-15	9.55E-15	9.55E-15	9.54E-15	9.54E-15	9.40E-15
rb 88	9.24E-15	1.28E-14	1.28E-14	1.28E-14	1.28E-14	9.22E-15
i135	8.47E-15	1.01E-14	1.01E-14	1.01E-14	1.01E-14	8.46E-15
tb160	6.70E-15	6.99E-15	7.26E-15	7.54E-15	7.82E-15	7.82E-15
te123	4.70E-15	4.96E-15	5.22E-15	5.49E-15	5.77E-15	5.77E-15
er167	3.71E-15	4.03E-15	4.35E-15	4.70E-15	5.06E-15	5.06E-15
be 9	3.97E-15	4.14E-15	4.30E-15	4.47E-15	4.63E-15	4.63E-15
pr142	3.89E-15	4.31E-15	4.48E-15	4.65E-15	4.82E-15	4.53E-15
sb126	4.03E-15	4.09E-15	4.13E-15	4.17E-15	4.22E-15	4.20E-15
sb124	2.41E-15	2.42E-15	2.43E-15	2.45E-15	2.46E-15	2.46E-15
in117m	1.94E-15	2.15E-15	2.16E-15	2.16E-15	2.16E-15	1.94E-15
li 7	1.62E-15	1.69E-15	1.75E-15	1.82E-15	1.89E-15	1.89E-15
i130	1.35E-15	1.51E-15	1.54E-15	1.57E-15	1.60E-15	1.46E-15
te134	1.07E-15	5.83E-15	5.83E-15	5.83E-15	5.83E-15	1.07E-15
in117	5.76E-16	6.35E-16	6.35E-16	6.36E-16	6.37E-16	5.78E-16
rb 86	4.84E-16	4.95E-16	5.05E-16	5.16E-16	5.26E-16	5.24E-16
dy165	2.29E-16	3.78E-16	3.85E-16	3.92E-16	3.98E-16	2.46E-16
cd108	1.20E-16	1.31E-16	1.42E-16	1.54E-16	1.66E-16	1.66E-16
sn114	9.77E-17	1.06E-16	1.15E-16	1.25E-16	1.34E-16	1.34E-16
ge 75	3.77E-17	8.64E-17	8.64E-17	8.64E-17	8.64E-17	3.77E-17
cd118	2.99E-17	1.22E-16	1.22E-16	1.22E-16	1.22E-16	2.99E-17
cs134m	2.02E-17	3.16E-17	3.28E-17	3.41E-17	3.53E-17	2.35E-17
cd109	1.21E-18	1.26E-18	1.30E-18	1.34E-18	1.38E-18	1.38E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 65
0 fraction of total absorption rate
power= .00mw, burnup= 1023.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 228282. d 237413. d 246544. d 255675. d 255676. d

in119m	6.96E-19	3.05E-17	3.05E-17	3.05E-17	3.05E-17	6.95E-19
in119	3.36E-21	2.40E-18	2.40E-18	2.40E-18	2.40E-18	3.36E-21

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 66
power= 4.000E-03mw, burnup=1.0227E+03mwd, flux= 2.69E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

		charge 228282. d	237413. d	246544. d	255675. d	255676. d	
h	1	5.16E-05	5.37E-05	5.59E-05	5.80E-05	6.01E-05	6.01E-05
h	2	1.53E-07	1.59E-07	1.66E-07	1.72E-07	1.79E-07	1.79E-07
h	3	3.46E-11	3.48E-11	3.48E-11	3.49E-11	3.50E-11	3.50E-11
h	4	.00E+00	1.41E-34	1.41E-34	1.41E-34	1.42E-34	.00E+00
he	3	1.09E-09	1.13E-09	1.18E-09	1.23E-09	1.27E-09	1.27E-09
he	4	8.53E-06	8.88E-06	9.24E-06	9.59E-06	9.94E-06	9.94E-06
he	6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne	20	1.02E-06	1.07E-06	1.11E-06	1.15E-06	1.19E-06	1.19E-06
ne	21	1.86E-11	2.01E-11	2.17E-11	2.33E-11	2.50E-11	2.50E-11
ne	22	6.64E-09	6.91E-09	7.19E-09	7.47E-09	7.75E-09	7.75E-09
ne	23	7.07E-30	7.08E-15	7.08E-15	7.08E-15	7.08E-15	7.08E-30
na	22	4.16E-11	4.17E-11	4.17E-11	4.17E-11	4.16E-11	4.16E-11
na	23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na	24	2.54E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08	2.54E-08
na	24m	4.52E-30	4.52E-15	4.52E-15	4.52E-15	4.52E-15	4.52E-30
na	25	8.55E-41	9.13E-26	9.71E-26	1.03E-25	1.09E-25	1.09E-40
mg	24	7.40E-03	7.68E-03	7.97E-03	8.25E-03	8.54E-03	8.54E-03
mg	25	3.00E-09	3.19E-09	3.40E-09	3.61E-09	3.82E-09	3.82E-09
mg	26	1.53E-07	1.59E-07	1.66E-07	1.72E-07	1.78E-07	1.78E-07
mg	27	1.17E-15	2.12E-12	2.12E-12	2.11E-12	2.11E-12	1.17E-15
mg	28	4.06E-24	4.31E-24	4.30E-24	4.30E-24	4.30E-24	4.07E-24
al	27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al	28	3.74E-24	2.04E-10	2.04E-10	2.04E-10	2.04E-10	3.74E-24
al	29	9.03E-29	4.83E-24	5.21E-24	5.59E-24	5.99E-24	1.21E-28
al	30	.00E+00	5.77E-35	6.46E-35	7.21E-35	8.01E-35	.00E+00
si	28	2.15E-02	2.24E-02	2.32E-02	2.40E-02	2.48E-02	2.48E-02
si	29	1.75E-08	1.89E-08	2.03E-08	2.19E-08	2.34E-08	2.34E-08
si	30	1.50E-14	1.69E-14	1.89E-14	2.11E-14	2.34E-14	2.34E-14
si	31	6.84E-27	1.21E-26	1.35E-26	1.51E-26	1.68E-26	1.07E-26
si	32	7.69E-33	8.88E-33	1.02E-32	1.16E-32	1.32E-32	1.32E-32
totals		5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux			2.69E+08	2.69E+08	2.69E+08	2.69E+08	2.69E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 67
power= 4.000E-03mw, burnup=1.0227E+03mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 228282. d	237413. d	246544. d	255675. d	255676. d	
he 4	1.45E-01	1.53E-01	1.61E-01	1.69E-01	1.78E-01	1.78E-01
pb206	2.96E-06	3.36E-06	3.79E-06	4.26E-06	4.76E-06	4.76E-06
pb207	2.47E-06	2.69E-06	2.93E-06	3.17E-06	3.42E-06	3.42E-06
pb208	4.48E-07	4.86E-07	5.25E-07	5.65E-07	6.08E-07	6.08E-07
pb209	4.97E-13	5.35E-13	5.78E-13	6.23E-13	6.69E-13	6.74E-13
pb210	4.88E-07	5.30E-07	5.73E-07	6.18E-07	6.65E-07	6.65E-07
pb211	8.58E-13	8.96E-13	9.34E-13	9.72E-13	1.01E-12	1.01E-12
pb212	2.61E-12	2.72E-12	2.82E-12	2.93E-12	3.04E-12	3.04E-12
pb214	1.20E-12	1.34E-12	1.44E-12	1.55E-12	1.66E-12	1.61E-12
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.85E-07	2.09E-07	2.35E-07	2.63E-07	2.93E-07	2.93E-07
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	3.00E-10	3.26E-10	3.53E-10	3.81E-10	4.09E-10	4.09E-10
bi211	5.13E-14	5.31E-14	5.54E-14	5.76E-14	5.99E-14	6.04E-14
bi212	2.48E-13	2.58E-13	2.68E-13	2.78E-13	2.88E-13	2.88E-13
bi213	1.12E-13	1.25E-13	1.35E-13	1.45E-13	1.56E-13	1.52E-13
bi214	9.06E-13	9.93E-13	1.07E-12	1.15E-12	1.23E-12	1.22E-12
po210	8.29E-09	9.01E-09	9.75E-09	1.05E-08	1.13E-08	1.13E-08
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	5.67E-19	5.87E-19	6.12E-19	6.37E-19	6.62E-19	6.67E-19
po212	1.30E-23	1.35E-23	1.41E-23	1.46E-23	1.51E-23	1.51E-23

po213	1.68E-22	1.88E-22	2.03E-22	2.19E-22	2.35E-22	2.28E-22
po214	1.25E-19	1.37E-19	1.47E-19	1.58E-19	1.70E-19	1.67E-19
po215	7.06E-19	7.37E-19	7.68E-19	7.99E-19	8.30E-19	8.30E-19
po216	9.88E-18	1.03E-17	1.07E-17	1.11E-17	1.15E-17	1.15E-17
po218	1.43E-13	1.55E-13	1.67E-13	1.79E-13	1.92E-13	1.92E-13
rn218	3.71E-29	3.86E-29	4.01E-29	4.16E-29	4.32E-29	4.32E-29
rn219	1.57E-15	1.64E-15	1.71E-15	1.78E-15	1.85E-15	1.85E-15
rn220	3.79E-15	3.94E-15	4.10E-15	4.25E-15	4.41E-15	4.41E-15
rn222	2.54E-10	2.75E-10	2.96E-10	3.18E-10	3.41E-10	3.41E-10
ra222	4.03E-26	4.19E-26	4.36E-26	4.52E-26	4.69E-26	4.69E-26
ra223	3.92E-10	4.09E-10	4.26E-10	4.43E-10	4.61E-10	4.61E-10
ra224	2.15E-11	2.24E-11	2.33E-11	2.42E-11	2.51E-11	2.51E-11
ra225	5.39E-11	5.84E-11	6.31E-11	6.80E-11	7.31E-11	7.31E-11
ra226	3.88E-05	4.20E-05	4.52E-05	4.86E-05	5.21E-05	5.21E-05
ra228	1.25E-12	1.31E-12	1.36E-12	1.41E-12	1.46E-12	1.46E-12
ac225	3.64E-11	3.95E-11	4.27E-11	4.60E-11	4.94E-11	4.94E-11
ac227	2.72E-07	2.84E-07	2.96E-07	3.08E-07	3.20E-07	3.20E-07
ac228	1.53E-16	1.59E-16	1.66E-16	1.72E-16	1.79E-16	1.79E-16
th226	1.96E-24	2.05E-24	2.13E-24	2.21E-24	2.29E-24	2.28E-24
th227	6.32E-10	6.60E-10	6.88E-10	7.16E-10	7.43E-10	7.43E-10
th228	4.11E-09	4.28E-09	4.45E-09	4.62E-09	4.79E-09	4.79E-09
th229	1.05E-05	1.14E-05	1.23E-05	1.32E-05	1.42E-05	1.42E-05
th230	1.53E-02	1.60E-02	1.66E-02	1.72E-02	1.79E-02	1.79E-02
th231	3.07E-09	3.07E-09	3.08E-09	3.08E-09	3.08E-09	3.08E-09
th232	3.10E-03	3.23E-03	3.36E-03	3.49E-03	3.62E-03	3.62E-03
th233	1.18E-15	2.96E-14	3.08E-14	3.19E-14	3.31E-14	1.37E-15
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	4.32E-04	4.50E-04	4.68E-04	4.86E-04	5.04E-04	5.04E-04
pa232	7.13E-12	7.72E-12	8.02E-12	8.33E-12	8.64E-12	8.32E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 68
power= 4.000E-03mw, burnup=1.0227E+03mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 228282. d	237413. d	246544. d	255675. d	255676. d	
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.90E-21	1.98E-21	2.06E-21	2.14E-21	2.22E-21	2.21E-21
u231	6.12E-18	6.45E-18	6.70E-18	6.96E-18	7.22E-18	7.13E-18
u232	1.47E-07	1.53E-07	1.59E-07	1.65E-07	1.71E-07	1.71E-07
u233	8.15E-03	8.49E-03	8.83E-03	9.17E-03	9.51E-03	9.51E-03
u234	9.12E+00	9.12E+00	9.13E+00	9.13E+00	9.13E+00	9.13E+00
u235	7.26E+02	7.26E+02	7.26E+02	7.25E+02	7.25E+02	7.25E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.09E-06	3.11E-06	3.11E-06	3.11E-06	3.11E-06	3.09E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.54E-08	3.18E-07	3.18E-07	3.17E-07	3.17E-07	1.54E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.63E-12	8.64E-12	8.64E-12	8.64E-12	8.64E-12	8.64E-12
np236m	1.95E-12	2.05E-12	2.05E-12	2.05E-12	2.05E-12	1.95E-12
np236	1.18E-07	1.23E-07	1.28E-07	1.33E-07	1.38E-07	1.38E-07
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.51E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.51E-06
np239	4.52E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.52E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.96E-15	9.31E-15	9.31E-15	9.30E-15	9.30E-15	2.96E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

```
     pu236   1.11E-09  1.11E-09  1.11E-09  1.11E-09  1.11E-09  1.11E-09
     pu237   2.50E-13  2.52E-13  2.53E-13  2.54E-13  2.55E-13  2.55E-13
     pu238   2.33E-02  2.33E-02  2.33E-02  2.33E-02  2.33E-02  2.33E-02
     pu239   2.94E+00  3.05E+00  3.17E+00  3.29E+00  3.41E+00  3.41E+00
     pu240   8.49E-03  9.19E-03  9.92E-03  1.07E-02  1.15E-02  1.15E-02
     pu241   3.26E-06  3.54E-06  3.83E-06  4.13E-06  4.45E-06  4.45E-06
     pu242   1.43E-08  1.66E-08  1.91E-08  2.19E-08  2.50E-08  2.50E-08
     pu243   2.37E-17  3.49E-17  4.03E-17  4.62E-17  5.27E-17  4.15E-17
     pu244   9.87E-36  1.49E-35  2.22E-35  3.24E-35  4.67E-35  4.67E-35
     pu245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239   6.16E-21  7.64E-21  8.53E-21  9.48E-21  1.05E-20  9.50E-21
     am240   3.04E-18  3.50E-18  3.91E-18  4.34E-18  4.81E-18  4.70E-18
     am241   2.48E-05  2.79E-05  3.11E-05  3.46E-05  3.83E-05  3.83E-05
     am242m  5.82E-09  6.70E-09  7.66E-09  8.71E-09  9.84E-09  9.84E-09
     am242   8.74E-13  1.05E-12  1.18E-12  1.31E-12  1.45E-12  1.36E-12
     am243   2.53E-11  3.05E-11  3.64E-11  4.32E-11  5.09E-11  5.09E-11
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   1.71E-19  2.32E-19  2.77E-19  3.28E-19  3.87E-19  3.44E-19
     am245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   5.43E-23  6.12E-23  6.85E-23  7.63E-23  8.46E-23  8.45E-23
     cm242   1.89E-10  2.12E-10  2.38E-10  2.65E-10  2.94E-10  2.94E-10
     cm243   6.26E-17  7.12E-17  8.05E-17  9.06E-17  1.01E-16  1.01E-16
     cm244   2.50E-15  3.04E-15  3.66E-15  4.37E-15  5.18E-15  5.18E-15
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                actinides          page   69
       power= 4.000E-03mw, burnup=1.0227E+03mwd, flux= 2.69E+08n/cm**2-sec
0                                          nuclide concentrations, gram atoms
                                           basis = single reactor assembly
            charge 228282. d 237413. d 246544. d 255675. d 255676. d
     cm245   2.68E-19  3.41E-19  4.28E-19  5.33E-19  6.58E-19  6.58E-19
     cm246   1.33E-22  1.76E-22  2.31E-22  2.99E-22  3.83E-22  3.83E-22
     cm247   1.07E-27  1.49E-27  2.03E-27  2.74E-27  3.66E-27  3.66E-27
     cm248   8.91E-32  1.29E-31  1.84E-31  2.59E-31  3.59E-31  3.59E-31
     cm249    .00E+00  7.78E-42  7.78E-42  7.78E-42  7.78E-42  2.57E-42
     cm250    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.69E+08  2.69E+08  2.69E+08  2.69E+08  2.69E-07
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number  8 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
```

```
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *          made from modified card-image origen-s libraries of scale 4.2       *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *         see information above this box (if present) for later updates        *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                    .other identification and sizes of library.
0                     data set name:  ft33f001
0                   8/28/1996    date library was produced
0                        1697    total number of nuclides in library
                          689    number of light-element nuclides
                          129    number of actinide nuclides
                          879    number of fission product nuclides
0                        7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   70
         power=    .00mw, burnup=   1169.mwd, flux= 2.69E+08n/cm**2-sec
0                                      basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                     initial      264807. d      273938. d      283069. d      292201. d      292201. d
     productions   1.144583E+06   1.144756E+06   1.144929E+06   1.145102E+06   1.145274E+06   1.145274E+06
     absorptions   9.360666E+05   9.362543E+05   9.364396E+05   9.366226E+05   9.368034E+05   9.368033E+05
     k infinity    1.222758E+00   1.222698E+00   1.222641E+00   1.222586E+00   1.222534E+00   1.222534E+00
0                     initial      264807. d      273938. d      283069. d      292201. d      292201. d
     actinide
     absorptions   9.292053E+05   9.293088E+05   9.294123E+05   9.295153E+05   9.296181E+05   9.296181E+05
     non-actinide
     abs. fracs.   7.329941E-03   7.418394E-03   7.504284E-03   7.588327E-03   7.670045E-03   7.669985E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              fission products        page   71
0                              fraction of total absorption rate
         power=    .00mw, burnup=   1169.mwd, flux= 2.69E+08n/cm**2-sec
0                initial 264807. d 273938. d 283069. d 292201. d 292201. d

     sm149      3.33E-03  3.40E-03  3.46E-03  3.53E-03  3.59E-03  3.59E-03
     eu151      1.26E-04  1.31E-04  1.37E-04  1.42E-04  1.47E-04  1.47E-04
     nd143      1.03E-04  1.07E-04  1.10E-04  1.14E-04  1.18E-04  1.18E-04
     gd155      5.80E-05  5.98E-05  6.15E-05  6.31E-05  6.48E-05  6.48E-05
     rh103      4.81E-05  4.98E-05  5.15E-05  5.32E-05  5.49E-05  5.49E-05
     sm151      3.98E-05  3.99E-05  3.99E-05  3.99E-05  3.99E-05  3.99E-05
     cd113      3.55E-05  3.65E-05  3.74E-05  3.83E-05  3.93E-05  3.93E-05
     xe131      3.26E-05  3.37E-05  3.49E-05  3.60E-05  3.72E-05  3.72E-05
```

gd157	2.91E-05	2.96E-05	3.01E-05	3.06E-05	3.10E-05	3.10E-05
cs133	2.53E-05	2.62E-05	2.71E-05	2.80E-05	2.89E-05	2.89E-05
sm147	1.86E-05	1.93E-05	2.00E-05	2.06E-05	2.13E-05	2.13E-05
tc 99	1.86E-05	1.92E-05	1.99E-05	2.05E-05	2.12E-05	2.12E-05
nd145	1.44E-05	1.49E-05	1.54E-05	1.60E-05	1.65E-05	1.65E-05
mo 95	9.99E-06	1.03E-05	1.07E-05	1.11E-05	1.14E-05	1.14E-05
sm152	7.97E-06	8.26E-06	8.55E-06	8.85E-06	9.14E-06	9.14E-06
kr 83	6.26E-06	6.48E-06	6.70E-06	6.92E-06	7.14E-06	7.14E-06
cs135	5.70E-06	5.90E-06	6.11E-06	6.31E-06	6.51E-06	6.51E-06
ru101	4.41E-06	4.57E-06	4.73E-06	4.88E-06	5.04E-06	5.04E-06
pr141	4.27E-06	4.42E-06	4.57E-06	4.72E-06	4.87E-06	4.87E-06
eu153	3.89E-06	4.03E-06	4.17E-06	4.31E-06	4.45E-06	4.45E-06
la139	3.49E-06	3.61E-06	3.74E-06	3.86E-06	3.98E-06	3.98E-06
sm150	2.81E-06	2.99E-06	3.16E-06	3.35E-06	3.53E-06	3.53E-06
xe135	2.28E-06	2.32E-06	2.32E-06	2.31E-06	2.31E-06	2.26E-06
ba137	1.57E-06	1.63E-06	1.69E-06	1.74E-06	1.80E-06	1.80E-06
pd105	1.50E-06	1.55E-06	1.61E-06	1.66E-06	1.71E-06	1.71E-06
zr 93	1.41E-06	1.46E-06	1.51E-06	1.56E-06	1.61E-06	1.61E-06
i129	1.09E-06	1.13E-06	1.17E-06	1.20E-06	1.24E-06	1.24E-06
nd144	1.05E-06	1.08E-06	1.12E-06	1.16E-06	1.20E-06	1.20E-06
mo 97	7.91E-07	8.19E-07	8.47E-07	8.75E-07	9.03E-07	9.03E-07
ag109	6.65E-07	6.93E-07	7.21E-07	7.49E-07	7.78E-07	7.78E-07
zr 91	3.72E-07	3.85E-07	3.98E-07	4.11E-07	4.25E-07	4.25E-07
y 89	3.57E-07	3.70E-07	3.82E-07	3.95E-07	4.07E-07	4.07E-07
ru102	3.23E-07	3.34E-07	3.46E-07	3.57E-07	3.69E-07	3.69E-07
ce142	2.90E-07	3.01E-07	3.11E-07	3.21E-07	3.32E-07	3.32E-07
nd148	2.79E-07	2.89E-07	2.99E-07	3.09E-07	3.18E-07	3.18E-07
pm147	2.69E-07	2.69E-07	2.69E-07	2.69E-07	2.69E-07	2.69E-07
nd146	2.34E-07	2.42E-07	2.51E-07	2.59E-07	2.67E-07	2.67E-07
pd108	2.09E-07	2.17E-07	2.25E-07	2.34E-07	2.42E-07	2.42E-07
ba138	2.00E-07	2.07E-07	2.14E-07	2.21E-07	2.29E-07	2.29E-07
in115	1.94E-07	2.01E-07	2.08E-07	2.15E-07	2.22E-07	2.22E-07
ce140	1.87E-07	1.94E-07	2.01E-07	2.07E-07	2.14E-07	2.14E-07
xe132	1.68E-07	1.74E-07	1.80E-07	1.86E-07	1.92E-07	1.92E-07
eu155	1.63E-07	1.63E-07	1.63E-07	1.63E-07	1.63E-07	1.63E-07
pd107	1.21E-07	1.25E-07	1.30E-07	1.35E-07	1.39E-07	1.39E-07
mo 98	1.16E-07	1.20E-07	1.24E-07	1.28E-07	1.32E-07	1.32E-07
mo100	1.12E-07	1.16E-07	1.20E-07	1.24E-07	1.28E-07	1.28E-07
xe134	1.11E-07	1.14E-07	1.18E-07	1.22E-07	1.26E-07	1.26E-07
zr 92	8.96E-08	9.28E-08	9.60E-08	9.92E-08	1.02E-07	1.02E-07
i127	7.35E-08	7.61E-08	7.87E-08	8.14E-08	8.40E-08	8.40E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 72
0 fraction of total absorption rate
power= .00mw, burnup= 1169.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 264807. d 273938. d 283069. d 292201. d 292201. d

zr 96	7.02E-08	7.26E-08	7.51E-08	7.76E-08	8.01E-08	8.01E-08
ru104	6.95E-08	7.20E-08	7.44E-08	7.69E-08	7.94E-08	7.94E-08
nd150	6.18E-08	6.40E-08	6.62E-08	6.84E-08	7.06E-08	7.06E-08
xe136	5.98E-08	6.19E-08	6.40E-08	6.62E-08	6.83E-08	6.83E-08
gd152	4.30E-08	4.66E-08	5.04E-08	5.44E-08	5.85E-08	5.85E-08
br 81	4.47E-08	4.63E-08	4.79E-08	4.95E-08	5.11E-08	5.11E-08
rb 85	4.35E-08	4.50E-08	4.66E-08	4.81E-08	4.97E-08	4.97E-08
zr 94	3.78E-08	3.92E-08	4.05E-08	4.19E-08	4.32E-08	4.32E-08
zr 90	3.32E-08	3.44E-08	3.56E-08	3.69E-08	3.81E-08	3.81E-08
eu152	3.19E-08	3.33E-08	3.46E-08	3.60E-08	3.74E-08	3.74E-08
cd111	3.07E-08	3.19E-08	3.30E-08	3.42E-08	3.54E-08	3.54E-08
te130	2.72E-08	2.82E-08	2.91E-08	3.01E-08	3.11E-08	3.11E-08
sm154	2.66E-08	2.75E-08	2.85E-08	2.95E-08	3.04E-08	3.04E-08
rb 87	2.52E-08	2.61E-08	2.70E-08	2.79E-08	2.88E-08	2.88E-08

se 77	1.80E-08	1.86E-08	1.93E-08	1.99E-08	2.06E-08	2.06E-08
sr 90	1.70E-08	1.70E-08	1.70E-08	1.70E-08	1.70E-08	1.70E-08
pd106	1.32E-08	1.37E-08	1.42E-08	1.47E-08	1.51E-08	1.51E-08
kr 84	1.19E-08	1.23E-08	1.27E-08	1.32E-08	1.36E-08	1.36E-08
se 79	9.23E-09	9.56E-09	9.89E-09	1.02E-08	1.05E-08	1.05E-08
sb121	8.81E-09	9.12E-09	9.44E-09	9.75E-09	1.01E-08	1.01E-08
rh105	8.59E-09	8.63E-09	8.64E-09	8.65E-09	8.66E-09	8.61E-09
sb123	7.16E-09	7.42E-09	7.67E-09	7.93E-09	8.18E-09	8.18E-09
gd156	6.49E-09	6.79E-09	7.09E-09	7.40E-09	7.71E-09	7.71E-09
kr 86	6.66E-09	6.89E-09	7.13E-09	7.36E-09	7.60E-09	7.60E-09
te128	5.96E-09	6.17E-09	6.39E-09	6.60E-09	6.81E-09	6.81E-09
dy161	4.38E-09	4.56E-09	4.74E-09	4.93E-09	5.11E-09	5.11E-09
se 80	4.30E-09	4.45E-09	4.61E-09	4.76E-09	4.91E-09	4.91E-09
ru 99	3.46E-09	3.70E-09	3.96E-09	4.22E-09	4.49E-09	4.49E-09
te125	3.78E-09	3.91E-09	4.05E-09	4.18E-09	4.32E-09	4.32E-09
cs137	3.75E-09	3.75E-09	3.75E-09	3.75E-09	3.75E-09	3.75E-09
tb159	2.71E-09	2.81E-09	2.92E-09	3.02E-09	3.13E-09	3.13E-09
cd112	2.51E-09	2.60E-09	2.69E-09	2.78E-09	2.88E-09	2.88E-09
li 6	2.44E-09	2.52E-09	2.61E-09	2.70E-09	2.78E-09	2.78E-09
pr143	2.65E-09	2.65E-09	2.65E-09	2.65E-09	2.65E-09	2.65E-09
gd154	1.79E-09	1.92E-09	2.06E-09	2.20E-09	2.34E-09	2.34E-09
sn117	1.96E-09	2.03E-09	2.10E-09	2.18E-09	2.25E-09	2.25E-09
eu154	1.96E-09	2.03E-09	2.10E-09	2.17E-09	2.24E-09	2.24E-09
xe133	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09
gd158	1.65E-09	1.73E-09	1.81E-09	1.89E-09	1.97E-09	1.97E-09
sn119	1.61E-09	1.66E-09	1.72E-09	1.78E-09	1.84E-09	1.84E-09
sn115	1.47E-09	1.52E-09	1.58E-09	1.63E-09	1.68E-09	1.68E-09
ce141	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09
sr 88	1.22E-09	1.27E-09	1.31E-09	1.35E-09	1.40E-09	1.40E-09
cd114	1.07E-09	1.12E-09	1.16E-09	1.21E-09	1.25E-09	1.25E-09
pd110	9.35E-10	9.71E-10	1.01E-09	1.04E-09	1.08E-09	1.08E-09
pm149	9.68E-10	9.74E-10	9.74E-10	9.74E-10	9.73E-10	9.64E-10
se 82	8.31E-10	8.60E-10	8.90E-10	9.19E-10	9.48E-10	9.48E-10
nd147	9.21E-10	9.24E-10	9.24E-10	9.24E-10	9.24E-10	9.19E-10
sn126	6.80E-10	7.05E-10	7.30E-10	7.54E-10	7.79E-10	7.79E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 73
0 fraction of total absorption rate
power= .00mw, burnup= 1169.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 264807. d 273938. d 283069. d 292201. d 292201. d

dy164	6.48E-10	6.79E-10	7.10E-10	7.42E-10	7.74E-10	7.74E-10
ru100	5.92E-10	6.35E-10	6.79E-10	7.24E-10	7.71E-10	7.71E-10
dy162	6.47E-10	6.76E-10	7.05E-10	7.35E-10	7.65E-10	7.65E-10
se 78	6.31E-10	6.53E-10	6.76E-10	6.98E-10	7.20E-10	7.20E-10
ce144	5.98E-10	5.97E-10	5.97E-10	5.97E-10	5.97E-10	5.97E-10
sn124	5.09E-10	5.28E-10	5.46E-10	5.64E-10	5.82E-10	5.82E-10
kr 85	5.70E-10	5.69E-10	5.69E-10	5.69E-10	5.69E-10	5.69E-10
nd142	4.11E-10	4.41E-10	4.71E-10	5.03E-10	5.36E-10	5.36E-10
ba134	3.94E-10	4.22E-10	4.51E-10	4.82E-10	5.13E-10	5.13E-10
sm148	3.67E-10	3.94E-10	4.21E-10	4.49E-10	4.78E-10	4.78E-10
as 75	3.75E-10	3.89E-10	4.02E-10	4.15E-10	4.29E-10	4.29E-10
ba135	3.22E-10	3.45E-10	3.70E-10	3.95E-10	4.20E-10	4.20E-10
ru103	3.59E-10	3.60E-10	3.60E-10	3.60E-10	3.60E-10	3.59E-10
pd104	2.69E-10	2.89E-10	3.09E-10	3.30E-10	3.51E-10	3.51E-10
in113	2.76E-10	2.86E-10	2.96E-10	3.07E-10	3.17E-10	3.17E-10
ba136	2.35E-10	2.44E-10	2.54E-10	2.64E-10	2.74E-10	2.74E-10
sn118	2.07E-10	2.15E-10	2.22E-10	2.30E-10	2.37E-10	2.37E-10
cs134	1.88E-10	1.95E-10	2.02E-10	2.08E-10	2.15E-10	2.15E-10
sn122	1.76E-10	1.83E-10	1.89E-10	1.95E-10	2.02E-10	2.02E-10
cd116	1.76E-10	1.82E-10	1.89E-10	1.95E-10	2.01E-10	2.01E-10

dy163	1.51E-10	1.58E-10	1.65E-10	1.72E-10	1.79E-10	1.79E-10
kr 82	1.47E-10	1.53E-10	1.60E-10	1.67E-10	1.74E-10	1.74E-10
mo 96	1.36E-10	1.44E-10	1.53E-10	1.61E-10	1.70E-10	1.70E-10
zr 95	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10
nb 95	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.52E-10
sn120	1.32E-10	1.36E-10	1.41E-10	1.46E-10	1.51E-10	1.51E-10
y 91	1.43E-10	1.42E-10	1.42E-10	1.42E-10	1.42E-10	1.42E-10
xe130	1.11E-10	1.16E-10	1.22E-10	1.28E-10	1.34E-10	1.34E-10
ge 73	1.03E-10	1.07E-10	1.10E-10	1.14E-10	1.18E-10	1.18E-10
pm151	1.07E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.05E-10
nb 93	4.89E-11	5.26E-11	5.64E-11	6.03E-11	6.44E-11	6.44E-11
cd110	4.02E-11	4.33E-11	4.65E-11	4.98E-11	5.33E-11	5.33E-11
ba140	4.69E-11	4.71E-11	4.71E-11	4.71E-11	4.71E-11	4.68E-11
ge 76	3.72E-11	3.85E-11	3.98E-11	4.11E-11	4.24E-11	4.24E-11
sm153	3.78E-11	3.87E-11	3.88E-11	3.88E-11	3.88E-11	3.76E-11
eu156	3.62E-11	3.63E-11	3.64E-11	3.64E-11	3.65E-11	3.65E-11
br 79	2.63E-11	2.82E-11	3.02E-11	3.22E-11	3.43E-11	3.43E-11
te126	2.71E-11	2.84E-11	2.97E-11	3.11E-11	3.25E-11	3.25E-11
sr 89	3.05E-11	3.05E-11	3.05E-11	3.05E-11	3.04E-11	3.04E-11
gd160	2.59E-11	2.69E-11	2.79E-11	2.90E-11	3.00E-11	3.00E-11
ru106	2.70E-11	2.71E-11	2.71E-11	2.72E-11	2.72E-11	2.72E-11
xe129	1.49E-11	1.60E-11	1.71E-11	1.83E-11	1.95E-11	1.95E-11
ag107	1.47E-11	1.58E-11	1.69E-11	1.81E-11	1.93E-11	1.93E-11
ce143	1.69E-11	1.74E-11	1.74E-11	1.74E-11	1.74E-11	1.67E-11
y 90	1.62E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11
sb125	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11
la140	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11
mo 99	1.28E-11	1.31E-11	1.31E-11	1.31E-11	1.31E-11	1.27E-11
ho165	1.06E-11	1.11E-11	1.16E-11	1.21E-11	1.26E-11	1.26E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 74
0 fraction of total absorption rate
power= .00mw, burnup= 1169.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 264807. d 273938. d 283069. d 292201. d 292201. d

pm148m	9.50E-12	9.52E-12	9.52E-12	9.51E-12	9.51E-12	9.50E-12
te127m	7.60E-12	7.61E-12	7.61E-12	7.62E-12	7.62E-12	7.62E-12
i131	6.74E-12	6.75E-12	6.75E-12	6.75E-12	6.75E-12	6.73E-12
kr 87	9.09E-12	2.28E-11	2.28E-11	2.28E-11	2.28E-11	6.65E-12
te124	4.72E-12	4.90E-12	5.09E-12	5.27E-12	5.45E-12	5.45E-12
sr 87	4.32E-12	4.47E-12	4.63E-12	4.78E-12	4.94E-12	4.94E-12
nb 94	2.45E-12	2.54E-12	2.62E-12	2.71E-12	2.80E-12	2.80E-12
dy160	2.10E-12	2.25E-12	2.40E-12	2.56E-12	2.72E-12	2.72E-12
ge 74	2.08E-12	2.15E-12	2.23E-12	2.30E-12	2.37E-12	2.37E-12
sr 86	1.93E-12	2.02E-12	2.12E-12	2.22E-12	2.32E-12	2.32E-12
xe128	1.64E-12	1.75E-12	1.87E-12	1.99E-12	2.11E-12	2.11E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
ge 72	1.41E-12	1.46E-12	1.51E-12	1.56E-12	1.61E-12	1.61E-12
se 76	9.81E-13	1.02E-12	1.06E-12	1.11E-12	1.15E-12	1.15E-12
sn116	5.70E-13	6.11E-13	6.54E-13	6.98E-13	7.43E-13	7.43E-13
er166	4.22E-13	4.45E-13	4.69E-13	4.93E-13	5.18E-13	5.18E-13
pm148	3.63E-13	3.66E-13	3.66E-13	3.66E-13	3.66E-13	3.61E-13
ag111	3.51E-13	3.53E-13	3.55E-13	3.56E-13	3.57E-13	3.55E-13
te122	2.43E-13	2.60E-13	2.78E-13	2.97E-13	3.16E-13	3.16E-13
eu157	3.00E-13	3.22E-13	3.23E-13	3.23E-13	3.24E-13	2.95E-13
cd115m	2.40E-13	2.41E-13	2.41E-13	2.41E-13	2.41E-13	2.41E-13
cs136	7.41E-14	7.51E-14	7.57E-14	7.64E-14	7.71E-14	7.67E-14
kr 80	6.51E-14	6.77E-14	7.04E-14	7.30E-14	7.57E-14	7.57E-14
sn125	2.93E-14	2.95E-14	2.95E-14	2.95E-14	2.95E-14	2.93E-14
ru105	2.40E-14	3.05E-14	3.05E-14	3.05E-14	3.06E-14	2.21E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14

te132	9.40E-15	9.54E-15	9.54E-15	9.54E-15	9.54E-15	9.35E-15
tb160	7.82E-15	8.10E-15	8.39E-15	8.67E-15	8.95E-15	8.94E-15
rb 88	9.22E-15	1.28E-14	1.28E-14	1.28E-14	1.28E-14	8.02E-15
i135	8.46E-15	1.01E-14	1.01E-14	1.01E-14	1.01E-14	7.96E-15
te123	5.77E-15	6.05E-15	6.34E-15	6.64E-15	6.94E-15	6.94E-15
er167	5.06E-15	5.43E-15	5.82E-15	6.23E-15	6.65E-15	6.65E-15
be 9	4.63E-15	4.80E-15	4.96E-15	5.12E-15	5.29E-15	5.29E-15
pr142	4.53E-15	4.99E-15	5.17E-15	5.34E-15	5.51E-15	5.07E-15
sb126	4.20E-15	4.26E-15	4.30E-15	4.34E-15	4.39E-15	4.37E-15
sb124	2.46E-15	2.47E-15	2.48E-15	2.50E-15	2.51E-15	2.51E-15
li 7	1.89E-15	1.95E-15	2.02E-15	2.09E-15	2.15E-15	2.15E-15
in117m	1.94E-15	2.16E-15	2.16E-15	2.17E-15	2.17E-15	1.82E-15
i130	1.46E-15	1.63E-15	1.66E-15	1.70E-15	1.73E-15	1.53E-15
te134	1.07E-15	5.82E-15	5.82E-15	5.82E-15	5.82E-15	6.05E-16
rb 86	5.24E-16	5.36E-16	5.46E-16	5.56E-16	5.66E-16	5.64E-16
in117	5.78E-16	6.37E-16	6.38E-16	6.39E-16	6.39E-16	5.45E-16
cd108	1.66E-16	1.80E-16	1.93E-16	2.08E-16	2.23E-16	2.23E-16
dy165	2.46E-16	4.05E-16	4.12E-16	4.18E-16	4.25E-16	2.21E-16
sn114	1.34E-16	1.44E-16	1.55E-16	1.65E-16	1.76E-16	1.76E-16
ge 75	3.77E-17	8.63E-17	8.63E-17	8.63E-17	8.63E-17	2.83E-17
cs134m	2.35E-17	3.66E-17	3.78E-17	3.91E-17	4.03E-17	2.35E-17
cd118	2.99E-17	1.23E-16	1.23E-16	1.23E-16	1.23E-16	1.87E-17
cd109	1.38E-18	1.42E-18	1.46E-18	1.50E-18	1.54E-18	1.54E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 75
0 fraction of total absorption rate
power= .00mw, burnup= 1169.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 264807. d 273938. d 283069. d 292201. d 292201. d

in119m	6.95E-19	3.05E-17	3.05E-17	3.05E-17	3.06E-17	1.88E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 76
power= 4.000E-03mw, burnup=1.1688E+03mwd, flux= 2.69E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	264807. d	273938. d	283069. d	292201. d	292201. d
h 1	6.01E-05	6.23E-05	6.44E-05	6.66E-05	6.87E-05	6.87E-05
h 2	1.79E-07	1.85E-07	1.91E-07	1.98E-07	2.04E-07	2.04E-07
h 3	3.50E-11	3.51E-11	3.51E-11	3.52E-11	3.53E-11	3.53E-11
h 4	.00E+00	1.42E-34	1.42E-34	1.43E-34	1.43E-34	.00E+00
he 3	1.27E-09	1.32E-09	1.37E-09	1.41E-09	1.46E-09	1.46E-09
he 4	9.94E-06	1.03E-05	1.07E-05	1.10E-05	1.14E-05	1.14E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.19E-06	1.24E-06	1.28E-06	1.32E-06	1.36E-06	1.36E-06
ne 21	2.50E-11	2.67E-11	2.85E-11	3.03E-11	3.22E-11	3.22E-11
ne 22	7.75E-09	8.02E-09	8.30E-09	8.58E-09	8.86E-09	8.86E-09
ne 23	7.08E-30	7.09E-15	7.09E-15	7.09E-15	7.09E-15	7.09E-30
na 22	4.16E-11	4.17E-11	4.17E-11	4.17E-11	4.17E-11	4.17E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.54E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08	2.47E-08
na 24m	4.52E-30	4.52E-15	4.51E-15	4.51E-15	4.51E-15	4.51E-30
na 25	1.09E-40	1.15E-25	1.22E-25	1.29E-25	1.35E-25	1.35E-40
mg 24	8.54E-03	8.82E-03	9.10E-03	9.39E-03	9.67E-03	9.67E-03
mg 25	3.82E-09	4.04E-09	4.27E-09	4.50E-09	4.74E-09	4.74E-09
mg 26	1.78E-07	1.85E-07	1.91E-07	1.98E-07	2.04E-07	2.04E-07
mg 27	1.17E-15	2.12E-12	2.12E-12	2.12E-12	2.12E-12	9.59E-17
mg 28	4.07E-24	4.31E-24	4.31E-24	4.31E-24	4.30E-24	3.99E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	3.74E-24	2.04E-10	2.04E-10	2.04E-10	2.04E-10	2.11E-25
al 29	1.21E-28	6.41E-24	6.84E-24	7.28E-24	7.73E-24	4.26E-30
al 30	.00E+00	8.86E-35	9.78E-35	1.08E-34	1.18E-34	.00E+00

si 28	2.48E-02	2.57E-02	2.65E-02	2.73E-02	2.82E-02	2.82E-02
si 29	2.34E-08	2.51E-08	2.67E-08	2.85E-08	3.02E-08	3.02E-08
si 30	2.34E-14	2.59E-14	2.86E-14	3.15E-14	3.45E-14	3.45E-14
si 31	1.07E-26	1.86E-26	2.05E-26	2.25E-26	2.47E-26	1.35E-26
si 32	1.32E-32	1.49E-32	1.68E-32	1.88E-32	2.10E-32	2.10E-32
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.69E+08	2.69E+08	2.69E+08	2.69E+08	2.68E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 77
power= 4.000E-03mw, burnup=1.1688E+03mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 264807. d	273938. d	283069. d	292201. d	292201. d	
he 4	1.78E-01	1.86E-01	1.95E-01	2.03E-01	2.12E-01	2.12E-01
pb206	4.76E-06	5.30E-06	5.88E-06	6.49E-06	7.15E-06	7.15E-06
pb207	3.42E-06	3.68E-06	3.95E-06	4.23E-06	4.51E-06	4.51E-06
pb208	6.08E-07	6.51E-07	6.96E-07	7.43E-07	7.91E-07	7.91E-07
pb209	6.74E-13	7.17E-13	7.67E-13	8.18E-13	8.71E-13	8.76E-13
pb210	6.65E-07	7.13E-07	7.63E-07	8.14E-07	8.67E-07	8.67E-07
pb211	1.01E-12	1.05E-12	1.09E-12	1.12E-12	1.16E-12	1.16E-12
pb212	3.04E-12	3.14E-12	3.25E-12	3.36E-12	3.46E-12	3.46E-12
pb214	1.61E-12	1.77E-12	1.89E-12	2.01E-12	2.14E-12	2.08E-12
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.93E-07	3.26E-07	3.60E-07	3.97E-07	4.37E-07	4.37E-07
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	4.09E-10	4.39E-10	4.70E-10	5.01E-10	5.34E-10	5.34E-10
bi211	6.04E-14	6.21E-14	6.43E-14	6.66E-14	6.88E-14	6.91E-14
bi212	2.88E-13	2.98E-13	3.08E-13	3.18E-13	3.28E-13	3.29E-13
bi213	1.52E-13	1.68E-13	1.79E-13	1.91E-13	2.03E-13	1.97E-13
bi214	1.22E-12	1.32E-12	1.41E-12	1.50E-12	1.59E-12	1.56E-12
po210	1.13E-08	1.21E-08	1.30E-08	1.38E-08	1.47E-08	1.47E-08
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	6.67E-19	6.86E-19	7.11E-19	7.36E-19	7.61E-19	7.64E-19
po212	1.51E-23	1.57E-23	1.62E-23	1.67E-23	1.73E-23	1.73E-23
po213	2.28E-22	2.52E-22	2.69E-22	2.87E-22	3.06E-22	2.97E-22
po214	1.67E-19	1.81E-19	1.93E-19	2.06E-19	2.18E-19	2.14E-19
po215	8.30E-19	8.61E-19	8.92E-19	9.23E-19	9.54E-19	9.54E-19
po216	1.15E-17	1.19E-17	1.23E-17	1.27E-17	1.31E-17	1.31E-17
po218	1.92E-13	2.05E-13	2.19E-13	2.33E-13	2.47E-13	2.48E-13
rn218	4.32E-29	4.47E-29	4.62E-29	4.77E-29	4.92E-29	4.91E-29
rn219	1.85E-15	1.92E-15	1.98E-15	2.05E-15	2.12E-15	2.12E-15
rn220	4.41E-15	4.56E-15	4.72E-15	4.87E-15	5.03E-15	5.03E-15
rn222	3.41E-10	3.65E-10	3.89E-10	4.14E-10	4.39E-10	4.39E-10
ra222	4.69E-26	4.85E-26	5.01E-26	5.18E-26	5.34E-26	5.34E-26
ra223	4.61E-10	4.78E-10	4.95E-10	5.12E-10	5.30E-10	5.30E-10
ra224	2.51E-11	2.59E-11	2.68E-11	2.77E-11	2.86E-11	2.86E-11
ra225	7.31E-11	7.84E-11	8.38E-11	8.94E-11	9.52E-11	9.52E-11
ra226	5.21E-05	5.57E-05	5.94E-05	6.32E-05	6.72E-05	6.72E-05
ra228	1.46E-12	1.52E-12	1.57E-12	1.62E-12	1.68E-12	1.68E-12
ac225	4.94E-11	5.29E-11	5.66E-11	6.04E-11	6.43E-11	6.43E-11
ac227	3.20E-07	3.32E-07	3.44E-07	3.56E-07	3.68E-07	3.68E-07
ac228	1.79E-16	1.85E-16	1.92E-16	1.98E-16	2.05E-16	2.05E-16
th226	2.28E-24	2.37E-24	2.45E-24	2.53E-24	2.61E-24	2.60E-24
th227	7.43E-10	7.71E-10	7.99E-10	8.27E-10	8.55E-10	8.55E-10
th228	4.79E-09	4.95E-09	5.12E-09	5.29E-09	5.46E-09	5.46E-09
th229	1.42E-05	1.52E-05	1.63E-05	1.74E-05	1.85E-05	1.85E-05
th230	1.79E-02	1.85E-02	1.92E-02	1.98E-02	2.04E-02	2.04E-02
th231	3.08E-09	3.08E-09	3.08E-09	3.09E-09	3.09E-09	3.08E-09
th232	3.62E-03	3.75E-03	3.88E-03	4.01E-03	4.14E-03	4.14E-03
th233	1.37E-15	3.43E-14	3.55E-14	3.67E-14	3.79E-14	5.43E-16

th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	5.04E-04	5.22E-04	5.40E-04	5.58E-04	5.76E-04	5.76E-04
pa232	8.32E-12	8.95E-12	9.26E-12	9.56E-12	9.87E-12	9.39E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 78
power= 4.000E-03mw, burnup=1.1688E+03mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 264807. d	273938. d	283069. d	292201. d	292201. d	
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	2.21E-21	2.29E-21	2.37E-21	2.45E-21	2.53E-21	2.52E-21
u231	7.13E-18	7.47E-18	7.73E-18	7.99E-18	8.24E-18	8.11E-18
u232	1.71E-07	1.77E-07	1.83E-07	1.89E-07	1.95E-07	1.95E-07
u233	9.51E-03	9.84E-03	1.02E-02	1.05E-02	1.09E-02	1.09E-02
u234	9.13E+00	9.14E+00	9.14E+00	9.14E+00	9.15E+00	9.15E+00
u235	7.25E+02	7.25E+02	7.25E+02	7.25E+02	7.24E+02	7.24E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.09E-06	3.11E-06	3.11E-06	3.11E-06	3.11E-06	3.08E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.54E-08	3.17E-07	3.17E-07	3.17E-07	3.17E-07	5.63E-09
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.64E-12	8.64E-12	8.64E-12	8.64E-12	8.64E-12	8.64E-12
np236m	1.95E-12	2.05E-12	2.05E-12	2.05E-12	2.05E-12	1.91E-12
np236	1.38E-07	1.42E-07	1.47E-07	1.52E-07	1.57E-07	1.57E-07
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.51E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.50E-06
np239	4.52E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.49E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.96E-15	9.30E-15	9.30E-15	9.30E-15	9.30E-15	2.02E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09
pu237	2.55E-13	2.57E-13	2.58E-13	2.59E-13	2.60E-13	2.59E-13
pu238	2.33E-02	2.34E-02	2.34E-02	2.34E-02	2.34E-02	2.34E-02
pu239	3.41E+00	3.53E+00	3.65E+00	3.77E+00	3.88E+00	3.88E+00
pu240	1.15E-02	1.23E-02	1.31E-02	1.40E-02	1.49E-02	1.49E-02
pu241	4.45E-06	4.77E-06	5.10E-06	5.45E-06	5.80E-06	5.80E-06
pu242	2.50E-08	2.84E-08	3.22E-08	3.62E-08	4.06E-08	4.06E-08
pu243	4.15E-17	5.99E-17	6.77E-17	7.63E-17	8.55E-17	6.22E-17
pu244	4.67E-35	6.65E-35	9.33E-35	1.29E-34	1.78E-34	1.78E-34
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	9.50E-21	1.16E-20	1.27E-20	1.39E-20	1.52E-20	1.33E-20
am240	4.70E-18	5.30E-18	5.83E-18	6.38E-18	6.96E-18	6.75E-18
am241	3.83E-05	4.22E-05	4.64E-05	5.08E-05	5.55E-05	5.55E-05
am242m	9.84E-09	1.11E-08	1.24E-08	1.38E-08	1.53E-08	1.53E-08
am242	1.36E-12	1.61E-12	1.77E-12	1.94E-12	2.12E-12	1.94E-12
am243	5.09E-11	5.97E-11	6.94E-11	8.04E-11	9.26E-11	9.26E-11
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	3.44E-19	4.53E-19	5.27E-19	6.11E-19	7.03E-19	6.01E-19
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	8.45E-23	9.35E-23	1.03E-22	1.13E-22	1.23E-22	1.23E-22
cm242	2.94E-10	3.24E-10	3.57E-10	3.91E-10	4.28E-10	4.28E-10
cm243	1.01E-16	1.13E-16	1.25E-16	1.38E-16	1.52E-16	1.52E-16
cm244	5.18E-15	6.10E-15	7.14E-15	8.30E-15	9.61E-15	9.61E-15

1

power= 4.000E-03mw, burnup=1.1688E+03mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 264807. d	273938. d	283069. d	292201. d	292201. d	
cm245	6.58E-19	8.05E-19	9.78E-19	1.18E-18	1.41E-18	1.41E-18
cm246	3.83E-22	4.87E-22	6.14E-22	7.67E-22	9.50E-22	9.50E-22
cm247	3.66E-27	4.83E-27	6.31E-27	8.17E-27	1.05E-26	1.05E-26
cm248	3.59E-31	4.91E-31	6.65E-31	8.92E-31	1.18E-30	1.18E-30
cm249	2.57E-42	1.56E-41	2.33E-41	3.11E-41	3.89E-41	8.90E-42
cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.69E+08	2.69E+08	2.69E+08	2.69E+08	2.68E-07

```
0        1q array has     20 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        4q array has      1 entries.
0       54q array has     12 entries.
1library information...

          cross-section data taken from position number  9 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *           prelim lwr origen-s binary working library--id = 1143              *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                   fission product yields are from endf/b-v                   *
          *                                                                              *
          *               photon libraries use an 18-energy-group structure              *
          *              the photon data are from the master photon data base,           *
          *               produced to include bremsstrahlung from uo2 matrix             *
          *                                                                              *
          *         see information above this box (if present) for later updates        *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                   .other identification and sizes of library.
```

```
0                  data set name:  ft33f001
0                8/28/1996    date library was produced
0                    1697     total number of nuclides in library
                      689     number of light-element nuclides
                      129     number of actinide nuclides
                      879     number of fission product nuclides
0                    7993     number of nonzero off-diagonal matrix elements
0       ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   80
        power=    .00mw, burnup=   1315.mwd, flux= 2.68E+08n/cm**2-sec
0                                    basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                     initial      301332. d      310463. d      319594. d      328726. d      328726. d
     productions   1.145846E+06   1.146018E+06   1.146189E+06   1.146360E+06   1.146531E+06   1.146531E+06
     absorptions   9.373998E+05   9.375783E+05   9.377546E+05   9.379288E+05   9.381009E+05   9.381009E+05
     k infinity    1.222366E+00   1.222317E+00   1.222270E+00   1.222225E+00   1.222183E+00   1.222183E+00
0                     initial      301332. d      310463. d      319594. d      328726. d      328726. d
     actinide
     absorptions   9.302094E+05   9.303122E+05   9.304148E+05   9.305171E+05   9.306193E+05   9.306193E+05
     non-actinide
     abs. fracs.   7.670581E-03   7.749796E-03   7.826984E-03   7.902205E-03   7.975280E-03   7.975221E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              fission products          page   81
0                                 fraction of total absorption rate
        power=    .00mw, burnup=   1315.mwd, flux= 2.68E+08n/cm**2-sec
0                initial 301332. d 310463. d 319594. d 328726. d 328726. d

     sm149      3.59E-03  3.65E-03  3.71E-03  3.76E-03  3.82E-03  3.82E-03
     eu151      1.47E-04  1.52E-04  1.58E-04  1.63E-04  1.68E-04  1.68E-04
     nd143      1.18E-04  1.21E-04  1.25E-04  1.29E-04  1.32E-04  1.32E-04
     gd155      6.48E-05  6.64E-05  6.81E-05  6.97E-05  7.12E-05  7.12E-05
     rh103      5.49E-05  5.67E-05  5.84E-05  6.01E-05  6.18E-05  6.18E-05
     cd113      3.92E-05  4.01E-05  4.10E-05  4.19E-05  4.28E-05  4.28E-05
     xe131      3.72E-05  3.84E-05  3.95E-05  4.07E-05  4.18E-05  4.18E-05
     sm151      3.99E-05  4.00E-05  4.00E-05  4.00E-05  4.00E-05  4.00E-05
     gd157      3.10E-05  3.14E-05  3.18E-05  3.22E-05  3.26E-05  3.26E-05
     cs133      2.89E-05  2.97E-05  3.06E-05  3.15E-05  3.24E-05  3.24E-05
     sm147      2.13E-05  2.20E-05  2.26E-05  2.33E-05  2.40E-05  2.40E-05
     tc 99      2.12E-05  2.19E-05  2.25E-05  2.32E-05  2.38E-05  2.38E-05
     nd145      1.65E-05  1.70E-05  1.75E-05  1.80E-05  1.85E-05  1.85E-05
     mo 95      1.14E-05  1.18E-05  1.21E-05  1.25E-05  1.28E-05  1.28E-05
     sm152      9.14E-06  9.44E-06  9.74E-06  1.00E-05  1.03E-05  1.03E-05
     kr 83      7.14E-06  7.36E-06  7.58E-06  7.81E-06  8.03E-06  8.03E-06
     cs135      6.51E-06  6.71E-06  6.92E-06  7.12E-06  7.32E-06  7.32E-06
     ru101      5.04E-06  5.20E-06  5.36E-06  5.51E-06  5.67E-06  5.67E-06
     pr141      4.87E-06  5.02E-06  5.17E-06  5.32E-06  5.47E-06  5.47E-06
     eu153      4.45E-06  4.59E-06  4.73E-06  4.87E-06  5.01E-06  5.01E-06
     la139      3.98E-06  4.11E-06  4.23E-06  4.35E-06  4.48E-06  4.48E-06
     sm150      3.53E-06  3.72E-06  3.91E-06  4.10E-06  4.30E-06  4.30E-06
     xe135      2.26E-06  2.31E-06  2.31E-06  2.31E-06  2.31E-06  2.26E-06
     ba137      1.80E-06  1.86E-06  1.92E-06  1.98E-06  2.04E-06  2.04E-06
     pd105      1.71E-06  1.77E-06  1.82E-06  1.88E-06  1.93E-06  1.93E-06
     zr 93      1.61E-06  1.66E-06  1.71E-06  1.76E-06  1.81E-06  1.81E-06
      i129      1.24E-06  1.28E-06  1.32E-06  1.36E-06  1.40E-06  1.40E-06
     nd144      1.20E-06  1.23E-06  1.27E-06  1.31E-06  1.35E-06  1.35E-06
     mo 97      9.03E-07  9.31E-07  9.59E-07  9.87E-07  1.01E-06  1.01E-06
     ag109      7.78E-07  8.07E-07  8.36E-07  8.65E-07  8.95E-07  8.95E-07
     zr 91      4.25E-07  4.38E-07  4.51E-07  4.64E-07  4.77E-07  4.77E-07
      y 89      4.07E-07  4.20E-07  4.33E-07  4.45E-07  4.58E-07  4.58E-07
     ru102      3.69E-07  3.80E-07  3.92E-07  4.03E-07  4.15E-07  4.15E-07
     ce142      3.32E-07  3.42E-07  3.52E-07  3.62E-07  3.73E-07  3.73E-07
```

nd148	3.18E-07	3.28E-07	3.38E-07	3.48E-07	3.58E-07	3.58E-07
nd146	2.67E-07	2.76E-07	2.84E-07	2.92E-07	3.00E-07	3.00E-07
pd108	2.42E-07	2.51E-07	2.59E-07	2.68E-07	2.76E-07	2.76E-07
pm147	2.69E-07	2.69E-07	2.69E-07	2.69E-07	2.69E-07	2.69E-07
ba138	2.29E-07	2.36E-07	2.43E-07	2.50E-07	2.57E-07	2.57E-07
in115	2.22E-07	2.29E-07	2.36E-07	2.42E-07	2.49E-07	2.49E-07
ce140	2.14E-07	2.21E-07	2.27E-07	2.34E-07	2.41E-07	2.41E-07
xe132	1.92E-07	1.98E-07	2.04E-07	2.10E-07	2.16E-07	2.16E-07
eu155	1.63E-07	1.63E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07
pd107	1.39E-07	1.44E-07	1.49E-07	1.53E-07	1.58E-07	1.58E-07
mo 98	1.32E-07	1.36E-07	1.40E-07	1.44E-07	1.48E-07	1.48E-07
mo100	1.28E-07	1.32E-07	1.36E-07	1.40E-07	1.44E-07	1.44E-07
xe134	1.26E-07	1.30E-07	1.34E-07	1.38E-07	1.42E-07	1.42E-07
zr 92	1.02E-07	1.05E-07	1.09E-07	1.12E-07	1.15E-07	1.15E-07
i127	8.40E-08	8.67E-08	8.93E-08	9.20E-08	9.47E-08	9.47E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 82
0 fraction of total absorption rate
power= .00mw, burnup= 1315.mwd, flux= 2.68E+08n/cm**2-sec
0 initial 301332. d 310463. d 319594. d 328726. d 328726. d

zr 96	8.01E-08	8.26E-08	8.51E-08	8.76E-08	9.01E-08	9.01E-08
ru104	7.94E-08	8.19E-08	8.44E-08	8.69E-08	8.94E-08	8.94E-08
nd150	7.06E-08	7.28E-08	7.50E-08	7.72E-08	7.94E-08	7.94E-08
xe136	6.83E-08	7.04E-08	7.25E-08	7.46E-08	7.67E-08	7.67E-08
gd152	5.85E-08	6.27E-08	6.71E-08	7.17E-08	7.64E-08	7.64E-08
br 81	5.11E-08	5.27E-08	5.43E-08	5.58E-08	5.74E-08	5.74E-08
rb 85	4.97E-08	5.12E-08	5.27E-08	5.43E-08	5.58E-08	5.58E-08
zr 94	4.32E-08	4.46E-08	4.59E-08	4.72E-08	4.86E-08	4.86E-08
zr 90	3.81E-08	3.94E-08	4.06E-08	4.19E-08	4.31E-08	4.31E-08
eu152	3.74E-08	3.88E-08	4.01E-08	4.15E-08	4.29E-08	4.29E-08
cd111	3.54E-08	3.65E-08	3.77E-08	3.89E-08	4.01E-08	4.01E-08
te130	3.11E-08	3.20E-08	3.30E-08	3.40E-08	3.49E-08	3.49E-08
sm154	3.04E-08	3.14E-08	3.23E-08	3.33E-08	3.42E-08	3.42E-08
rb 87	2.88E-08	2.97E-08	3.06E-08	3.15E-08	3.24E-08	3.24E-08
se 77	2.06E-08	2.12E-08	2.18E-08	2.25E-08	2.31E-08	2.31E-08
pd106	1.51E-08	1.56E-08	1.61E-08	1.66E-08	1.71E-08	1.71E-08
sr 90	1.70E-08	1.70E-08	1.70E-08	1.70E-08	1.70E-08	1.70E-08
kr 84	1.36E-08	1.40E-08	1.44E-08	1.48E-08	1.53E-08	1.53E-08
se 79	1.05E-08	1.09E-08	1.12E-08	1.15E-08	1.18E-08	1.18E-08
sb121	1.01E-08	1.04E-08	1.07E-08	1.10E-08	1.13E-08	1.13E-08
sb123	8.18E-09	8.44E-09	8.70E-09	8.95E-09	9.21E-09	9.21E-09
gd156	7.71E-09	8.02E-09	8.34E-09	8.66E-09	8.98E-09	8.98E-09
rh105	8.61E-09	8.67E-09	8.68E-09	8.69E-09	8.70E-09	8.65E-09
kr 86	7.60E-09	7.83E-09	8.07E-09	8.30E-09	8.54E-09	8.54E-09
te128	6.81E-09	7.02E-09	7.24E-09	7.45E-09	7.66E-09	7.66E-09
dy161	5.11E-09	5.30E-09	5.48E-09	5.67E-09	5.87E-09	5.87E-09
ru 99	4.49E-09	4.78E-09	5.06E-09	5.36E-09	5.67E-09	5.67E-09
se 80	4.91E-09	5.06E-09	5.22E-09	5.37E-09	5.52E-09	5.52E-09
te125	4.32E-09	4.46E-09	4.60E-09	4.73E-09	4.87E-09	4.87E-09
cs137	3.75E-09	3.75E-09	3.75E-09	3.75E-09	3.75E-09	3.75E-09
tb159	3.13E-09	3.23E-09	3.34E-09	3.44E-09	3.55E-09	3.55E-09
cd112	2.88E-09	2.97E-09	3.06E-09	3.15E-09	3.25E-09	3.25E-09
li 6	2.78E-09	2.87E-09	2.95E-09	3.04E-09	3.12E-09	3.12E-09
gd154	2.34E-09	2.49E-09	2.65E-09	2.81E-09	2.97E-09	2.97E-09
pr143	2.65E-09	2.65E-09	2.65E-09	2.65E-09	2.65E-09	2.65E-09
sn117	2.25E-09	2.32E-09	2.39E-09	2.46E-09	2.53E-09	2.53E-09
eu154	2.24E-09	2.31E-09	2.38E-09	2.45E-09	2.53E-09	2.53E-09
gd158	1.97E-09	2.06E-09	2.14E-09	2.23E-09	2.31E-09	2.31E-09
sn119	1.84E-09	1.89E-09	1.95E-09	2.01E-09	2.07E-09	2.07E-09
xe133	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09

sn115	1.68E-09	1.73E-09	1.79E-09	1.84E-09	1.89E-09	1.89E-09
ce141	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09
sr 88	1.40E-09	1.44E-09	1.48E-09	1.53E-09	1.57E-09	1.57E-09
cd114	1.25E-09	1.30E-09	1.35E-09	1.39E-09	1.44E-09	1.44E-09
pd110	1.08E-09	1.12E-09	1.15E-09	1.19E-09	1.23E-09	1.23E-09
se 82	9.48E-10	9.78E-10	1.01E-09	1.04E-09	1.07E-09	1.07E-09
ru100	7.71E-10	8.19E-10	8.69E-10	9.20E-10	9.73E-10	9.73E-10
pm149	9.64E-10	9.73E-10	9.73E-10	9.73E-10	9.73E-10	9.63E-10
nd147	9.19E-10	9.24E-10	9.23E-10	9.23E-10	9.23E-10	9.18E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 83
0 fraction of total absorption rate
power= .00mw, burnup= 1315.mwd, flux= 2.68E+08n/cm**2-sec
0 initial 301332. d 310463. d 319594. d 328726. d 328726. d

dy164	7.74E-10	8.06E-10	8.39E-10	8.73E-10	9.07E-10	9.07E-10
dy162	7.65E-10	7.95E-10	8.26E-10	8.58E-10	8.89E-10	8.89E-10
sn126	7.79E-10	8.04E-10	8.29E-10	8.53E-10	8.78E-10	8.78E-10
se 78	7.20E-10	7.43E-10	7.65E-10	7.88E-10	8.10E-10	8.10E-10
nd142	5.36E-10	5.70E-10	6.05E-10	6.41E-10	6.78E-10	6.78E-10
sn124	5.83E-10	6.01E-10	6.19E-10	6.38E-10	6.56E-10	6.56E-10
ba134	5.13E-10	5.46E-10	5.79E-10	6.13E-10	6.49E-10	6.49E-10
sm148	4.78E-10	5.08E-10	5.39E-10	5.70E-10	6.03E-10	6.03E-10
ce144	5.97E-10	5.97E-10	5.97E-10	5.96E-10	5.96E-10	5.96E-10
kr 85	5.69E-10	5.68E-10	5.68E-10	5.68E-10	5.68E-10	5.68E-10
ba135	4.20E-10	4.47E-10	4.74E-10	5.03E-10	5.32E-10	5.32E-10
as 75	4.29E-10	4.42E-10	4.55E-10	4.69E-10	4.82E-10	4.82E-10
pd104	3.51E-10	3.73E-10	3.96E-10	4.20E-10	4.44E-10	4.44E-10
ru103	3.59E-10	3.60E-10	3.60E-10	3.60E-10	3.60E-10	3.59E-10
in113	3.17E-10	3.27E-10	3.37E-10	3.48E-10	3.58E-10	3.58E-10
ba136	2.74E-10	2.84E-10	2.94E-10	3.04E-10	3.14E-10	3.14E-10
sn118	2.37E-10	2.45E-10	2.52E-10	2.60E-10	2.67E-10	2.67E-10
cs134	2.15E-10	2.22E-10	2.28E-10	2.35E-10	2.42E-10	2.41E-10
sn122	2.02E-10	2.08E-10	2.14E-10	2.21E-10	2.27E-10	2.27E-10
cd116	2.01E-10	2.08E-10	2.14E-10	2.20E-10	2.27E-10	2.27E-10
dy163	1.79E-10	1.86E-10	1.94E-10	2.02E-10	2.09E-10	2.09E-10
mo 96	1.70E-10	1.79E-10	1.88E-10	1.98E-10	2.08E-10	2.08E-10
kr 82	1.74E-10	1.81E-10	1.88E-10	1.95E-10	2.02E-10	2.02E-10
sn120	1.51E-10	1.55E-10	1.60E-10	1.65E-10	1.69E-10	1.69E-10
zr 95	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.63E-10
xe130	1.34E-10	1.40E-10	1.46E-10	1.52E-10	1.58E-10	1.58E-10
nb 95	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.51E-10	1.51E-10
y 91	1.42E-10	1.42E-10	1.42E-10	1.42E-10	1.42E-10	1.42E-10
ge 73	1.18E-10	1.21E-10	1.25E-10	1.29E-10	1.32E-10	1.32E-10
pm151	1.05E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.05E-10
nb 93	6.44E-11	6.85E-11	7.29E-11	7.73E-11	8.19E-11	8.19E-11
cd110	5.33E-11	5.69E-11	6.06E-11	6.45E-11	6.85E-11	6.85E-11
ge 76	4.24E-11	4.37E-11	4.51E-11	4.64E-11	4.77E-11	4.77E-11
ba140	4.68E-11	4.70E-11	4.70E-11	4.70E-11	4.70E-11	4.68E-11
br 79	3.43E-11	3.65E-11	3.87E-11	4.10E-11	4.34E-11	4.34E-11
te126	3.25E-11	3.38E-11	3.53E-11	3.67E-11	3.82E-11	3.82E-11
sm153	3.76E-11	3.88E-11	3.88E-11	3.89E-11	3.89E-11	3.77E-11
eu156	3.65E-11	3.66E-11	3.66E-11	3.67E-11	3.68E-11	3.68E-11
gd160	3.00E-11	3.10E-11	3.21E-11	3.31E-11	3.42E-11	3.42E-11
sr 89	3.04E-11	3.04E-11	3.04E-11	3.04E-11	3.04E-11	3.04E-11
ru106	2.72E-11	2.73E-11	2.74E-11	2.74E-11	2.75E-11	2.75E-11
xe129	1.95E-11	2.07E-11	2.20E-11	2.33E-11	2.47E-11	2.47E-11
ag107	1.93E-11	2.06E-11	2.19E-11	2.32E-11	2.46E-11	2.46E-11
ce143	1.67E-11	1.74E-11	1.74E-11	1.74E-11	1.73E-11	1.67E-11
y 90	1.62E-11	1.61E-11	1.61E-11	1.61E-11	1.61E-11	1.61E-11
sb125	1.52E-11	1.52E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11

la140	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11
ho165	1.26E-11	1.32E-11	1.37E-11	1.43E-11	1.48E-11	1.48E-11
mo 99	1.27E-11	1.30E-11	1.30E-11	1.30E-11	1.30E-11	1.27E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 84
0 fraction of total absorption rate
power= .00mw, burnup= 1315.mwd, flux= 2.68E+08n/cm**2-sec
0 initial 301332. d 310463. d 319594. d 328726. d 328726. d

pm148m	9.50E-12	9.51E-12	9.51E-12	9.51E-12	9.51E-12	9.50E-12
te127m	7.62E-12	7.63E-12	7.63E-12	7.64E-12	7.65E-12	7.65E-12
i131	6.73E-12	6.75E-12	6.75E-12	6.75E-12	6.75E-12	6.72E-12
kr 87	6.65E-12	2.28E-11	2.27E-11	2.27E-11	2.27E-11	6.64E-12
te124	5.45E-12	5.64E-12	5.83E-12	6.01E-12	6.20E-12	6.20E-12
sr 87	4.93E-12	5.09E-12	5.24E-12	5.40E-12	5.55E-12	5.55E-12
dy160	2.72E-12	2.89E-12	3.07E-12	3.25E-12	3.43E-12	3.43E-12
nb 94	2.80E-12	2.89E-12	2.98E-12	3.06E-12	3.15E-12	3.15E-12
sr 86	2.32E-12	2.42E-12	2.52E-12	2.63E-12	2.73E-12	2.73E-12
ge 74	2.37E-12	2.45E-12	2.52E-12	2.60E-12	2.67E-12	2.67E-12
xe128	2.11E-12	2.24E-12	2.37E-12	2.50E-12	2.64E-12	2.64E-12
ge 72	1.61E-12	1.66E-12	1.71E-12	1.76E-12	1.81E-12	1.81E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
se 76	1.15E-12	1.19E-12	1.24E-12	1.28E-12	1.32E-12	1.32E-12
sn116	7.44E-13	7.91E-13	8.39E-13	8.89E-13	9.40E-13	9.40E-13
er166	5.18E-13	5.43E-13	5.69E-13	5.96E-13	6.23E-13	6.23E-13
te122	3.16E-13	3.36E-13	3.56E-13	3.77E-13	3.99E-13	3.99E-13
pm148	3.61E-13	3.66E-13	3.66E-13	3.66E-13	3.65E-13	3.61E-13
ag111	3.55E-13	3.59E-13	3.60E-13	3.61E-13	3.62E-13	3.60E-13
eu157	2.95E-13	3.25E-13	3.26E-13	3.27E-13	3.28E-13	2.98E-13
cd115m	2.41E-13	2.41E-13	2.41E-13	2.41E-13	2.41E-13	2.41E-13
kr 80	7.57E-14	7.84E-14	8.12E-14	8.40E-14	8.68E-14	8.68E-14
cs136	7.67E-14	7.78E-14	7.84E-14	7.91E-14	7.97E-14	7.93E-14
sn125	2.93E-14	2.95E-14	2.95E-14	2.95E-14	2.95E-14	2.93E-14
ru105	2.21E-14	3.06E-14	3.06E-14	3.07E-14	3.07E-14	2.22E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
tb160	8.94E-15	9.23E-15	9.52E-15	9.81E-15	1.01E-14	1.01E-14
te132	9.35E-15	9.53E-15	9.53E-15	9.53E-15	9.53E-15	9.34E-15
er167	6.65E-15	7.09E-15	7.55E-15	8.03E-15	8.52E-15	8.52E-15
te123	6.94E-15	7.25E-15	7.57E-15	7.90E-15	8.23E-15	8.23E-15
rb 88	8.02E-15	1.28E-14	1.28E-14	1.28E-14	1.28E-14	8.01E-15
i135	7.96E-15	1.01E-14	1.01E-14	1.01E-14	1.01E-14	7.95E-15
be 9	5.29E-15	5.45E-15	5.62E-15	5.78E-15	5.95E-15	5.95E-15
pr142	5.07E-15	5.68E-15	5.85E-15	6.02E-15	6.19E-15	5.70E-15
sb126	4.37E-15	4.43E-15	4.47E-15	4.51E-15	4.56E-15	4.54E-15
sb124	2.51E-15	2.52E-15	2.54E-15	2.55E-15	2.56E-15	2.56E-15
li 7	2.15E-15	2.22E-15	2.29E-15	2.35E-15	2.42E-15	2.42E-15
in117m	1.82E-15	2.17E-15	2.17E-15	2.17E-15	2.18E-15	1.83E-15
i130	1.53E-15	1.76E-15	1.79E-15	1.82E-15	1.85E-15	1.64E-15
te134	6.05E-16	5.82E-15	5.81E-15	5.81E-15	5.81E-15	6.04E-16
rb 86	5.64E-16	5.76E-16	5.86E-16	5.96E-16	6.06E-16	6.04E-16
in117	5.45E-16	6.40E-16	6.41E-16	6.41E-16	6.42E-16	5.47E-16
cd108	2.23E-16	2.39E-16	2.56E-16	2.73E-16	2.91E-16	2.91E-16
dy165	2.21E-16	4.32E-16	4.39E-16	4.45E-16	4.52E-16	2.35E-16
sn114	1.76E-16	1.88E-16	2.00E-16	2.12E-16	2.24E-16	2.24E-16
ge 75	2.83E-17	8.62E-17	8.62E-17	8.62E-17	8.62E-17	2.83E-17
cs134m	2.35E-17	4.16E-17	4.28E-17	4.41E-17	4.53E-17	2.64E-17
cd118	1.87E-17	1.23E-16	1.23E-16	1.23E-16	1.23E-16	1.88E-17
cd109	1.54E-18	1.58E-18	1.63E-18	1.67E-18	1.71E-18	1.71E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 85
0 fraction of total absorption rate
power= .00mw, burnup= 1315.mwd, flux= 2.68E+08n/cm**2-sec

0 initial 301332. d 310463. d 319594. d 328726. d 328726. d

in119m 1.88E-19 3.06E-17 3.06E-17 3.06E-17 3.06E-17 1.88E-19

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 86
power= 4.000E-03mw, burnup=1.3149E+03mwd, flux= 2.68E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	301332. d	310463. d	319594. d	328726. d	328726. d
h	1	6.87E-05	7.09E-05	7.30E-05	7.52E-05	7.73E-05	7.73E-05
h	2	2.04E-07	2.10E-07	2.17E-07	2.23E-07	2.29E-07	2.29E-07
h	3	3.53E-11	3.54E-11	3.54E-11	3.55E-11	3.56E-11	3.56E-11
h	4	.00E+00	1.43E-34	1.44E-34	1.44E-34	1.44E-34	.00E+00
he	3	1.46E-09	1.51E-09	1.55E-09	1.60E-09	1.65E-09	1.65E-09
he	4	1.14E-05	1.17E-05	1.21E-05	1.24E-05	1.28E-05	1.28E-05
he	6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne	20	1.36E-06	1.41E-06	1.45E-06	1.49E-06	1.54E-06	1.54E-06
ne	21	3.22E-11	3.42E-11	3.62E-11	3.83E-11	4.04E-11	4.04E-11
ne	22	8.86E-09	9.13E-09	9.41E-09	9.69E-09	9.97E-09	9.97E-09
ne	23	7.09E-30	7.10E-15	7.09E-15	7.09E-15	7.09E-15	7.09E-30
na	22	4.17E-11	4.17E-11	4.17E-11	4.17E-11	4.17E-11	4.17E-11
na	23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na	24	2.47E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08	2.47E-08
na	24m	4.51E-30	4.52E-15	4.52E-15	4.51E-15	4.51E-15	4.51E-30
na	25	1.35E-40	1.42E-25	1.49E-25	1.57E-25	1.64E-25	1.64E-40
mg	24	9.67E-03	9.96E-03	1.02E-02	1.05E-02	1.08E-02	1.08E-02
mg	25	4.74E-09	4.98E-09	5.23E-09	5.49E-09	5.75E-09	5.75E-09
mg	26	2.04E-07	2.10E-07	2.17E-07	2.23E-07	2.29E-07	2.29E-07
mg	27	9.59E-17	2.12E-12	2.12E-12	2.12E-12	2.12E-12	9.60E-17
mg	28	3.99E-24	4.31E-24	4.31E-24	4.31E-24	4.31E-24	3.99E-24
al	27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al	28	2.11E-25	2.04E-10	2.04E-10	2.04E-10	2.04E-10	2.11E-25
al	29	4.26E-30	8.21E-24	8.69E-24	9.19E-24	9.69E-24	5.34E-30
al	30	.00E+00	1.29E-34	1.41E-34	1.53E-34	1.66E-34	.00E+00
si	28	2.82E-02	2.90E-02	2.98E-02	3.06E-02	3.15E-02	3.15E-02
si	29	3.02E-08	3.21E-08	3.40E-08	3.59E-08	3.79E-08	3.79E-08
si	30	3.45E-14	3.77E-14	4.11E-14	4.47E-14	4.86E-14	4.86E-14
si	31	1.35E-26	2.70E-26	2.94E-26	3.20E-26	3.47E-26	1.90E-26
si	32	2.10E-32	2.33E-32	2.59E-32	2.86E-32	3.15E-32	3.15E-32
totals		5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux			2.68E+08	2.68E+08	2.68E+08	2.68E+08	2.68E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 87
power= 4.000E-03mw, burnup=1.3149E+03mwd, flux= 2.68E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	301332. d	310463. d	319594. d	328726. d	328726. d
he	4	2.12E-01	2.21E-01	2.30E-01	2.38E-01	2.48E-01	2.48E-01
pb206		7.15E-06	7.85E-06	8.59E-06	9.38E-06	1.02E-05	1.02E-05
pb207		4.51E-06	4.81E-06	5.12E-06	5.44E-06	5.76E-06	5.76E-06
pb208		7.91E-07	8.41E-07	8.92E-07	9.45E-07	9.99E-07	9.99E-07
pb209		8.76E-13	9.26E-13	9.82E-13	1.04E-12	1.10E-12	1.11E-12
pb210		8.67E-07	9.21E-07	9.76E-07	1.03E-06	1.09E-06	1.09E-06
pb211		1.16E-12	1.20E-12	1.24E-12	1.27E-12	1.31E-12	1.31E-12
pb212		3.46E-12	3.57E-12	3.68E-12	3.78E-12	3.89E-12	3.89E-12
pb214		2.08E-12	2.27E-12	2.40E-12	2.53E-12	2.67E-12	2.60E-12
bi208		.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209		4.37E-07	4.79E-07	5.23E-07	5.71E-07	6.20E-07	6.20E-07
bi210m		.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210		5.34E-10	5.67E-10	6.01E-10	6.36E-10	6.72E-10	6.72E-10

bi211	6.91E-14	7.11E-14	7.33E-14	7.55E-14	7.78E-14	7.81E-14
bi212	3.29E-13	3.39E-13	3.49E-13	3.59E-13	3.69E-13	3.69E-13
bi213	1.97E-13	2.16E-13	2.29E-13	2.43E-13	2.57E-13	2.49E-13
bi214	1.56E-12	1.68E-12	1.78E-12	1.88E-12	1.98E-12	1.94E-12
po210	1.47E-08	1.57E-08	1.66E-08	1.76E-08	1.86E-08	1.86E-08
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	7.64E-19	7.85E-19	8.10E-19	8.35E-19	8.60E-19	8.63E-19
po212	1.73E-23	1.78E-23	1.83E-23	1.88E-23	1.94E-23	1.94E-23
po213	2.97E-22	3.25E-22	3.45E-22	3.65E-22	3.86E-22	3.74E-22
po214	2.14E-19	2.32E-19	2.45E-19	2.59E-19	2.73E-19	2.68E-19
po215	9.54E-19	9.85E-19	1.02E-18	1.05E-18	1.08E-18	1.08E-18
po216	1.31E-17	1.35E-17	1.39E-17	1.43E-17	1.47E-17	1.47E-17
po218	2.48E-13	2.62E-13	2.77E-13	2.93E-13	3.09E-13	3.09E-13
rn218	4.91E-29	5.07E-29	5.22E-29	5.38E-29	5.53E-29	5.52E-29
rn219	2.12E-15	2.19E-15	2.26E-15	2.33E-15	2.40E-15	2.40E-15
rn220	5.03E-15	5.18E-15	5.34E-15	5.49E-15	5.64E-15	5.65E-15
rn222	4.39E-10	4.66E-10	4.93E-10	5.20E-10	5.49E-10	5.49E-10
ra222	5.34E-26	5.51E-26	5.67E-26	5.84E-26	6.00E-26	5.99E-26
ra223	5.30E-10	5.47E-10	5.64E-10	5.81E-10	5.99E-10	5.99E-10
ra224	2.86E-11	2.95E-11	3.03E-11	3.12E-11	3.21E-11	3.21E-11
ra225	9.52E-11	1.01E-10	1.07E-10	1.14E-10	1.20E-10	1.20E-10
ra226	6.72E-05	7.12E-05	7.53E-05	7.95E-05	8.39E-05	8.39E-05
ra228	1.68E-12	1.73E-12	1.78E-12	1.84E-12	1.89E-12	1.89E-12
ac225	6.43E-11	6.83E-11	7.24E-11	7.67E-11	8.11E-11	8.11E-11
ac227	3.68E-07	3.80E-07	3.92E-07	4.04E-07	4.16E-07	4.16E-07
ac228	2.05E-16	2.11E-16	2.18E-16	2.24E-16	2.31E-16	2.31E-16
th226	2.60E-24	2.69E-24	2.77E-24	2.85E-24	2.93E-24	2.92E-24
th227	8.55E-10	8.83E-10	9.10E-10	9.38E-10	9.66E-10	9.66E-10
th228	5.46E-09	5.63E-09	5.79E-09	5.96E-09	6.13E-09	6.13E-09
th229	1.85E-05	1.97E-05	2.09E-05	2.21E-05	2.33E-05	2.33E-05
th230	2.04E-02	2.11E-02	2.17E-02	2.24E-02	2.30E-02	2.30E-02
th231	3.08E-09	3.09E-09	3.09E-09	3.10E-09	3.10E-09	3.09E-09
th232	4.14E-03	4.27E-03	4.40E-03	4.53E-03	4.66E-03	4.66E-03
th233	5.43E-16	3.90E-14	4.02E-14	4.14E-14	4.26E-14	6.11E-16
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	5.76E-04	5.94E-04	6.12E-04	6.30E-04	6.48E-04	6.48E-04
pa232	9.39E-12	1.02E-11	1.05E-11	1.08E-11	1.11E-11	1.06E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 88
power= 4.000E-03mw, burnup=1.3149E+03mwd, flux= 2.68E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 301332. d	310463. d	319594. d	328726. d	328726. d	
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	2.52E-21	2.60E-21	2.68E-21	2.76E-21	2.84E-21	2.83E-21
u231	8.11E-18	8.50E-18	8.76E-18	9.01E-18	9.26E-18	9.12E-18
u232	1.95E-07	2.01E-07	2.07E-07	2.13E-07	2.19E-07	2.19E-07
u233	1.09E-02	1.12E-02	1.15E-02	1.19E-02	1.22E-02	1.22E-02
u234	9.15E+00	9.15E+00	9.15E+00	9.16E+00	9.16E+00	9.16E+00
u235	7.24E+02	7.24E+02	7.24E+02	7.24E+02	7.24E+02	7.24E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.08E-06	3.11E-06	3.11E-06	3.11E-06	3.11E-06	3.08E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	5.63E-09	3.17E-07	3.17E-07	3.17E-07	3.17E-07	5.62E-09
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	1.40E-45
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.64E-12	8.64E-12	8.64E-12	8.64E-12	8.64E-12	8.64E-12

```
     np236m  1.91E-12  2.05E-12  2.05E-12  2.05E-12  2.05E-12  1.91E-12
     np236   1.57E-07  1.62E-07  1.67E-07  1.72E-07  1.76E-07  1.76E-07
     np237   4.21E+01  4.21E+01  4.21E+01  4.21E+01  4.21E+01  4.21E+01
     np238   1.50E-06  1.55E-06  1.55E-06  1.55E-06  1.55E-06  1.50E-06
     np239   4.49E-05  4.59E-05  4.59E-05  4.59E-05  4.59E-05  4.49E-05
     np240m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     np240   2.02E-15  9.30E-15  9.30E-15  9.29E-15  9.29E-15  2.01E-15
     np241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu236   1.11E-09  1.11E-09  1.11E-09  1.11E-09  1.11E-09  1.11E-09
     pu237   2.59E-13  2.61E-13  2.62E-13  2.63E-13  2.64E-13  2.64E-13
     pu238   2.34E-02  2.34E-02  2.34E-02  2.34E-02  2.34E-02  2.34E-02
     pu239   3.88E+00  4.00E+00  4.12E+00  4.24E+00  4.35E+00  4.35E+00
     pu240   1.49E-02  1.58E-02  1.67E-02  1.77E-02  1.87E-02  1.87E-02
     pu241   5.80E-06  6.17E-06  6.55E-06  6.93E-06  7.33E-06  7.33E-06
     pu242   4.06E-08  4.54E-08  5.06E-08  5.62E-08  6.22E-08  6.22E-08
     pu243   6.22E-17  9.56E-17  1.07E-16  1.18E-16  1.31E-16  9.52E-17
     pu244   1.78E-34  2.41E-34  3.25E-34  4.33E-34  5.72E-34  5.72E-34
     pu245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239   1.33E-20  1.66E-20  1.80E-20  1.94E-20  2.10E-20  1.84E-20
     am240   6.75E-18  7.58E-18  8.22E-18  8.90E-18  9.61E-18  9.31E-18
     am241   5.55E-05  6.03E-05  6.55E-05  7.09E-05  7.65E-05  7.65E-05
     am242m  1.53E-08  1.70E-08  1.87E-08  2.05E-08  2.25E-08  2.25E-08
     am242   1.94E-12  2.31E-12  2.51E-12  2.72E-12  2.94E-12  2.69E-12
     am243   9.26E-11  1.06E-10  1.21E-10  1.38E-10  1.56E-10  1.56E-10
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   6.01E-19  8.06E-19  9.19E-19  1.04E-18  1.18E-18  1.01E-18
     am245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00  1.40E-45
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   1.23E-22  1.34E-22  1.46E-22  1.58E-22  1.71E-22  1.71E-22
     cm242   4.28E-10  4.66E-10  5.06E-10  5.49E-10  5.93E-10  5.93E-10
     cm243   1.52E-16  1.67E-16  1.83E-16  1.99E-16  2.16E-16  2.16E-16
     cm244   9.61E-15  1.11E-14  1.27E-14  1.45E-14  1.64E-14  1.64E-14
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                actinides        page   89
       power= 4.000E-03mw, burnup=1.3149E+03mwd, flux= 2.68E+08n/cm**2-sec
0                                          nuclide concentrations, gram atoms
                                           basis = single reactor assembly
            charge 301332. d 310463. d 319594. d 328726. d 328726. d
     cm245   1.41E-18  1.68E-18  1.99E-18  2.35E-18  2.75E-18  2.75E-18
     cm246   9.50E-22  1.17E-21  1.43E-21  1.74E-21  2.10E-21  2.10E-21
     cm247   1.05E-26  1.33E-26  1.68E-26  2.11E-26  2.63E-26  2.63E-26
     cm248   1.18E-30  1.56E-30  2.03E-30  2.62E-30  3.36E-30  3.36E-30
     cm249   8.90E-42  4.67E-41  6.22E-41  8.56E-41  1.09E-40  2.49E-41
     cm250    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.68E+08  2.68E+08  2.68E+08  2.68E+08  2.68E-07
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

        cross-section data taken from position number  1 of library on unit 15.

          pass  10
          pass   1
```

```
        pass   0
        *scale-system control module sas2 library*
        used a time-dependent neutron spectrum, for each of the above passes
          pass 0 applies start-up fuel densiities
          pass n applies mid time densities of nth library interval
        first library updated was...
        pass   1
        pass   0
        *scale-system control module sas2 library*
        used a time-dependent neutron spectrum, for each of the above passes
          pass 0 applies start-up fuel densiities
          pass n applies mid time densities of nth library interval
        first library updated was...
        ******************************************************************************
        *                                                                            *
        *            prelim lwr origen-s binary working library--id = 1143           *
        *         made from modified card-image origen-s libraries of scale 4.2      *
        *      data from the light element, actinide, and fission product libraries  *
        *        decay data, including gamma and total energy, are from endf/b-vi    *
        *                                                                            *
        *      neutron flux spectrum factors and cross sections were produced from   *
        *     the "presas2" case updating all nuclides on the scale "burnup" library *
        *                                                                            *
        *                  fission product yields are from endf/b-v                  *
        *                                                                            *
        *              photon libraries use an 18-energy-group structure             *
        *             the photon data are from the master photon data base,          *
        *              produced to include bremsstrahlung from uo2 matrix            *
        *                                                                            *
        *        see information above this box (if present) for later updates       *
        *                                                                            *
        ******************************************************************************
        *                                                                            *
0       ******************************************************************************
0                 .other identification and sizes of library.
0                  data set name:  ft15f001
0               8/28/1996    date library was produced
0                    1697    total number of nuclides in library
                      689    number of light-element nuclides
                      129    number of actinide nuclides
                      879    number of fission product nuclides
0                    7993    number of nonzero off-diagonal matrix elements
0       ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   90
        power=    .00mw, burnup=   1461.mwd, flux= 2.68E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                  initial      337857. d      346988. d      356120. d      365251. d
     productions   1.147285E+06   1.147456E+06   1.147625E+06   1.147795E+06   1.147964E+06
     absorptions   9.388229E+05   9.389935E+05   9.391619E+05   9.393289E+05   9.394933E+05
     k infinity    1.222046E+00   1.222006E+00   1.221968E+00   1.221931E+00   1.221897E+00
0                  initial      337857. d      346988. d      356120. d      365251. d
     actinide
     absorptions   9.313372E+05   9.314392E+05   9.315411E+05   9.316427E+05   9.317441E+05
     non-actinide
     abs. fracs.   7.973492E-03   8.045137E-03   8.114398E-03   8.182645E-03   8.248210E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              fission products        page   91
0                                 fraction of total absorption rate
        power=    .00mw, burnup=   1461.mwd, flux= 2.68E+08n/cm**2-sec
0              initial 337857. d 346988. d 356120. d 365251. d
```

sm149	3.82E-03	3.87E-03	3.92E-03	3.97E-03	4.02E-03
eu151	1.68E-04	1.73E-04	1.78E-04	1.84E-04	1.89E-04
nd143	1.32E-04	1.36E-04	1.39E-04	1.43E-04	1.47E-04
gd155	7.12E-05	7.28E-05	7.43E-05	7.58E-05	7.73E-05
rh103	6.18E-05	6.35E-05	6.52E-05	6.69E-05	6.87E-05
xe131	4.18E-05	4.30E-05	4.41E-05	4.53E-05	4.64E-05
cd113	4.27E-05	4.36E-05	4.44E-05	4.52E-05	4.60E-05
sm151	4.00E-05	4.00E-05	4.00E-05	4.00E-05	4.00E-05
cs133	3.24E-05	3.33E-05	3.42E-05	3.51E-05	3.60E-05
gd157	3.26E-05	3.30E-05	3.33E-05	3.37E-05	3.40E-05
sm147	2.40E-05	2.46E-05	2.53E-05	2.60E-05	2.66E-05
tc 99	2.38E-05	2.45E-05	2.51E-05	2.58E-05	2.65E-05
nd145	1.85E-05	1.90E-05	1.95E-05	2.00E-05	2.05E-05
mo 95	1.28E-05	1.32E-05	1.35E-05	1.39E-05	1.42E-05
sm152	1.03E-05	1.06E-05	1.09E-05	1.12E-05	1.15E-05
kr 83	8.03E-06	8.25E-06	8.47E-06	8.69E-06	8.91E-06
cs135	7.32E-06	7.52E-06	7.73E-06	7.93E-06	8.13E-06
ru101	5.67E-06	5.83E-06	5.98E-06	6.14E-06	6.30E-06
pr141	5.47E-06	5.62E-06	5.78E-06	5.93E-06	6.08E-06
eu153	5.01E-06	5.15E-06	5.29E-06	5.43E-06	5.57E-06
sm150	4.30E-06	4.50E-06	4.70E-06	4.90E-06	5.11E-06
la139	4.48E-06	4.60E-06	4.72E-06	4.85E-06	4.97E-06
xe135	2.26E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06
ba137	2.04E-06	2.10E-06	2.16E-06	2.22E-06	2.28E-06
pd105	1.93E-06	1.99E-06	2.04E-06	2.10E-06	2.15E-06
zr 93	1.81E-06	1.86E-06	1.91E-06	1.96E-06	2.01E-06
i129	1.40E-06	1.44E-06	1.48E-06	1.51E-06	1.55E-06
nd144	1.34E-06	1.38E-06	1.42E-06	1.46E-06	1.49E-06
mo 97	1.01E-06	1.04E-06	1.07E-06	1.10E-06	1.13E-06
ag109	8.95E-07	9.25E-07	9.55E-07	9.86E-07	1.02E-06
zr 91	4.77E-07	4.90E-07	5.03E-07	5.16E-07	5.29E-07
y 89	4.58E-07	4.70E-07	4.83E-07	4.95E-07	5.08E-07
ru102	4.14E-07	4.26E-07	4.37E-07	4.49E-07	4.60E-07
ce142	3.73E-07	3.83E-07	3.93E-07	4.03E-07	4.14E-07
nd148	3.58E-07	3.68E-07	3.78E-07	3.88E-07	3.97E-07
nd146	3.00E-07	3.09E-07	3.17E-07	3.25E-07	3.34E-07
pd108	2.76E-07	2.85E-07	2.94E-07	3.02E-07	3.11E-07
ba138	2.57E-07	2.64E-07	2.71E-07	2.78E-07	2.85E-07
in115	2.49E-07	2.56E-07	2.63E-07	2.70E-07	2.77E-07
pm147	2.69E-07	2.69E-07	2.69E-07	2.69E-07	2.69E-07
ce140	2.41E-07	2.47E-07	2.54E-07	2.60E-07	2.67E-07
xe132	2.16E-07	2.22E-07	2.28E-07	2.34E-07	2.40E-07
pd107	1.58E-07	1.63E-07	1.68E-07	1.73E-07	1.78E-07
mo 98	1.48E-07	1.53E-07	1.57E-07	1.61E-07	1.65E-07
eu155	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.65E-07
mo100	1.44E-07	1.48E-07	1.52E-07	1.56E-07	1.60E-07
xe134	1.42E-07	1.46E-07	1.50E-07	1.54E-07	1.58E-07
zr 92	1.15E-07	1.18E-07	1.21E-07	1.24E-07	1.28E-07
i127	9.47E-08	9.73E-08	1.00E-07	1.03E-07	1.05E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 92
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.68E+08n/cm**2-sec
0 initial 337857. d 346988. d 356120. d 365251. d

zr 96	9.01E-08	9.26E-08	9.50E-08	9.75E-08	1.00E-07
ru104	8.94E-08	9.19E-08	9.44E-08	9.69E-08	9.94E-08
gd152	7.64E-08	8.12E-08	8.62E-08	9.14E-08	9.67E-08
nd150	7.94E-08	8.16E-08	8.38E-08	8.60E-08	8.82E-08
xe136	7.67E-08	7.89E-08	8.10E-08	8.31E-08	8.52E-08

br 81	5.74E-08	5.90E-08	6.06E-08	6.22E-08	6.38E-08
rb 85	5.58E-08	5.74E-08	5.89E-08	6.04E-08	6.20E-08
zr 94	4.86E-08	4.99E-08	5.12E-08	5.26E-08	5.39E-08
eu152	4.29E-08	4.42E-08	4.56E-08	4.69E-08	4.83E-08
zr 90	4.31E-08	4.43E-08	4.56E-08	4.68E-08	4.81E-08
cd111	4.01E-08	4.13E-08	4.25E-08	4.37E-08	4.49E-08
te130	3.49E-08	3.59E-08	3.69E-08	3.78E-08	3.88E-08
sm154	3.42E-08	3.52E-08	3.62E-08	3.71E-08	3.81E-08
rb 87	3.24E-08	3.33E-08	3.41E-08	3.50E-08	3.59E-08
se 77	2.31E-08	2.37E-08	2.44E-08	2.50E-08	2.57E-08
pd106	1.71E-08	1.76E-08	1.81E-08	1.86E-08	1.91E-08
kr 84	1.53E-08	1.57E-08	1.61E-08	1.65E-08	1.69E-08
sr 90	1.70E-08	1.70E-08	1.69E-08	1.69E-08	1.69E-08
se 79	1.18E-08	1.22E-08	1.25E-08	1.28E-08	1.32E-08
sb121	1.13E-08	1.17E-08	1.20E-08	1.23E-08	1.26E-08
gd156	8.99E-09	9.31E-09	9.65E-09	9.98E-09	1.03E-08
sb123	9.21E-09	9.47E-09	9.72E-09	9.98E-09	1.02E-08
kr 86	8.54E-09	8.77E-09	9.00E-09	9.24E-09	9.47E-09
rh105	8.64E-09	8.70E-09	8.71E-09	8.72E-09	8.73E-09
te128	7.66E-09	7.87E-09	8.09E-09	8.30E-09	8.51E-09
ru 99	5.67E-09	5.98E-09	6.31E-09	6.64E-09	6.98E-09
dy161	5.86E-09	6.06E-09	6.25E-09	6.45E-09	6.64E-09
se 80	5.52E-09	5.67E-09	5.82E-09	5.98E-09	6.13E-09
te125	4.87E-09	5.01E-09	5.14E-09	5.28E-09	5.42E-09
tb159	3.55E-09	3.65E-09	3.76E-09	3.87E-09	3.98E-09
cs137	3.75E-09	3.75E-09	3.75E-09	3.75E-09	3.75E-09
gd154	2.97E-09	3.14E-09	3.31E-09	3.49E-09	3.68E-09
cd112	3.25E-09	3.34E-09	3.43E-09	3.53E-09	3.62E-09
li 6	3.12E-09	3.21E-09	3.30E-09	3.38E-09	3.47E-09
sn117	2.53E-09	2.60E-09	2.68E-09	2.75E-09	2.82E-09
eu154	2.52E-09	2.60E-09	2.67E-09	2.74E-09	2.81E-09
gd158	2.31E-09	2.40E-09	2.48E-09	2.57E-09	2.66E-09
pr143	2.65E-09	2.65E-09	2.65E-09	2.64E-09	2.64E-09
sn119	2.07E-09	2.12E-09	2.18E-09	2.24E-09	2.30E-09
sn115	1.89E-09	1.94E-09	2.00E-09	2.05E-09	2.10E-09
xe133	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09
sr 88	1.57E-09	1.61E-09	1.65E-09	1.70E-09	1.74E-09
cd114	1.44E-09	1.49E-09	1.54E-09	1.59E-09	1.64E-09
ce141	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09
pd110	1.23E-09	1.26E-09	1.30E-09	1.34E-09	1.38E-09
ru100	9.73E-10	1.03E-09	1.08E-09	1.14E-09	1.20E-09
se 82	1.07E-09	1.09E-09	1.12E-09	1.15E-09	1.18E-09
dy164	9.07E-10	9.41E-10	9.76E-10	1.01E-09	1.05E-09
dy162	8.89E-10	9.22E-10	9.54E-10	9.87E-10	1.02E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 93
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.68E+08n/cm**2-sec
0 initial 337857. d 346988. d 356120. d 365251. d

sn126	8.78E-10	9.03E-10	9.28E-10	9.53E-10	9.78E-10
pm149	9.63E-10	9.72E-10	9.72E-10	9.72E-10	9.72E-10
nd147	9.18E-10	9.23E-10	9.23E-10	9.22E-10	9.22E-10
se 78	8.10E-10	8.32E-10	8.55E-10	8.77E-10	9.00E-10
nd142	6.78E-10	7.15E-10	7.54E-10	7.95E-10	8.36E-10
ba134	6.49E-10	6.85E-10	7.22E-10	7.61E-10	8.00E-10
sm148	6.03E-10	6.37E-10	6.71E-10	7.06E-10	7.43E-10
sn124	6.56E-10	6.74E-10	6.93E-10	7.11E-10	7.29E-10
ba135	5.32E-10	5.61E-10	5.92E-10	6.23E-10	6.56E-10
ce144	5.96E-10	5.96E-10	5.96E-10	5.96E-10	5.95E-10
kr 85	5.68E-10	5.67E-10	5.67E-10	5.67E-10	5.67E-10

pd104	4.44E-10	4.69E-10	4.95E-10	5.21E-10	5.48E-10
as 75	4.82E-10	4.95E-10	5.09E-10	5.22E-10	5.35E-10
in113	3.58E-10	3.68E-10	3.79E-10	3.89E-10	3.99E-10
ru103	3.59E-10	3.60E-10	3.60E-10	3.60E-10	3.60E-10
ba136	3.14E-10	3.25E-10	3.35E-10	3.45E-10	3.56E-10
sn118	2.67E-10	2.74E-10	2.82E-10	2.89E-10	2.97E-10
cs134	2.41E-10	2.48E-10	2.55E-10	2.61E-10	2.68E-10
sn122	2.27E-10	2.33E-10	2.40E-10	2.46E-10	2.52E-10
cd116	2.27E-10	2.33E-10	2.39E-10	2.46E-10	2.52E-10
mo 96	2.08E-10	2.17E-10	2.28E-10	2.38E-10	2.48E-10
dy163	2.09E-10	2.17E-10	2.25E-10	2.33E-10	2.41E-10
kr 82	2.02E-10	2.09E-10	2.17E-10	2.24E-10	2.32E-10
sn120	1.69E-10	1.74E-10	1.79E-10	1.84E-10	1.88E-10
xe130	1.58E-10	1.65E-10	1.71E-10	1.78E-10	1.84E-10
zr 95	1.63E-10	1.64E-10	1.64E-10	1.63E-10	1.63E-10
nb 95	1.51E-10	1.51E-10	1.51E-10	1.51E-10	1.51E-10
ge 73	1.32E-10	1.36E-10	1.40E-10	1.43E-10	1.47E-10
y 91	1.42E-10	1.42E-10	1.42E-10	1.42E-10	1.42E-10
pm151	1.05E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10
nb 93	8.19E-11	8.66E-11	9.14E-11	9.64E-11	1.02E-10
cd110	6.85E-11	7.26E-11	7.69E-11	8.13E-11	8.58E-11
br 79	4.34E-11	4.58E-11	4.83E-11	5.09E-11	5.35E-11
ge 76	4.77E-11	4.90E-11	5.03E-11	5.16E-11	5.29E-11
ba140	4.68E-11	4.70E-11	4.70E-11	4.70E-11	4.70E-11
te126	3.82E-11	3.96E-11	4.12E-11	4.27E-11	4.42E-11
sm153	3.77E-11	3.89E-11	3.89E-11	3.89E-11	3.90E-11
gd160	3.42E-11	3.52E-11	3.63E-11	3.74E-11	3.85E-11
eu156	3.68E-11	3.68E-11	3.69E-11	3.70E-11	3.71E-11
ag107	2.46E-11	2.60E-11	2.75E-11	2.90E-11	3.06E-11
xe129	2.47E-11	2.60E-11	2.75E-11	2.89E-11	3.04E-11
sr 89	3.03E-11	3.04E-11	3.04E-11	3.03E-11	3.03E-11
ru106	2.75E-11	2.76E-11	2.76E-11	2.77E-11	2.78E-11
kr 87	6.64E-12	2.27E-11	2.27E-11	2.27E-11	2.27E-11
ce143	1.67E-11	1.73E-11	1.73E-11	1.73E-11	1.73E-11
ho165	1.48E-11	1.54E-11	1.59E-11	1.65E-11	1.71E-11
y 90	1.61E-11	1.61E-11	1.61E-11	1.61E-11	1.61E-11
sb125	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11
la140	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 94
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.68E+08n/cm**2-sec
0 initial 337857. d 346988. d 356120. d 365251. d

mo 99	1.27E-11	1.30E-11	1.30E-11	1.30E-11	1.30E-11
pm148m	9.50E-12	9.51E-12	9.51E-12	9.51E-12	9.51E-12
te127m	7.64E-12	7.65E-12	7.66E-12	7.66E-12	7.67E-12
te124	6.20E-12	6.39E-12	6.58E-12	6.77E-12	6.96E-12
i131	6.72E-12	6.75E-12	6.75E-12	6.75E-12	6.75E-12
sr 87	5.55E-12	5.71E-12	5.86E-12	6.02E-12	6.17E-12
dy160	3.43E-12	3.62E-12	3.82E-12	4.02E-12	4.23E-12
nb 94	3.15E-12	3.24E-12	3.33E-12	3.42E-12	3.51E-12
xe128	2.64E-12	2.78E-12	2.93E-12	3.07E-12	3.23E-12
sr 86	2.73E-12	2.84E-12	2.95E-12	3.07E-12	3.18E-12
ge 74	2.67E-12	2.74E-12	2.82E-12	2.89E-12	2.97E-12
ge 72	1.81E-12	1.86E-12	1.92E-12	1.97E-12	2.02E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
se 76	1.32E-12	1.37E-12	1.41E-12	1.46E-12	1.50E-12
sn116	9.40E-13	9.93E-13	1.05E-12	1.10E-12	1.16E-12
er166	6.23E-13	6.51E-13	6.79E-13	7.08E-13	7.37E-13
te122	3.99E-13	4.21E-13	4.44E-13	4.67E-13	4.91E-13

ag111	3.60E-13	3.64E-13	3.65E-13	3.66E-13	3.67E-13
pm148	3.61E-13	3.66E-13	3.65E-13	3.65E-13	3.65E-13
eu157	2.98E-13	3.29E-13	3.29E-13	3.30E-13	3.31E-13
cd115m	2.41E-13	2.41E-13	2.42E-13	2.42E-13	2.42E-13
kr 80	8.67E-14	8.96E-14	9.24E-14	9.53E-14	9.82E-14
cs136	7.93E-14	8.04E-14	8.11E-14	8.17E-14	8.24E-14
ru105	2.22E-14	3.07E-14	3.08E-14	3.08E-14	3.08E-14
sn125	2.93E-14	2.95E-14	2.96E-14	2.96E-14	2.96E-14
rb 88	8.01E-15	1.28E-14	1.28E-14	1.28E-14	1.28E-14
tb160	1.01E-14	1.04E-14	1.07E-14	1.10E-14	1.12E-14
er167	8.52E-15	9.03E-15	9.55E-15	1.01E-14	1.07E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
i135	7.95E-15	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te123	8.23E-15	8.57E-15	8.92E-15	9.27E-15	9.63E-15
te132	9.34E-15	9.53E-15	9.53E-15	9.53E-15	9.52E-15
pr142	5.70E-15	6.36E-15	6.53E-15	6.70E-15	6.87E-15
be 9	5.95E-15	6.11E-15	6.28E-15	6.44E-15	6.60E-15
te134	6.04E-16	5.81E-15	5.81E-15	5.80E-15	5.80E-15
sb126	4.54E-15	4.60E-15	4.64E-15	4.69E-15	4.73E-15
li 7	2.42E-15	2.49E-15	2.55E-15	2.62E-15	2.69E-15
sb124	2.56E-15	2.57E-15	2.59E-15	2.60E-15	2.61E-15
in117m	1.83E-15	2.18E-15	2.18E-15	2.18E-15	2.18E-15
i130	1.64E-15	1.88E-15	1.91E-15	1.94E-15	1.98E-15
rb 86	6.03E-16	6.16E-16	6.26E-16	6.36E-16	6.45E-16
in117	5.47E-16	6.42E-16	6.43E-16	6.44E-16	6.45E-16
dy165	2.35E-16	4.59E-16	4.65E-16	4.72E-16	4.79E-16
cd108	2.91E-16	3.10E-16	3.30E-16	3.51E-16	3.72E-16
sn114	2.24E-16	2.37E-16	2.51E-16	2.64E-16	2.78E-16
cd118	1.87E-17	1.23E-16	1.23E-16	1.23E-16	1.23E-16
ge 75	2.83E-17	8.62E-17	8.62E-17	8.61E-17	8.61E-17
cs134m	2.64E-17	4.66E-17	4.78E-17	4.91E-17	5.03E-17
in119m	1.88E-19	3.06E-17	3.06E-17	3.06E-17	3.06E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 95
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.68E+08n/cm**2-sec
0 initial 337857. d 346988. d 356120. d 365251. d

in119	7.22E-22	2.41E-18	2.42E-18	2.42E-18	2.42E-18
cd109	1.71E-18	1.75E-18	1.79E-18	1.83E-18	1.87E-18
ag110	6.76E-22	1.21E-18	1.25E-18	1.29E-18	1.33E-18
in120	.00E+00	4.06E-22	4.06E-22	4.06E-22	4.06E-22
in120m	.00E+00	4.76E-23	4.77E-23	4.78E-23	4.79E-23

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 96
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	337857. d	346988. d	356120. d	365251. d
h 1	7.73E-05	7.94E-05	8.16E-05	8.37E-05	8.59E-05
h 2	2.29E-07	2.36E-07	2.42E-07	2.49E-07	2.55E-07
h 3	3.56E-11	3.56E-11	3.57E-11	3.58E-11	3.58E-11
h 4	.00E+00	1.44E-34	1.45E-34	1.45E-34	1.45E-34
he 3	1.65E-09	1.69E-09	1.74E-09	1.79E-09	1.83E-09
he 4	1.28E-05	1.31E-05	1.35E-05	1.38E-05	1.42E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.54E-06	1.58E-06	1.62E-06	1.66E-06	1.71E-06
ne 21	4.04E-11	4.26E-11	4.48E-11	4.71E-11	4.95E-11
ne 22	9.97E-09	1.02E-08	1.05E-08	1.08E-08	1.11E-08
ne 23	7.09E-30	7.10E-15	7.10E-15	7.10E-15	7.10E-15
na 22	4.17E-11	4.18E-11	4.18E-11	4.18E-11	4.18E-11

na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.47E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08
na 24m	4.51E-30	4.51E-15	4.51E-15	4.51E-15	4.51E-15
na 25	1.64E-40	1.72E-25	1.80E-25	1.87E-25	1.96E-25
mg 24	1.08E-02	1.11E-02	1.14E-02	1.17E-02	1.20E-02
mg 25	5.75E-09	6.01E-09	6.28E-09	6.56E-09	6.85E-09
mg 26	2.29E-07	2.36E-07	2.42E-07	2.49E-07	2.55E-07
mg 27	9.60E-17	2.12E-12	2.12E-12	2.12E-12	2.12E-12
mg 28	3.99E-24	4.31E-24	4.31E-24	4.31E-24	4.31E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.11E-25	2.04E-10	2.04E-10	2.04E-10	2.04E-10
al 29	5.34E-30	1.02E-23	1.08E-23	1.13E-23	1.19E-23
al 30	.00E+00	1.80E-34	1.94E-34	2.09E-34	2.25E-34
si 28	3.15E-02	3.23E-02	3.31E-02	3.40E-02	3.48E-02
si 29	3.79E-08	3.99E-08	4.20E-08	4.42E-08	4.64E-08
si 30	4.86E-14	5.26E-14	5.68E-14	6.13E-14	6.59E-14
si 31	1.90E-26	3.76E-26	4.06E-26	4.38E-26	4.72E-26
si 32	3.15E-32	3.45E-32	3.78E-32	4.13E-32	4.50E-32
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.68E+08	2.68E+08	2.68E+08	2.68E+08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 97
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 337857. d	346988. d	356120. d	365251. d	
he 4	2.48E-01	2.57E-01	2.66E-01	2.75E-01	2.85E-01
pb206	1.02E-05	1.11E-05	1.20E-05	1.30E-05	1.40E-05
pb207	5.76E-06	6.10E-06	6.45E-06	6.80E-06	7.17E-06
pb208	9.99E-07	1.05E-06	1.11E-06	1.17E-06	1.23E-06
pb209	1.11E-12	1.16E-12	1.22E-12	1.29E-12	1.35E-12
pb210	1.09E-06	1.15E-06	1.21E-06	1.28E-06	1.34E-06
pb211	1.31E-12	1.35E-12	1.39E-12	1.43E-12	1.46E-12
pb212	3.89E-12	3.99E-12	4.10E-12	4.21E-12	4.31E-12
pb214	2.60E-12	2.81E-12	2.96E-12	3.10E-12	3.25E-12
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	6.20E-07	6.73E-07	7.29E-07	7.87E-07	8.49E-07
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	6.72E-10	7.09E-10	7.47E-10	7.85E-10	8.25E-10
bi211	7.81E-14	8.00E-14	8.23E-14	8.45E-14	8.68E-14
bi212	3.69E-13	3.79E-13	3.89E-13	3.99E-13	4.09E-13
bi213	2.49E-13	2.71E-13	2.85E-13	3.00E-13	3.16E-13
bi214	1.94E-12	2.09E-12	2.19E-12	2.30E-12	2.42E-12
po210	1.86E-08	1.96E-08	2.06E-08	2.17E-08	2.28E-08
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	8.63E-19	8.84E-19	9.09E-19	9.34E-19	9.59E-19
po212	1.94E-23	1.99E-23	2.04E-23	2.10E-23	2.15E-23
po213	3.74E-22	4.07E-22	4.29E-22	4.52E-22	4.75E-22
po214	2.68E-19	2.87E-19	3.02E-19	3.17E-19	3.32E-19
po215	1.08E-18	1.11E-18	1.14E-18	1.17E-18	1.20E-18
po216	1.47E-17	1.51E-17	1.55E-17	1.59E-17	1.63E-17
po218	3.09E-13	3.25E-13	3.42E-13	3.59E-13	3.76E-13
rn218	5.52E-29	5.68E-29	5.83E-29	5.98E-29	6.13E-29
rn219	2.40E-15	2.47E-15	2.54E-15	2.61E-15	2.68E-15
rn220	5.65E-15	5.80E-15	5.95E-15	6.11E-15	6.26E-15
rn222	5.49E-10	5.78E-10	6.07E-10	6.38E-10	6.69E-10
ra222	5.99E-26	6.17E-26	6.33E-26	6.49E-26	6.66E-26
ra223	5.99E-10	6.16E-10	6.33E-10	6.50E-10	6.68E-10
ra224	3.21E-11	3.30E-11	3.39E-11	3.47E-11	3.56E-11
ra225	1.20E-10	1.27E-10	1.34E-10	1.41E-10	1.48E-10

ra226	8.39E-05	8.83E-05	9.28E-05	9.74E-05	1.02E-04
ra228	1.89E-12	1.94E-12	1.99E-12	2.05E-12	2.10E-12
ac225	8.11E-11	8.56E-11	9.02E-11	9.49E-11	9.98E-11
ac227	4.16E-07	4.28E-07	4.40E-07	4.52E-07	4.64E-07
ac228	2.31E-16	2.37E-16	2.43E-16	2.50E-16	2.56E-16
th226	2.92E-24	3.01E-24	3.09E-24	3.17E-24	3.25E-24
th227	9.66E-10	9.94E-10	1.02E-09	1.05E-09	1.08E-09
th228	6.13E-09	6.30E-09	6.46E-09	6.63E-09	6.80E-09
th229	2.33E-05	2.46E-05	2.60E-05	2.73E-05	2.87E-05
th230	2.30E-02	2.36E-02	2.43E-02	2.49E-02	2.56E-02
th231	3.09E-09	3.10E-09	3.10E-09	3.10E-09	3.11E-09
th232	4.66E-03	4.79E-03	4.92E-03	5.05E-03	5.18E-03
th233	6.11E-16	4.38E-14	4.49E-14	4.61E-14	4.73E-14
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	6.48E-04	6.67E-04	6.85E-04	7.03E-04	7.21E-04
pa232	1.06E-11	1.14E-11	1.17E-11	1.20E-11	1.23E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 98
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 337857. d	346988. d	356120. d	365251. d	
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	2.83E-21	2.92E-21	2.99E-21	3.07E-21	3.15E-21
u231	9.12E-18	9.52E-18	9.78E-18	1.00E-17	1.03E-17
u232	2.19E-07	2.25E-07	2.31E-07	2.37E-07	2.43E-07
u233	1.22E-02	1.25E-02	1.29E-02	1.32E-02	1.35E-02
u234	9.16E+00	9.16E+00	9.17E+00	9.17E+00	9.17E+00
u235	7.24E+02	7.24E+02	7.23E+02	7.23E+02	7.23E+02
u236	1.75E+02	1.75E+02	1.76E+02	1.76E+02	1.76E+02
u237	3.08E-06	3.12E-06	3.12E-06	3.12E-06	3.12E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	5.62E-09	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	1.40E-45	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.64E-12	8.64E-12	8.64E-12	8.64E-12	8.64E-12
np236m	1.91E-12	2.06E-12	2.05E-12	2.05E-12	2.05E-12
np236	1.76E-07	1.81E-07	1.86E-07	1.91E-07	1.96E-07
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.50E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06
np239	4.49E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.01E-15	9.29E-15	9.29E-15	9.29E-15	9.29E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09
pu237	2.64E-13	2.65E-13	2.66E-13	2.67E-13	2.68E-13
pu238	2.34E-02	2.34E-02	2.34E-02	2.34E-02	2.34E-02
pu239	4.35E+00	4.47E+00	4.59E+00	4.70E+00	4.82E+00
pu240	1.87E-02	1.97E-02	2.07E-02	2.18E-02	2.29E-02
pu241	7.33E-06	7.74E-06	8.16E-06	8.58E-06	9.02E-06
pu242	6.22E-08	6.86E-08	7.56E-08	8.30E-08	9.09E-08
pu243	9.52E-17	1.45E-16	1.59E-16	1.75E-16	1.91E-16
pu244	5.72E-34	7.50E-34	9.76E-34	1.26E-33	1.62E-33
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.84E-20	2.26E-20	2.43E-20	2.60E-20	2.79E-20
am240	9.31E-18	1.04E-17	1.11E-17	1.19E-17	1.28E-17

```
     am241   7.65E-05  8.24E-05  8.85E-05  9.49E-05  1.02E-04
     am242m  2.25E-08  2.45E-08  2.67E-08  2.90E-08  3.14E-08
     am242   2.69E-12  3.17E-12  3.41E-12  3.66E-12  3.92E-12
     am243   1.56E-10  1.75E-10  1.97E-10  2.21E-10  2.46E-10
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   1.01E-18  1.33E-18  1.50E-18  1.67E-18  1.87E-18
     am245   1.40E-45   .00E+00   .00E+00   .00E+00   .00E+00
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   1.71E-22  1.85E-22  1.99E-22  2.13E-22  2.28E-22
     cm242   5.93E-10  6.40E-10  6.88E-10  7.39E-10  7.91E-10
     cm243   2.16E-16  2.34E-16  2.53E-16  2.73E-16  2.94E-16
     cm244   1.64E-14  1.86E-14  2.09E-14  2.35E-14  2.63E-14
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides          page   99
       power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
              charge 337857. d 346988. d 356120. d 365251. d
     cm245   2.75E-18  3.20E-18  3.72E-18  4.29E-18  4.94E-18
     cm246   2.10E-21  2.52E-21  3.00E-21  3.57E-21  4.22E-21
     cm247   2.63E-26  3.25E-26  3.99E-26  4.88E-26  5.92E-26
     cm248   3.36E-30  4.28E-30  5.41E-30  6.80E-30  8.49E-30
     cm249   2.49E-41  1.32E-40  1.71E-40  2.10E-40  2.65E-40
     cm250    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              2.68E+08  2.68E+08  2.68E+08  2.68E+08
0  .results on logical unit no. 71, position  1, for time step  4, subcase11. (run position 1, case position 1)
   title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    light elements     page   100
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0                                        nuclide concentrations, grams
                                         basis =single reactor assembly
              initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
      h  1   8.59E-05  8.59E-05  8.59E-05  8.59E-05  8.59E-05  8.59E-05  8.59E-05
      h  2   5.10E-07  5.10E-07  5.10E-07  5.10E-07  5.10E-07  5.10E-07  5.10E-07
     he  4   5.68E-05  5.68E-05  5.68E-05  5.68E-05  5.68E-05  5.68E-05  5.68E-05
     ne 20   3.41E-05  3.41E-05  3.41E-05  3.41E-05  3.41E-05  3.41E-05  3.41E-05
     na 23   1.73E+05  1.73E+05  1.73E+05  1.73E+05  1.73E+05  1.73E+05  1.73E+05
     mg 24   2.87E-01  2.87E-01  2.87E-01  2.87E-01  2.87E-01  2.87E-01  2.87E-01
     mg 26   6.63E-06  6.63E-06  6.63E-06  6.63E-06  6.63E-06  6.63E-06  6.63E-06
     al 27   1.35E+06  1.35E+06  1.35E+06  1.35E+06  1.35E+06  1.35E+06  1.35E+06
     si 28   9.74E-01  9.74E-01  9.74E-01  9.74E-01  9.74E-01  9.74E-01  9.74E-01
     si 29   1.35E-06  1.35E-06  1.35E-06  1.35E-06  1.35E-06  1.35E-06  1.35E-06
   total     1.52E+06  1.52E+06  1.52E+06  1.52E+06  1.52E+06  1.52E+06  1.52E+06
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    light elements     page   101
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0                                        element radioactivity, curies
                                         basis =single reactor assembly
              initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
       h     1.04E-06  9.92E-07  9.47E-07  9.03E-07  8.62E-07  8.23E-07  7.85E-07
      na     8.40E+00  4.60E-06  3.68E-06  2.95E-06  2.36E-06  1.89E-06  1.52E-06
   totals    2.55E+01  5.59E-06  4.63E-06  3.85E-06  3.22E-06  2.71E-06  2.30E-06
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    light elements     page   102
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0                                        element thermal power, watts
                                         basis =single reactor assembly
```

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
na	1.70E-01	6.51E-08	5.21E-08	4.17E-08	3.34E-08	2.68E-08	2.14E-08
totals	4.76E-01	6.51E-08	5.21E-08	4.18E-08	3.34E-08	2.68E-08	2.15E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 103
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
na 22	7.46E-08	5.98E-08	4.79E-08	3.83E-08	3.07E-08	2.46E-08	1.97E-08
total	3.31E-01	5.98E-08	4.79E-08	3.83E-08	3.07E-08	2.46E-08	1.97E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 104
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he 4	2.85E-01	2.85E-01	2.85E-01	2.86E-01	2.86E-01	2.86E-01	2.86E-01
pb206	1.40E-05	1.40E-05	1.41E-05	1.41E-05	1.42E-05	1.42E-05	1.42E-05
pb207	7.17E-06	7.18E-06	7.19E-06	7.20E-06	7.22E-06	7.23E-06	7.24E-06
pb208	1.23E-06	1.23E-06	1.24E-06	1.24E-06	1.24E-06	1.24E-06	1.24E-06
pb210	1.34E-06	1.34E-06	1.34E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06
bi209	8.49E-07	8.51E-07	8.53E-07	8.55E-07	8.57E-07	8.59E-07	8.62E-07
ra226	1.02E-04	1.02E-04	1.02E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04
th229	2.87E-05	2.88E-05	2.88E-05	2.89E-05	2.89E-05	2.90E-05	2.90E-05
th230	2.56E-02	2.56E-02	2.56E-02	2.56E-02	2.56E-02	2.57E-02	2.57E-02
th232	5.18E-03	5.18E-03	5.19E-03	5.19E-03	5.20E-03	5.20E-03	5.20E-03
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	7.21E-04	7.21E-04	7.22E-04	7.22E-04	7.23E-04	7.24E-04	7.24E-04
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
u233	1.35E-02	1.36E-02	1.36E-02	1.36E-02	1.36E-02	1.36E-02	1.36E-02
u234	9.17E+00	9.17E+00	9.17E+00	9.18E+00	9.18E+00	9.18E+00	9.18E+00
u235	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02
u236	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
pu238	2.34E-02	2.32E-02	2.31E-02	2.29E-02	2.28E-02	2.26E-02	2.25E-02
pu239	4.82E+00	4.82E+00	4.82E+00	4.82E+00	4.82E+00	4.82E+00	4.82E+00
pu240	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02
pu241	9.02E-06	8.67E-06	8.32E-06	8.00E-06	7.68E-06	7.38E-06	7.09E-06
am241	1.02E-04	1.02E-04	1.02E-04	1.02E-04	1.02E-04	1.03E-04	1.03E-04
total	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 105
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 element concentrations, gram atoms
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	2.85E-01	2.85E-01	2.85E-01	2.86E-01	2.86E-01	2.86E-01	2.86E-01
pb	2.37E-05	2.38E-05	2.39E-05	2.39E-05	2.40E-05	2.40E-05	2.41E-05
bi	8.50E-07	8.52E-07	8.54E-07	8.56E-07	8.58E-07	8.60E-07	8.62E-07
ra	1.02E-04	1.02E-04	1.02E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04
th	3.08E-02	3.08E-02	3.08E-02	3.08E-02	3.09E-02	3.09E-02	3.09E-02
pa	7.22E-04	7.23E-04	7.23E-04	7.24E-04	7.24E-04	7.25E-04	7.26E-04
u	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
np	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
pu	4.87E+00	4.87E+00	4.87E+00	4.87E+00	4.86E+00	4.86E+00	4.86E+00
am	1.02E-04	1.02E-04	1.02E-04	1.02E-04	1.02E-04	1.03E-04	1.03E-04
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 106
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0
nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he 4	1.14E+00	1.14E+00	1.14E+00	1.14E+00	1.14E+00	1.14E+00	1.15E+00
pb206	2.89E-03	2.89E-03	2.90E-03	2.91E-03	2.92E-03	2.92E-03	2.93E-03
pb207	1.48E-03	1.49E-03	1.49E-03	1.49E-03	1.49E-03	1.50E-03	1.50E-03
pb208	2.56E-04	2.56E-04	2.57E-04	2.57E-04	2.58E-04	2.58E-04	2.59E-04
pb210	2.81E-04	2.82E-04	2.82E-04	2.83E-04	2.83E-04	2.84E-04	2.84E-04
bi209	1.77E-04	1.78E-04	1.78E-04	1.79E-04	1.79E-04	1.80E-04	1.80E-04
po210	4.78E-06	4.74E-06	4.73E-06	4.74E-06	4.75E-06	4.75E-06	4.76E-06
ra226	2.31E-02	2.31E-02	2.32E-02	2.32E-02	2.32E-02	2.33E-02	2.33E-02
ac227	1.05E-04	1.05E-04	1.05E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04
th228	1.55E-06	1.54E-06	1.53E-06	1.52E-06	1.51E-06	1.50E-06	1.49E-06
th229	6.58E-03	6.59E-03	6.60E-03	6.61E-03	6.62E-03	6.63E-03	6.64E-03
th230	5.88E+00	5.88E+00	5.89E+00	5.89E+00	5.90E+00	5.90E+00	5.91E+00
th231	7.18E-07	6.91E-07	6.91E-07	6.91E-07	6.91E-07	6.91E-07	6.91E-07
th232	1.20E+00	1.20E+00	1.20E+00	1.20E+00	1.21E+00	1.21E+00	1.21E+00
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	1.66E-01	1.67E-01	1.67E-01	1.67E-01	1.67E-01	1.67E-01	1.67E-01
pa233	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04
u232	5.63E-05	5.59E-05	5.55E-05	5.51E-05	5.47E-05	5.42E-05	5.38E-05
u233	3.16E+00	3.16E+00	3.16E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00
u234	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03
u235	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05
u236	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04
u238	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06
np236	4.62E-05	4.62E-05	4.62E-05	4.62E-05	4.62E-05	4.62E-05	4.62E-05
np237	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03
pu238	5.57E+00	5.53E+00	5.50E+00	5.46E+00	5.42E+00	5.39E+00	5.35E+00
pu239	1.15E+03	1.15E+03	1.15E+03	1.15E+03	1.15E+03	1.15E+03	1.15E+03
pu240	5.49E+00	5.49E+00	5.49E+00	5.49E+00	5.49E+00	5.49E+00	5.49E+00
pu241	2.17E-03	2.09E-03	2.01E-03	1.93E-03	1.85E-03	1.78E-03	1.71E-03
pu242	2.20E-05	2.20E-05	2.20E-05	2.20E-05	2.20E-05	2.20E-05	2.20E-05
am241	2.45E-02	2.45E-02	2.46E-02	2.46E-02	2.47E-02	2.47E-02	2.47E-02
am242m	7.60E-06	7.57E-06	7.53E-06	7.50E-06	7.47E-06	7.44E-06	7.41E-06
total	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 107
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0
element concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	1.14E+00	1.14E+00	1.14E+00	1.14E+00	1.14E+00	1.14E+00	1.15E+00
pb	4.91E-03	4.92E-03	4.93E-03	4.94E-03	4.95E-03	4.96E-03	4.97E-03
bi	1.78E-04	1.78E-04	1.78E-04	1.79E-04	1.79E-04	1.80E-04	1.80E-04
po	4.78E-06	4.74E-06	4.73E-06	4.74E-06	4.75E-06	4.75E-06	4.76E-06
ra	2.31E-02	2.31E-02	2.32E-02	2.32E-02	2.32E-02	2.33E-02	2.33E-02
ac	1.05E-04	1.05E-04	1.05E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04
th	7.09E+00	7.09E+00	7.10E+00	7.10E+00	7.11E+00	7.12E+00	7.12E+00
pa	1.67E-01	1.67E-01	1.67E-01	1.67E-01	1.67E-01	1.67E-01	1.68E-01
u	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06
np	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03
pu	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
am	2.45E-02	2.45E-02	2.46E-02	2.46E-02	2.47E-02	2.47E-02	2.48E-02
totals	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 108
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec

0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl207	7.61E-03	7.62E-03	7.63E-03	7.64E-03	7.64E-03	7.65E-03	7.66E-03
tl208	4.57E-04	4.56E-04	4.53E-04	4.49E-04	4.46E-04	4.43E-04	4.40E-04
tl209	2.74E-05	2.74E-05	2.75E-05	2.75E-05	2.75E-05	2.76E-05	2.76E-05
pb209	1.30E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.32E-03
pb210	2.15E-02	2.15E-02	2.16E-02	2.16E-02	2.16E-02	2.17E-02	2.17E-02
pb211	7.63E-03	7.64E-03	7.65E-03	7.66E-03	7.66E-03	7.67E-03	7.68E-03
pb212	1.27E-03	1.27E-03	1.26E-03	1.25E-03	1.24E-03	1.23E-03	1.22E-03
pb214	2.28E-02	2.29E-02	2.29E-02	2.29E-02	2.30E-02	2.30E-02	2.30E-02
bi210	2.15E-02	2.15E-02	2.16E-02	2.16E-02	2.16E-02	2.17E-02	2.17E-02
bi211	7.63E-03	7.64E-03	7.65E-03	7.66E-03	7.66E-03	7.67E-03	7.68E-03
bi212	1.27E-03	1.27E-03	1.26E-03	1.25E-03	1.24E-03	1.23E-03	1.22E-03
bi213	1.30E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.32E-03
bi214	2.28E-02	2.29E-02	2.29E-02	2.29E-02	2.30E-02	2.30E-02	2.30E-02
po210	2.15E-02	2.13E-02	2.13E-02	2.13E-02	2.13E-02	2.14E-02	2.14E-02
po211	2.10E-05	2.10E-05	2.10E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05
po212	8.14E-04	8.12E-04	8.07E-04	8.01E-04	7.95E-04	7.90E-04	7.84E-04
po213	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.29E-03	1.29E-03
po214	2.28E-02	2.29E-02	2.29E-02	2.29E-02	2.30E-02	2.30E-02	2.30E-02
po215	7.63E-03	7.64E-03	7.65E-03	7.66E-03	7.66E-03	7.67E-03	7.68E-03
po216	1.27E-03	1.27E-03	1.26E-03	1.25E-03	1.24E-03	1.23E-03	1.22E-03
po218	2.28E-02	2.29E-02	2.29E-02	2.29E-02	2.30E-02	2.30E-02	2.31E-02
at217	1.30E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.32E-03
rn219	7.63E-03	7.64E-03	7.65E-03	7.66E-03	7.66E-03	7.67E-03	7.68E-03
rn220	1.27E-03	1.27E-03	1.26E-03	1.25E-03	1.24E-03	1.23E-03	1.22E-03
rn222	2.28E-02	2.29E-02	2.29E-02	2.29E-02	2.30E-02	2.30E-02	2.31E-02
fr221	1.30E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.32E-03
fr223	1.05E-04	1.05E-04	1.05E-04	1.05E-04	1.06E-04	1.06E-04	1.06E-04
ra223	7.63E-03	7.64E-03	7.65E-03	7.66E-03	7.66E-03	7.67E-03	7.68E-03
ra224	1.27E-03	1.27E-03	1.26E-03	1.25E-03	1.24E-03	1.23E-03	1.22E-03
ra225	1.30E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.32E-03
ra226	2.28E-02	2.29E-02	2.29E-02	2.29E-02	2.30E-02	2.30E-02	2.31E-02
ac225	1.30E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.32E-03
ac227	7.62E-03	7.63E-03	7.63E-03	7.64E-03	7.65E-03	7.65E-03	7.66E-03
th227	7.52E-03	7.54E-03	7.54E-03	7.55E-03	7.56E-03	7.56E-03	7.57E-03
th228	1.27E-03	1.26E-03	1.25E-03	1.25E-03	1.24E-03	1.23E-03	1.22E-03
th229	1.30E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.32E-03
th230	1.21E-01	1.21E-01	1.21E-01	1.22E-01	1.22E-01	1.22E-01	1.22E-01
th231	3.82E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	7.87E-03	7.87E-03	7.88E-03	7.89E-03	7.89E-03	7.90E-03	7.90E-03
pa233	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
u232	1.24E-03	1.24E-03	1.23E-03	1.22E-03	1.21E-03	1.20E-03	1.19E-03
u233	3.04E-02	3.05E-02	3.05E-02	3.05E-02	3.06E-02	3.06E-02	3.06E-02
u234	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01
u235	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01
u236	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00
u237	6.03E+01	5.17E-06	4.97E-06	4.77E-06	4.58E-06	4.40E-06	4.23E-06
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
np236	6.09E-07	6.09E-07	6.09E-07	6.09E-07	6.09E-07	6.09E-07	6.09E-07
np237	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 109
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec

0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pu236	1.37E-04	1.13E-04	9.24E-05	7.57E-05	6.20E-05	5.08E-05	4.17E-05
pu238	9.54E+01	9.48E+01	9.41E+01	9.35E+01	9.29E+01	9.23E+01	9.17E+01
pu239	7.15E+01	7.15E+01	7.15E+01	7.15E+01	7.15E+01	7.15E+01	7.15E+01
pu240	1.25E+00	1.25E+00	1.25E+00	1.25E+00	1.25E+00	1.25E+00	1.25E+00
pu241	2.25E-01	2.16E-01	2.08E-01	1.99E-01	1.91E-01	1.84E-01	1.77E-01
am241	8.40E-02	8.42E-02	8.43E-02	8.45E-02	8.46E-02	8.48E-02	8.49E-02
am242m	7.96E-05	7.93E-05	7.90E-05	7.86E-05	7.83E-05	7.80E-05	7.77E-05
am242	7.67E-04	7.89E-05	7.86E-05	7.83E-05	7.80E-05	7.77E-05	7.73E-05
cm242	6.34E-04	2.22E-04	1.08E-04	7.66E-05	6.78E-05	6.52E-05	6.43E-05
total	5.45E+03	2.08E+02	2.07E+02	2.07E+02	2.06E+02	2.05E+02	2.05E+02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 110
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl	3.36E-05	3.36E-05	3.35E-05	3.35E-05	3.34E-05	3.34E-05	3.33E-05
pb	1.06E-04	1.06E-04	1.06E-04	1.07E-04	1.07E-04	1.07E-04	1.07E-04
bi	6.74E-04	6.75E-04	6.75E-04	6.76E-04	6.77E-04	6.77E-04	6.78E-04
po	3.08E-03	3.07E-03	3.08E-03	3.08E-03	3.08E-03	3.09E-03	3.09E-03
at	5.56E-05	5.57E-05	5.58E-05	5.59E-05	5.60E-05	5.61E-05	5.62E-05
rn	1.12E-03	1.12E-03	1.12E-03	1.13E-03	1.13E-03	1.13E-03	1.13E-03
fr	5.06E-05	5.06E-05	5.07E-05	5.08E-05	5.09E-05	5.10E-05	5.11E-05
ra	9.75E-04	9.77E-04	9.78E-04	9.79E-04	9.80E-04	9.81E-04	9.82E-04
ac	4.92E-05	4.93E-05	4.93E-05	4.94E-05	4.95E-05	4.96E-05	4.97E-05
th	5.40E-03	5.39E-03	5.39E-03	5.39E-03	5.40E-03	5.40E-03	5.40E-03
pa	3.24E-02	3.24E-02	3.24E-02	3.24E-02	3.24E-02	3.24E-02	3.24E-02
u	7.56E+00	5.42E-01	5.42E-01	5.42E-01	5.42E-01	5.42E-01	5.42E-01
np	7.11E+00	2.01E-01	2.01E-01	2.01E-01	2.01E-01	2.01E-01	2.01E-01
pu	5.42E+00	5.40E+00	5.38E+00	5.36E+00	5.34E+00	5.32E+00	5.30E+00
am	2.80E-03	2.81E-03	2.81E-03	2.82E-03	2.82E-03	2.83E-03	2.83E-03
cm	2.31E-05	8.09E-06	3.94E-06	2.79E-06	2.47E-06	2.38E-06	2.35E-06
totals	2.01E+01	6.19E+00	6.17E+00	6.15E+00	6.13E+00	6.11E+00	6.09E+00

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 111
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl207	9.92E-08	9.94E-08	9.95E-08	9.96E-08	9.97E-08	9.97E-08	9.98E-08
tl208	9.10E-06	9.08E-06	9.02E-06	8.95E-06	8.89E-06	8.82E-06	8.76E-06
tl209	3.44E-07	3.45E-07	3.45E-07	3.46E-07	3.46E-07	3.47E-07	3.47E-07
pb210	6.42E-07	6.43E-07	6.44E-07	6.45E-07	6.46E-07	6.47E-07	6.48E-07
pb211	3.06E-06	3.06E-06	3.07E-06	3.07E-06	3.07E-06	3.07E-06	3.08E-06
pb212	1.09E-06	1.09E-06	1.08E-06	1.08E-06	1.07E-06	1.06E-06	1.05E-06
pb214	3.38E-05	3.39E-05	3.39E-05	3.40E-05	3.40E-05	3.41E-05	3.42E-05
bi211	2.12E-06	2.12E-06	2.12E-06	2.12E-06	2.13E-06	2.13E-06	2.13E-06
bi212	7.93E-07	7.91E-07	7.85E-07	7.80E-07	7.74E-07	7.69E-07	7.63E-07
bi213	9.75E-07	9.77E-07	9.79E-07	9.80E-07	9.82E-07	9.83E-07	9.85E-07
bi214	2.04E-04	2.04E-04	2.05E-04	2.05E-04	2.05E-04	2.06E-04	2.06E-04
po214	1.12E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08
po215	7.93E-09	7.95E-09	7.96E-09	7.96E-09	7.97E-09	7.98E-09	7.99E-09
rn219	2.53E-06	2.54E-06	2.54E-06	2.54E-06	2.54E-06	2.55E-06	2.55E-06
rn222	5.27E-08	5.27E-08	5.28E-08	5.29E-08	5.30E-08	5.31E-08	5.32E-08
fr221	2.29E-07	2.29E-07	2.29E-07	2.30E-07	2.30E-07	2.31E-07	2.31E-07
fr223	3.58E-08	3.58E-08	3.58E-08	3.59E-08	3.59E-08	3.59E-08	3.60E-08
ra223	6.07E-06	6.09E-06	6.09E-06	6.10E-06	6.10E-06	6.11E-06	6.11E-06
ra224	7.59E-08	7.57E-08	7.52E-08	7.46E-08	7.41E-08	7.36E-08	7.30E-08
ra225	1.11E-07	1.11E-07	1.12E-07	1.12E-07	1.12E-07	1.12E-07	1.12E-07

ra226	9.77E-07	9.79E-07	9.80E-07	9.82E-07	9.84E-07	9.85E-07	9.87E-07
ac225	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.31E-07	1.31E-07	1.31E-07
ac227	8.71E-09	8.72E-09	8.73E-09	8.74E-09	8.74E-09	8.75E-09	8.76E-09
th227	4.95E-06	4.96E-06	4.96E-06	4.97E-06	4.97E-06	4.98E-06	4.98E-06
th228	2.65E-08	2.64E-08	2.62E-08	2.60E-08	2.58E-08	2.56E-08	2.54E-08
th229	7.31E-07	7.32E-07	7.33E-07	7.34E-07	7.36E-07	7.37E-07	7.38E-07
th230	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06
th231	7.01E-05	6.75E-05	6.75E-05	6.75E-05	6.75E-05	6.75E-05	6.75E-05
th234	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04
pa231	1.87E-06	1.87E-06	1.87E-06	1.87E-06	1.87E-06	1.87E-06	1.87E-06
pa233	9.32E-03	9.32E-03	9.32E-03	9.32E-03	9.32E-03	9.32E-03	9.32E-03
pa234m	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04
pa234	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05
u232	1.60E-08	1.59E-08	1.58E-08	1.56E-08	1.55E-08	1.54E-08	1.53E-08
u233	2.24E-07	2.24E-07	2.24E-07	2.24E-07	2.25E-07	2.25E-07	2.25E-07
u234	1.27E-04	1.27E-04	1.27E-04	1.27E-04	1.27E-04	1.27E-04	1.27E-04
u235	3.62E-04	3.62E-04	3.62E-04	3.62E-04	3.62E-04	3.62E-04	3.62E-04
u236	2.70E-05	2.70E-05	2.70E-05	2.70E-05	2.70E-05	2.70E-05	2.70E-05
u238	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05
np237	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03
pu238	1.07E-03	1.07E-03	1.06E-03	1.05E-03	1.05E-03	1.04E-03	1.03E-03
pu239	3.43E-04	3.43E-04	3.43E-04	3.43E-04	3.43E-04	3.43E-04	3.43E-04
pu240	1.22E-05	1.22E-05	1.22E-05	1.22E-05	1.22E-05	1.22E-05	1.22E-05
am241	1.42E-05	1.43E-05	1.43E-05	1.43E-05	1.44E-05	1.44E-05	1.44E-05
am242	8.83E-08	9.09E-09	9.05E-09	9.02E-09	8.98E-09	8.94E-09	8.91E-09
total	3.97E+00	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 112
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0
nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	3.84E-05	3.67E-05	3.50E-05	3.34E-05	3.19E-05	3.04E-05	2.90E-05
li 6	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05
be 9	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07
be 10	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06
c 14	1.12E-06	1.12E-06	1.12E-06	1.12E-06	1.12E-06	1.12E-06	1.12E-06
ga 71	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06
ge 72	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04
ge 73	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04
ge 74	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04
as 75	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03
ge 76	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02
se 76	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06
se 77	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02
se 78	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01
se 79	2.28E-01	2.28E-01	2.28E-01	2.28E-01	2.28E-01	2.28E-01	2.28E-01
br 79	2.39E-04	2.39E-04	2.40E-04	2.40E-04	2.41E-04	2.41E-04	2.41E-04
se 80	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01
br 81	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00
se 82	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00
kr 82	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04
kr 83	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00
kr 84	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00
kr 85	2.24E-02	2.12E-02	2.01E-02	1.90E-02	1.80E-02	1.71E-02	1.62E-02
rb 85	6.73E+00	6.73E+00	6.74E+00	6.74E+00	6.74E+00	6.74E+00	6.74E+00
kr 86	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01
sr 86	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05
rb 87	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01
sr 87	2.48E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05

sr 88	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01
y 89	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01
sr 90	1.38E+00	1.35E+00	1.33E+00	1.30E+00	1.27E+00	1.25E+00	1.22E+00
y 90	3.59E-04	3.52E-04	3.44E-04	3.37E-04	3.31E-04	3.24E-04	3.17E-04
zr 90	3.28E+01	3.28E+01	3.28E+01	3.28E+01	3.29E+01	3.29E+01	3.29E+01
zr 91	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01
zr 92	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01
zr 93	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01
nb 93	5.52E-03	5.53E-03	5.54E-03	5.55E-03	5.56E-03	5.57E-03	5.58E-03
nb 93m	2.63E-04	2.63E-04	2.63E-04	2.63E-04	2.63E-04	2.64E-04	2.64E-04
zr 94	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01
nb 94	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05
mo 95	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01
zr 96	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01
mo 96	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02
mo 97	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01
mo 98	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01
tc 98	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06
tc 99	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01
ru 99	6.62E-02	6.63E-02	6.64E-02	6.65E-02	6.66E-02	6.67E-02	6.68E-02
mo100	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01
ru100	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02
ru101	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01
ru102	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 113
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0
nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
rh103	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01
ru104	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01
pd104	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02
pd105	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00
ru106	5.31E-03	3.01E-03	1.71E-03	9.67E-04	5.48E-04	3.11E-04	1.76E-04
pd106	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00
pd107	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00
ag107	7.17E-05	7.18E-05	7.20E-05	7.21E-05	7.22E-05	7.23E-05	7.25E-05
pd108	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01
ag109	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01
pd110	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01
cd110	6.84E-04	6.84E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04
cd111	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01
cd112	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01
cd113	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02
cd113m	4.47E-05	4.29E-05	4.12E-05	3.95E-05	3.80E-05	3.64E-05	3.50E-05
in113	2.11E-03	2.11E-03	2.12E-03	2.12E-03	2.12E-03	2.12E-03	2.12E-03
cd114	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01
in115	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02
sn115	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03
cd116	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01
sn116	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04
sn117	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02
sn118	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02
sn119	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01
sn120	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01
sn121m	5.73E-05	5.67E-05	5.61E-05	5.55E-05	5.49E-05	5.43E-05	5.38E-05
sb121	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01
sn122	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01
te122	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05

sb123	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01
sn124	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01
te124	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
sb125	1.01E-03	8.17E-04	6.61E-04	5.35E-04	4.33E-04	3.50E-04	2.84E-04
te125	2.51E-01	2.51E-01	2.51E-01	2.51E-01	2.51E-01	2.51E-01	2.52E-01
te125m	1.35E-05	1.16E-05	9.39E-06	7.60E-06	6.15E-06	4.98E-06	4.03E-06
sn126	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01
te126	3.53E-03	3.53E-03	3.53E-03	3.53E-03	3.53E-03	3.54E-03	3.54E-03
i127	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00
te128	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00
xe128	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05
i129	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00
xe129	1.42E-04	1.43E-04	1.43E-04	1.43E-04	1.43E-04	1.44E-04	1.44E-04
te130	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01
xe130	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03
xe131	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01
xe132	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01
cs133	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01
xe134	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01
cs134	1.90E-04	1.44E-04	1.09E-04	8.20E-05	6.20E-05	4.68E-05	3.54E-05
ba134	3.19E-02	3.20E-02	3.20E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02
cs135	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 114
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0
nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
ba135	8.74E-03	8.75E-03	8.77E-03	8.78E-03	8.80E-03	8.81E-03	8.83E-03
xe136	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01
ba136	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02
cs137	2.44E+00	2.39E+00	2.35E+00	2.30E+00	2.26E+00	2.22E+00	2.18E+00
ba137	5.40E+01	5.40E+01	5.41E+01	5.41E+01	5.41E+01	5.42E+01	5.42E+01
ba138	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01
la138	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04
la139	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01
ce140	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01
pr141	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01
ce142	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01
nd142	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03
nd143	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01
ce144	5.76E-02	2.75E-02	1.31E-02	6.25E-03	2.98E-03	1.42E-03	6.78E-04
nd144	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01
nd145	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01
nd146	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01
sm146	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06
pm147	8.22E-02	6.68E-02	5.36E-02	4.30E-02	3.45E-02	2.77E-02	2.22E-02
sm147	2.17E+01	2.17E+01	2.17E+01	2.17E+01	2.17E+01	2.17E+01	2.17E+01
nd148	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01
sm148	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02
sm149	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00
nd150	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00
sm150	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00
sm151	5.49E-01	5.45E-01	5.42E-01	5.38E-01	5.35E-01	5.31E-01	5.28E-01
eu151	3.50E+00	3.50E+00	3.51E+00	3.51E+00	3.51E+00	3.52E+00	3.52E+00
sm152	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00
eu152	4.61E-03	4.42E-03	4.23E-03	4.05E-03	3.88E-03	3.71E-03	3.56E-03
gd152	7.30E-02	7.30E-02	7.31E-02	7.31E-02	7.32E-02	7.32E-02	7.32E-02
eu153	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00
sm154	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01

eu154	1.39E-04	1.30E-04	1.21E-04	1.13E-04	1.06E-04	9.91E-05	9.27E-05
gd154	5.53E-03	5.54E-03	5.54E-03	5.55E-03	5.56E-03	5.57E-03	5.57E-03
eu155	2.53E-03	2.24E-03	1.98E-03	1.75E-03	1.55E-03	1.37E-03	1.21E-03
gd155	2.79E-01	2.79E-01	2.80E-01	2.80E-01	2.80E-01	2.80E-01	2.80E-01
gd156	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01
gd157	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02
gd158	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02
tb159	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02
gd160	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03
dy160	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06
dy161	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03
dy162	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04
dy163	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04
dy164	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05
ho165	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05
er166	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06
total	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 115
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0

nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	3.72E-01	3.55E-01	3.38E-01	3.23E-01	3.08E-01	2.94E-01	2.81E-01
c 14	5.01E-06	5.01E-06	5.01E-06	5.01E-06	5.01E-06	5.01E-06	5.01E-06
se 79	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03
kr 85	8.79E+00	8.32E+00	7.89E+00	7.47E+00	7.08E+00	6.71E+00	6.36E+00
rb 87	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06
sr 90	1.95E+02	1.91E+02	1.87E+02	1.83E+02	1.80E+02	1.76E+02	1.72E+02
y 90	1.95E+02	1.91E+02	1.87E+02	1.83E+02	1.80E+02	1.76E+02	1.72E+02
y 91	1.97E+02	5.39E+00	1.47E-01	3.98E-03	1.08E-04	2.94E-06	7.97E-08
zr 93	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02
nb 93m	6.26E-02	6.27E-02	6.27E-02	6.28E-02	6.28E-02	6.29E-02	6.29E-02
nb 94	1.92E-06	1.92E-06	1.92E-06	1.92E-06	1.92E-06	1.92E-06	1.92E-06
zr 95	2.17E+02	8.06E+00	2.98E-01	1.11E-02	4.09E-04	1.52E-05	5.62E-07
nb 95	2.17E+02	1.71E+01	6.56E-01	2.43E-02	9.02E-04	3.34E-05	1.24E-06
tc 99	6.76E-01	6.76E-01	6.76E-01	6.76E-01	6.76E-01	6.76E-01	6.76E-01
rh102	8.66E-06	7.09E-06	5.81E-06	4.76E-06	3.90E-06	3.20E-06	2.62E-06
ru106	1.76E+01	9.98E+00	5.66E+00	3.21E+00	1.82E+00	1.03E+00	5.84E-01
rh106	1.76E+01	9.98E+00	5.66E+00	3.21E+00	1.82E+00	1.03E+00	5.84E-01
pd107	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04
ag110m	2.81E-04	1.21E-04	5.19E-05	2.23E-05	9.58E-06	4.12E-06	1.77E-06
cd113m	1.00E-02	9.63E-03	9.25E-03	8.87E-03	8.52E-03	8.18E-03	7.85E-03
sn119m	1.58E-03	7.70E-04	3.75E-04	1.82E-04	8.88E-05	4.32E-05	2.10E-05
sn121	4.81E-01	2.36E-03	2.34E-03	2.31E-03	2.29E-03	2.27E-03	2.24E-03
sn121m	3.08E-03	3.04E-03	3.01E-03	2.98E-03	2.95E-03	2.92E-03	2.89E-03
sn123	5.88E-02	1.15E-02	2.24E-03	4.37E-04	8.54E-05	1.67E-05	3.26E-06
sb125	1.05E+00	8.56E-01	6.93E-01	5.61E-01	4.54E-01	3.67E-01	2.97E-01
te125m	2.43E-01	2.09E-01	1.69E-01	1.37E-01	1.11E-01	8.97E-02	7.26E-02
sn126	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02
sb126	6.09E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03
sb126m	1.67E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02
te127	4.36E+00	1.12E-01	1.62E-02	2.34E-03	3.38E-04	4.88E-05	7.04E-06
te127m	7.66E-01	1.15E-01	1.66E-02	2.39E-03	3.45E-04	4.98E-05	7.19E-06
i129	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03
cs134	2.46E-01	1.86E-01	1.40E-01	1.06E-01	8.02E-02	6.06E-02	4.58E-02
cs135	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02
cs137	2.12E+02	2.08E+02	2.04E+02	2.01E+02	1.97E+02	1.93E+02	1.89E+02
ba137m	2.01E+02	1.97E+02	1.93E+02	1.89E+02	1.86E+02	1.82E+02	1.79E+02
ce142	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06

ce144	1.83E+02	8.74E+01	4.17E+01	1.99E+01	9.48E+00	4.52E+00	2.16E+00
pr144	1.83E+02	8.74E+01	4.17E+01	1.99E+01	9.48E+00	4.52E+00	2.16E+00
pr144m	2.57E+00	1.22E+00	5.84E-01	2.78E-01	1.33E-01	6.33E-02	3.02E-02
pm147	7.63E+01	6.19E+01	4.97E+01	3.99E+01	3.20E+01	2.57E+01	2.06E+01
sm151	1.44E+01	1.44E+01	1.43E+01	1.42E+01	1.41E+01	1.40E+01	1.39E+01
eu152	8.14E-01	7.80E-01	7.47E-01	7.15E-01	6.85E-01	6.56E-01	6.28E-01
gd153	6.58E-04	2.75E-04	1.15E-04	4.79E-05	2.00E-05	8.35E-06	3.49E-06
eu154	3.75E-02	3.51E-02	3.28E-02	3.07E-02	2.87E-02	2.68E-02	2.51E-02
eu155	1.25E+00	1.10E+00	9.76E-01	8.63E-01	7.63E-01	6.74E-01	5.96E-01
total	2.07E+04	1.11E+03	9.44E+02	8.68E+02	8.21E+02	7.88E+02	7.62E+02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 116
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0
element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h	1.25E-05	1.20E-05	1.14E-05	1.09E-05	1.04E-05	9.92E-06	9.47E-06
se	3.30E+00	9.79E-07	9.79E-07	9.79E-07	9.79E-07	9.79E-07	9.79E-07
kr	1.28E+01	1.25E-02	1.18E-02	1.12E-02	1.06E-02	1.01E-02	9.54E-03
sr	2.00E+01	2.30E-01	2.17E-01	2.13E-01	2.09E-01	2.04E-01	2.00E-01
y	2.81E+01	1.08E+00	1.04E+00	1.02E+00	9.94E-01	9.74E-01	9.54E-01
zr	1.20E+01	4.06E-02	1.51E-03	6.29E-05	9.28E-06	7.30E-06	7.22E-06
nb	2.15E+01	8.22E-02	3.16E-03	1.28E-04	1.51E-05	1.10E-05	1.08E-05
tc	6.63E+00	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04
ru	7.56E-01	2.26E-03	3.44E-04	1.91E-04	1.08E-04	6.13E-05	3.47E-05
rh	4.36E-01	9.58E-02	5.42E-02	3.07E-02	1.74E-02	9.88E-03	5.60E-03
pd	3.77E-02	3.95E-08	3.95E-08	3.95E-08	3.95E-08	3.95E-08	3.95E-08
ag	7.68E-02	2.03E-06	8.70E-07	3.74E-07	1.61E-07	6.91E-08	2.98E-08
cd	6.95E-02	1.10E-05	1.01E-05	9.65E-06	9.27E-06	8.89E-06	8.54E-06
sn	1.87E+00	5.47E-05	2.56E-05	1.99E-05	1.87E-05	1.84E-05	1.84E-05
sb	7.51E+00	2.87E-03	2.35E-03	1.93E-03	1.60E-03	1.32E-03	1.10E-03
te	9.26E+00	4.27E-04	1.73E-04	1.20E-04	9.39E-05	7.56E-05	6.11E-05
i	2.08E+01	5.34E-07	5.34E-07	5.34E-07	5.34E-07	5.34E-07	5.34E-07
cs	1.82E+01	2.34E-01	2.29E-01	2.24E-01	2.19E-01	2.15E-01	2.11E-01
ba	1.19E+01	7.73E-01	7.58E-01	7.44E-01	7.30E-01	7.16E-01	7.02E-01
ce	4.39E+00	5.76E-02	2.73E-02	1.30E-02	6.21E-03	2.96E-03	1.41E-03
pr	6.23E+00	6.42E-01	3.06E-01	1.46E-01	6.96E-02	3.32E-02	1.58E-02
pm	3.44E-01	2.27E-02	1.82E-02	1.46E-02	1.17E-02	9.42E-03	7.56E-03
sm	2.27E-02	1.69E-03	1.68E-03	1.67E-03	1.66E-03	1.64E-03	1.63E-03
eu	1.87E-02	7.13E-03	6.76E-03	6.41E-03	6.08E-03	5.77E-03	5.48E-03
gd	1.66E-04	2.41E-07	1.01E-07	4.21E-08	1.76E-08	7.34E-09	3.06E-09
totals	2.61E+02	3.28E+00	2.68E+00	2.42E+00	2.28E+00	2.18E+00	2.12E+00

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 117
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0
nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.16E-04	1.10E-04	1.04E-04	9.88E-05	9.36E-05	8.87E-05	8.40E-05
y 90	1.96E-06	1.92E-06	1.89E-06	1.85E-06	1.81E-06	1.77E-06	1.74E-06
nb 93m	6.98E-07	6.98E-07	6.99E-07	6.99E-07	7.00E-07	7.00E-07	7.01E-07
nb 94	1.78E-08	1.78E-08	1.78E-08	1.78E-08	1.78E-08	1.78E-08	1.78E-08
zr 95	9.44E-01	3.50E-02	1.29E-03	4.80E-05	1.78E-06	6.58E-08	2.44E-09
nb 95	9.85E-01	7.75E-02	2.97E-03	1.10E-04	4.09E-06	1.51E-07	5.61E-09
rh102	1.11E-07	9.08E-08	7.44E-08	6.10E-08	5.00E-08	4.09E-08	3.35E-08
rh106	2.15E-02	1.22E-02	6.91E-03	3.92E-03	2.22E-03	1.26E-03	7.13E-04
ag110m	4.56E-06	1.96E-06	8.42E-07	3.62E-07	1.56E-07	6.68E-08	2.87E-08
sn121m	9.12E-08	9.02E-08	8.93E-08	8.83E-08	8.74E-08	8.65E-08	8.56E-08
sb125	2.71E-03	2.20E-03	1.78E-03	1.44E-03	1.17E-03	9.45E-04	7.65E-04
te125m	5.12E-05	4.40E-05	3.57E-05	2.89E-05	2.34E-05	1.89E-05	1.53E-05

sn126	8.01E-06	8.01E-06	8.01E-06	8.01E-06	8.01E-06	8.01E-06	8.01E-06
sb126	9.94E-05	2.36E-05	2.36E-05	2.36E-05	2.36E-05	2.36E-05	2.36E-05
sb126m	1.54E-04	9.53E-05	9.53E-05	9.53E-05	9.53E-05	9.53E-05	9.53E-05
i129	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07
cs134	2.27E-03	1.71E-03	1.29E-03	9.78E-04	7.39E-04	5.59E-04	4.22E-04
ba137m	7.12E-01	6.99E-01	6.85E-01	6.72E-01	6.60E-01	6.47E-01	6.35E-01
ce144	2.06E-02	9.85E-03	4.70E-03	2.24E-03	1.07E-03	5.09E-04	2.43E-04
pr144	3.14E-02	1.50E-02	7.14E-03	3.41E-03	1.63E-03	7.75E-04	3.70E-04
pr144m	1.90E-04	9.07E-05	4.33E-05	2.06E-05	9.84E-06	4.69E-06	2.24E-06
pm147	1.98E-06	1.61E-06	1.29E-06	1.03E-06	8.30E-07	6.66E-07	5.35E-07
sm151	1.22E-06	1.21E-06	1.20E-06	1.19E-06	1.18E-06	1.18E-06	1.17E-06
eu152	5.61E-03	5.37E-03	5.14E-03	4.92E-03	4.72E-03	4.52E-03	4.32E-03
gd153	4.20E-07	1.75E-07	7.32E-08	3.05E-08	1.28E-08	5.32E-09	2.22E-09
eu154	2.79E-04	2.61E-04	2.44E-04	2.28E-04	2.13E-04	1.99E-04	1.86E-04
eu155	4.79E-04	4.24E-04	3.74E-04	3.31E-04	2.93E-04	2.59E-04	2.29E-04
total	1.29E+02	8.60E-01	7.18E-01	6.90E-01	6.72E-01	6.56E-01	6.42E-01

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 118
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec

0 element gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr	6.67E+00	1.10E-04	1.04E-04	9.88E-05	9.36E-05	8.87E-05	8.40E-05
y	9.75E+00	1.18E-04	5.03E-06	1.93E-06	1.81E-06	1.77E-06	1.74E-06
zr	4.79E+00	3.50E-02	1.29E-03	4.80E-05	1.78E-06	6.58E-08	2.44E-09
nb	9.14E+00	7.76E-02	2.97E-03	1.11E-04	4.81E-06	8.70E-07	7.24E-07
rh	1.24E-01	1.22E-02	6.91E-03	3.92E-03	2.22E-03	1.26E-03	7.13E-04
ag	3.16E-02	1.96E-06	8.43E-07	3.62E-07	1.56E-07	6.69E-08	2.88E-08
sn	1.22E+00	8.62E-06	8.21E-06	8.13E-06	8.10E-06	8.10E-06	8.09E-06
sb	5.15E+00	2.32E-03	1.90E-03	1.56E-03	1.29E-03	1.06E-03	8.84E-04
te	5.55E+00	5.89E-05	3.73E-05	2.91E-05	2.34E-05	1.89E-05	1.53E-05
i	1.36E+01	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07
cs	8.72E+00	1.71E-03	1.29E-03	9.78E-04	7.39E-04	5.59E-04	4.22E-04
ba	5.39E+00	6.99E-01	6.85E-01	6.72E-01	6.60E-01	6.47E-01	6.35E-01
ce	2.08E+00	9.98E-03	4.70E-03	2.24E-03	1.07E-03	5.09E-04	2.43E-04
pr	1.80E+00	1.51E-02	7.19E-03	3.43E-03	1.64E-03	7.80E-04	3.72E-04
pm	8.73E-02	1.67E-06	1.29E-06	1.04E-06	8.30E-07	6.66E-07	5.35E-07
sm	4.73E-03	1.21E-06	1.20E-06	1.19E-06	1.18E-06	1.18E-06	1.17E-06
eu	1.28E-02	6.05E-03	5.76E-03	5.48E-03	5.22E-03	4.97E-03	4.74E-03
gd	4.27E-05	1.75E-07	7.32E-08	3.05E-08	1.28E-08	5.32E-09	2.22E-09
totals	1.29E+02	8.60E-01	7.18E-01	6.90E-01	6.72E-01	6.56E-01	6.42E-01

1 page 119

photon spectrum as a function of time for light elements, cladding and structural materials

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 1461.mwd, flux= 2.74E+08 n**2-sec

0 spectrum of photon release rates, photons/sec
basis = single reactor assembly

0

emean (mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
			time after discharge				
1.00E-02	5.15E+11	5.60E+04	4.48E+04	3.59E+04	2.88E+04	2.30E+04	1.85E+04
3.00E-02	1.69E+11	1.78E+04	1.43E+04	1.14E+04	9.15E+03	7.33E+03	5.87E+03
5.50E-02	1.18E+11	1.20E+04	9.64E+03	7.72E+03	6.18E+03	4.95E+03	3.97E+03
8.50E-02	6.89E+10	6.77E+03	5.42E+03	4.34E+03	3.48E+03	2.79E+03	2.23E+03
1.20E-01	4.90E+10	4.63E+03	3.71E+03	2.97E+03	2.38E+03	1.90E+03	1.53E+03
1.70E-01	5.13E+10	4.55E+03	3.64E+03	2.92E+03	2.34E+03	1.87E+03	1.50E+03
3.00E-01	5.88E+10	4.52E+03	3.62E+03	2.90E+03	2.32E+03	1.86E+03	1.49E+03
6.50E-01	2.89E+10	2.42E+05	1.94E+05	1.55E+05	1.24E+05	9.94E+04	7.96E+04
1.13E+00	4.97E+09	1.93E+05	1.54E+05	1.24E+05	9.89E+04	7.92E+04	6.35E+04

	1.58E+00	9.04E+11	4.82E-01	3.86E-01	3.09E-01	2.48E-01	1.99E-01	1.59E-01
	2.00E+00	1.79E+08	4.29E-02	3.44E-02	2.75E-02	2.20E-02	1.77E-02	1.41E-02
	2.40E+00	3.63E+07	9.62E-03	7.70E-03	6.17E-03	4.94E-03	3.96E-03	3.17E-03
	2.80E+00	2.13E+11	1.51E-04	1.21E-04	9.66E-05	7.74E-05	6.20E-05	4.96E-05
	3.25E+00	1.37E+04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	3.75E+00	1.39E+08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	4.25E+00	1.82E+06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	4.75E+00	6.17E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	5.50E+00	1.01E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0	total	2.18E+12	5.41E+05	4.33E+05	3.47E+05	2.78E+05	2.22E+05	1.78E+05
0	mev/sec	2.10E+12	3.79E+05	3.03E+05	2.43E+05	1.95E+05	1.56E+05	1.25E+05

0 spectrum of energy release rates, mev/watt-sec
basis = single reactor assembly

0

	emean		time after discharge					
	(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	1.00E-02	1.29E+06	1.40E-01	1.12E-01	8.98E-02	7.19E-02	5.76E-02	4.61E-02
	3.00E-02	1.27E+06	1.34E-01	1.07E-01	8.57E-02	6.86E-02	5.50E-02	4.40E-02
	5.50E-02	1.62E+06	1.65E-01	1.33E-01	1.06E-01	8.50E-02	6.81E-02	5.45E-02
	8.50E-02	1.46E+06	1.44E-01	1.15E-01	9.23E-02	7.39E-02	5.92E-02	4.74E-02
	1.20E-01	1.47E+06	1.39E-01	1.11E-01	8.91E-02	7.13E-02	5.71E-02	4.58E-02
	1.70E-01	2.18E+06	1.93E-01	1.55E-01	1.24E-01	9.93E-02	7.95E-02	6.37E-02
	3.00E-01	4.41E+06	3.39E-01	2.72E-01	2.18E-01	1.74E-01	1.40E-01	1.12E-01
	6.50E-01	4.70E+06	3.93E+01	3.15E+01	2.52E+01	2.02E+01	1.62E+01	1.29E+01
	1.13E+00	1.40E+06	5.42E+01	4.34E+01	3.47E+01	2.78E+01	2.23E+01	1.79E+01
	1.58E+00	3.56E+08	1.90E-04	1.52E-04	1.22E-04	9.76E-05	7.82E-05	6.26E-05
	2.00E+00	8.95E+04	2.14E-05	1.72E-05	1.38E-05	1.10E-05	8.83E-06	7.07E-06
	2.40E+00	2.18E+04	5.77E-06	4.62E-06	3.70E-06	2.96E-06	2.37E-06	1.90E-06
	2.80E+00	1.49E+08	1.05E-07	8.44E-08	6.76E-08	5.42E-08	4.34E-08	3.47E-08
	3.25E+00	1.11E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	3.75E+00	1.30E+05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	4.25E+00	1.93E+03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	4.75E+00	7.33E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	5.50E+00	1.39E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0	total	5.25E+08	9.47E+01	7.58E+01	6.07E+01	4.87E+01	3.90E+01	3.12E+01
0	gamma watts	3.37E-01	6.07E-08	4.86E-08	3.89E-08	3.12E-08	2.50E-08	2.00E-08

1 page 120

photon spectrum as a function of time for fission products

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 1461.mwd, flux= 2.74E+08 n**2-sec

0 spectrum of photon release rates, photons/sec
basis = single reactor assembly

0

	emean		time after discharge					
	(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	1.00E-02	2.60E+14	8.34E+12	6.69E+12	5.90E+12	5.46E+12	5.18E+12	5.00E+12
	3.00E-02	1.14E+14	3.62E+12	2.88E+12	2.52E+12	2.32E+12	2.20E+12	2.11E+12
	5.50E-02	6.06E+13	1.82E+12	1.43E+12	1.25E+12	1.14E+12	1.08E+12	1.04E+12
	8.50E-02	4.19E+13	1.07E+12	8.28E+11	7.08E+11	6.42E+11	6.04E+11	5.79E+11
	1.20E-01	3.43E+13	1.09E+12	7.35E+11	5.65E+11	4.79E+11	4.33E+11	4.07E+11
	1.70E-01	5.49E+13	6.90E+11	5.33E+11	4.59E+11	4.18E+11	3.94E+11	3.79E+11
	3.00E-01	1.10E+14	7.56E+11	5.80E+11	4.93E+11	4.47E+11	4.20E+11	4.02E+11
	6.50E-01	2.30E+14	8.28E+12	6.94E+12	6.69E+12	6.52E+12	6.37E+12	6.23E+12
	1.13E+00	7.79E+13	7.09E+10	5.19E+10	4.22E+10	3.69E+10	3.37E+10	3.17E+10
	1.58E+00	4.03E+13	2.54E+10	1.65E+10	1.20E+10	9.63E+09	8.34E+09	7.59E+09
	2.00E+00	1.22E+13	2.93E+10	1.41E+10	6.86E+09	3.37E+09	1.70E+09	8.95E+08
	2.40E+00	1.06E+13	6.53E+08	3.46E+08	1.85E+08	9.92E+07	5.37E+07	2.92E+07
	2.80E+00	4.22E+12	8.65E+07	4.71E+07	2.58E+07	1.42E+07	7.81E+06	4.33E+06
	3.25E+00	2.46E+12	1.11E+07	6.32E+06	3.58E+06	2.03E+06	1.15E+06	6.52E+05

	3.75E+00	1.25E+12	4.92E+03	2.79E+03	1.58E+03	8.95E+02	5.07E+02	2.88E+02
	4.25E+00	1.38E+12	2.01E-06	2.01E-06	2.02E-06	2.02E-06	2.02E-06	2.02E-06
	4.75E+00	4.04E+11	1.01E-06	1.01E-06	1.01E-06	1.01E-06	1.01E-06	1.01E-06
	5.50E+00	3.01E+11	7.50E-07	7.50E-07	7.50E-07	7.50E-07	7.50E-07	7.50E-07
0	total	1.06E+15	2.58E+13	2.07E+13	1.86E+13	1.75E+13	1.67E+13	1.62E+13
0	mev/sec	4.44E+14	6.42E+12	5.28E+12	4.98E+12	4.80E+12	4.67E+12	4.56E+12

0 spectrum of energy release rates, mev/watt-sec
basis = single reactor assembly

0

	emean		time after discharge					
	(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	1.00E-02	6.51E+08	2.09E+07	1.67E+07	1.47E+07	1.36E+07	1.30E+07	1.25E+07
	3.00E-02	8.54E+08	2.71E+07	2.16E+07	1.89E+07	1.74E+07	1.65E+07	1.59E+07
	5.50E-02	8.34E+08	2.50E+07	1.97E+07	1.71E+07	1.57E+07	1.49E+07	1.43E+07
	8.50E-02	8.90E+08	2.28E+07	1.76E+07	1.50E+07	1.37E+07	1.28E+07	1.23E+07
	1.20E-01	1.03E+09	3.26E+07	2.20E+07	1.70E+07	1.44E+07	1.30E+07	1.22E+07
	1.70E-01	2.33E+09	2.93E+07	2.27E+07	1.95E+07	1.78E+07	1.68E+07	1.61E+07
	3.00E-01	8.25E+09	5.67E+07	4.35E+07	3.70E+07	3.35E+07	3.15E+07	3.02E+07
	6.50E-01	3.73E+10	1.35E+09	1.13E+09	1.09E+09	1.06E+09	1.04E+09	1.01E+09
	1.13E+00	2.19E+10	1.99E+07	1.46E+07	1.19E+07	1.04E+07	9.48E+06	8.90E+06
	1.58E+00	1.59E+10	1.00E+07	6.48E+06	4.71E+06	3.79E+06	3.29E+06	2.99E+06
	2.00E+00	6.12E+09	1.47E+07	7.06E+06	3.43E+06	1.69E+06	8.49E+05	4.47E+05
	2.40E+00	6.34E+09	3.92E+05	2.08E+05	1.11E+05	5.95E+04	3.22E+04	1.75E+04
	2.80E+00	2.95E+09	6.05E+04	3.30E+04	1.80E+04	9.91E+03	5.47E+03	3.03E+03
	3.25E+00	2.00E+09	9.06E+03	5.13E+03	2.91E+03	1.65E+03	9.35E+02	5.30E+02
	3.75E+00	1.17E+09	4.61E+00	2.61E+00	1.48E+00	8.39E-01	4.76E-01	2.70E-01
	4.25E+00	1.47E+09	2.14E-09	2.14E-09	2.14E-09	2.14E-09	2.14E-09	2.14E-09
	4.75E+00	4.80E+08	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09
	5.50E+00	4.14E+08	1.03E-09	1.03E-09	1.03E-09	1.03E-09	1.03E-09	1.03E-09
0	total	1.11E+11	1.61E+09	1.32E+09	1.25E+09	1.20E+09	1.17E+09	1.14E+09
0	gamma watts	7.11E+01	1.03E+00	8.46E-01	7.99E-01	7.70E-01	7.48E-01	7.30E-01

1 page 121

0 principal photon sources in group 1, photons/sec
mean energy = .0100 mev. nuclides exceeding 1.0E-03 of total group release rate (5.18E+12) at 1521.9 d

nuclide			time after discharge				
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	4.64E+10	4.39E+10	4.16E+10	3.94E+10	3.74E+10	3.54E+10	3.36E+10
sr 90	7.94E+11	7.78E+11	7.62E+11	7.47E+11	7.32E+11	7.17E+11	7.02E+11
y 90	3.90E+12	3.82E+12	3.75E+12	3.67E+12	3.60E+12	3.52E+12	3.45E+12
rh106	5.24E+11	2.97E+11	1.68E+11	9.54E+10	5.41E+10	3.07E+10	1.74E+10
cs137	7.50E+11	7.35E+11	7.21E+11	7.08E+11	6.94E+11	6.81E+11	6.68E+11
ba137m	3.52E+10	3.45E+10	3.38E+10	3.32E+10	3.26E+10	3.19E+10	3.13E+10
ce144	3.53E+11	1.68E+11	8.03E+10	3.83E+10	1.83E+10	8.71E+09	4.15E+09
pr144	4.68E+12	2.23E+12	1.06E+12	5.07E+11	2.42E+11	1.15E+11	5.50E+10
pm147	8.86E+10	7.19E+10	5.77E+10	4.63E+10	3.72E+10	2.98E+10	2.39E+10

0 principal photon sources in group 2, photons/sec
mean energy = .0300 mev. nuclides exceeding 1.0E-03 of total group release rate (2.20E+12) at 1521.9 d

nuclide			time after discharge				
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.35E+10	1.28E+10	1.21E+10	1.15E+10	1.09E+10	1.03E+10	9.78E+09
sr 90	2.24E+11	2.20E+11	2.15E+11	2.11E+11	2.07E+11	2.03E+11	1.98E+11
y 90	1.27E+12	1.25E+12	1.22E+12	1.20E+12	1.17E+12	1.15E+12	1.12E+12
rh106	1.75E+11	9.92E+10	5.62E+10	3.19E+10	1.81E+10	1.02E+10	5.80E+09
sb125	1.94E+10	1.57E+10	1.27E+10	1.03E+10	8.33E+09	6.74E+09	5.45E+09
te125m	1.04E+10	8.93E+09	7.24E+09	5.86E+09	4.74E+09	3.84E+09	3.11E+09
cs137	2.09E+11	2.05E+11	2.01E+11	1.97E+11	1.93E+11	1.90E+11	1.86E+11
ba137m	6.04E+11	5.93E+11	5.81E+11	5.70E+11	5.59E+11	5.49E+11	5.38E+11
ce144	8.19E+11	3.91E+11	1.86E+11	8.89E+10	4.24E+10	2.02E+10	9.64E+09
pr144	1.55E+12	7.38E+11	3.52E+11	1.68E+11	8.00E+10	3.82E+10	1.82E+10
pm147	1.95E+10	1.58E+10	1.27E+10	1.02E+10	8.17E+09	6.56E+09	5.26E+09

eu152	1.19E+10	1.14E+10	1.09E+10	1.04E+10	1.00E+10	9.58E+09	9.17E+09

0 principal photon sources in group 3, photons/sec

mean energy = .0550 mev. nuclides exceeding 1.0E-03 of total group release rate (1.08E+12) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
			time after discharge				
kr 85	8.28E+09	7.85E+09	7.44E+09	7.05E+09	6.68E+09	6.33E+09	6.00E+09
sr 90	1.33E+11	1.30E+11	1.27E+11	1.25E+11	1.22E+11	1.20E+11	1.17E+11
y 90	8.79E+11	8.61E+11	8.44E+11	8.26E+11	8.10E+11	7.93E+11	7.77E+11
rh106	1.24E+11	7.03E+10	3.98E+10	2.26E+10	1.28E+10	7.25E+09	4.11E+09
cs137	1.22E+11	1.19E+11	1.17E+11	1.15E+11	1.13E+11	1.10E+11	1.08E+11
ce144	1.19E+11	5.65E+10	2.70E+10	1.29E+10	6.13E+09	2.93E+09	1.40E+09
pr144	1.09E+12	5.18E+11	2.47E+11	1.18E+11	5.62E+10	2.68E+10	1.28E+10
pm147	8.19E+09	6.65E+09	5.33E+09	4.28E+09	3.43E+09	2.75E+09	2.21E+09
eu152	1.03E+10	9.90E+09	9.48E+09	9.08E+09	8.69E+09	8.32E+09	7.97E+09
eu155	9.64E+09	8.52E+09	7.53E+09	6.65E+09	5.88E+09	5.20E+09	4.59E+09

1

0 principal photon sources in group 4, photons/sec

mean energy = .0850 mev. nuclides exceeding 1.0E-03 of total group release rate (6.04E+11) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
			time after discharge				
kr 85	4.15E+09	3.93E+09	3.72E+09	3.53E+09	3.34E+09	3.17E+09	3.00E+09
sr 90	6.32E+10	6.20E+10	6.07E+10	5.95E+10	5.83E+10	5.71E+10	5.59E+10
y 90	5.09E+11	4.98E+11	4.88E+11	4.78E+11	4.68E+11	4.59E+11	4.50E+11
rh106	7.37E+10	4.17E+10	2.37E+10	1.34E+10	7.60E+09	4.31E+09	2.44E+09
cs137	5.69E+10	5.58E+10	5.48E+10	5.37E+10	5.27E+10	5.17E+10	5.07E+10
ce144	1.67E+11	7.98E+10	3.81E+10	1.82E+10	8.66E+09	4.13E+09	1.97E+09
pr144	6.39E+11	3.05E+11	1.45E+11	6.93E+10	3.31E+10	1.58E+10	7.52E+09
pm147	2.33E+09	1.89E+09	1.52E+09	1.22E+09	9.77E+08	7.84E+08	6.29E+08
eu155	1.46E+10	1.29E+10	1.14E+10	1.01E+10	8.93E+09	7.89E+09	6.98E+09

0 principal photon sources in group 5, photons/sec

mean energy = .1200 mev. nuclides exceeding 1.0E-03 of total group release rate (4.33E+11) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
			time after discharge				
kr 85	2.50E+09	2.37E+09	2.24E+09	2.13E+09	2.02E+09	1.91E+09	1.81E+09
sr 90	3.60E+10	3.53E+10	3.46E+10	3.39E+10	3.32E+10	3.25E+10	3.18E+10
y 90	3.58E+11	3.51E+11	3.43E+11	3.36E+11	3.30E+11	3.23E+11	3.16E+11
rh106	5.32E+10	3.02E+10	1.71E+10	9.69E+09	5.49E+09	3.11E+09	1.76E+09
cs137	3.19E+10	3.13E+10	3.07E+10	3.01E+10	2.95E+10	2.90E+10	2.84E+10
ce144	8.21E+11	3.91E+11	1.87E+11	8.90E+10	4.25E+10	2.03E+10	9.66E+09
pr144	4.57E+11	2.18E+11	1.04E+11	4.96E+10	2.37E+10	1.13E+10	5.38E+09
eu152	8.71E+09	8.34E+09	7.98E+09	7.64E+09	7.32E+09	7.01E+09	6.71E+09
eu155	8.35E+09	7.38E+09	6.52E+09	5.77E+09	5.10E+09	4.51E+09	3.98E+09

0 principal photon sources in group 6, photons/sec

mean energy = .1700 mev. nuclides exceeding 1.0E-03 of total group release rate (3.94E+11) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
			time after discharge				
kr 85	1.99E+09	1.88E+09	1.78E+09	1.69E+09	1.60E+09	1.52E+09	1.44E+09
sr 90	2.57E+10	2.52E+10	2.46E+10	2.41E+10	2.37E+10	2.32E+10	2.27E+10
y 90	3.69E+11	3.61E+11	3.54E+11	3.47E+11	3.40E+11	3.33E+11	3.26E+11
rh106	5.70E+10	3.23E+10	1.83E+10	1.04E+10	5.89E+09	3.34E+09	1.89E+09
sb125	2.91E+09	2.36E+09	1.91E+09	1.55E+09	1.25E+09	1.01E+09	8.21E+08
cs137	2.25E+10	2.21E+10	2.17E+10	2.13E+10	2.09E+10	2.05E+10	2.01E+10
pr144	4.84E+11	2.31E+11	1.10E+11	5.25E+10	2.50E+10	1.19E+10	5.69E+09

0 principal photon sources in group 7, photons/sec

mean energy = .3000 mev. nuclides exceeding 1.0E-03 of total group release rate (4.20E+11) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
			time after discharge				
kr 85	1.20E+09	1.14E+09	1.08E+09	1.02E+09	9.67E+08	9.16E+08	8.68E+08
sr 90	1.16E+10	1.14E+10	1.12E+10	1.09E+10	1.07E+10	1.05E+10	1.03E+10
y 90	4.10E+11	4.01E+11	3.93E+11	3.85E+11	3.77E+11	3.70E+11	3.62E+11

rh106	6.88E+10	3.90E+10	2.21E+10	1.25E+10	7.10E+09	4.03E+09	2.28E+09
cs137	1.14E+10	1.12E+10	1.10E+10	1.08E+10	1.06E+10	1.04E+10	1.02E+10
pr144	5.66E+11	2.70E+11	1.29E+11	6.14E+10	2.93E+10	1.40E+10	6.66E+09
eu152	1.21E+10	1.16E+10	1.11E+10	1.06E+10	1.02E+10	9.72E+09	9.31E+09

1 page 123

0 principal photon sources in group 8, photons/sec
mean energy = .6500 mev. nuclides exceeding 1.0E-03 of total group release rate (6.37E+12) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	1.73E+11	1.70E+11	1.66E+11	1.63E+11	1.59E+11	1.56E+11	1.53E+11
rh106	2.12E+11	1.20E+11	6.83E+10	3.87E+10	2.19E+10	1.24E+10	7.05E+09
sb125	2.37E+10	1.92E+10	1.56E+10	1.26E+10	1.02E+10	8.25E+09	6.67E+09
ba137m	6.79E+12	6.66E+12	6.53E+12	6.41E+12	6.29E+12	6.17E+12	6.05E+12
pr144	3.86E+11	1.84E+11	8.79E+10	4.19E+10	2.00E+10	9.54E+09	4.55E+09
eu152	8.52E+09	8.16E+09	7.81E+09	7.48E+09	7.16E+09	6.86E+09	6.57E+09

0 principal photon sources in group 9, photons/sec
mean energy = 1.1250 mev. nuclides exceeding 1.0E-03 of total group release rate (3.37E+10) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	2.26E+10	2.21E+10	2.17E+10	2.12E+10	2.08E+10	2.04E+10	2.00E+10
rh106	1.98E+10	1.12E+10	6.36E+09	3.60E+09	2.04E+09	1.16E+09	6.56E+08
cs134	2.54E+08	1.92E+08	1.45E+08	1.10E+08	8.28E+07	6.26E+07	4.73E+07
pr144	4.94E+10	2.36E+10	1.12E+10	5.36E+09	2.56E+09	1.22E+09	5.82E+08
eu152	1.27E+10	1.21E+10	1.16E+10	1.11E+10	1.06E+10	1.02E+10	9.75E+09
eu154	9.34E+08	8.73E+08	8.16E+08	7.63E+08	7.14E+08	6.67E+08	6.24E+08

0 principal photon sources in group 10, photons/sec
mean energy = 1.5750 mev. nuclides exceeding 1.0E-03 of total group release rate (8.34E+09) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	2.88E+09	2.82E+09	2.77E+09	2.71E+09	2.66E+09	2.60E+09	2.55E+09
rh106	3.73E+09	2.12E+09	1.20E+09	6.80E+08	3.85E+08	2.18E+08	1.24E+08
cs134	2.40E+08	1.81E+08	1.37E+08	1.03E+08	7.82E+07	5.91E+07	4.46E+07
pr144	3.08E+10	1.47E+10	7.00E+09	3.34E+09	1.59E+09	7.59E+08	3.62E+08
eu152	5.81E+09	5.57E+09	5.33E+09	5.10E+09	4.89E+09	4.68E+09	4.48E+09
eu154	3.38E+07	3.16E+07	2.95E+07	2.76E+07	2.58E+07	2.41E+07	2.26E+07

0 principal photon sources in group 11, photons/sec
mean energy = 2.0000 mev. nuclides exceeding 1.0E-03 of total group release rate (1.70E+09) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	1.72E+08	1.69E+08	1.65E+08	1.62E+08	1.59E+08	1.56E+08	1.52E+08
rh106	1.21E+09	6.88E+08	3.90E+08	2.21E+08	1.25E+08	7.10E+07	4.02E+07
pr144	5.97E+10	2.85E+10	1.36E+10	6.47E+09	3.09E+09	1.47E+09	7.02E+08

1 page 124

0 principal photon sources in group 12, photons/sec
mean energy = 2.4000 mev. nuclides exceeding 1.0E-03 of total group release rate (5.37E+07) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	1.01E+05	9.86E+04	9.66E+04	9.46E+04	9.27E+04	9.08E+04	8.90E+04
rh106	6.78E+08	3.84E+08	2.18E+08	1.23E+08	7.00E+07	3.97E+07	2.25E+07
pr144	5.64E+08	2.69E+08	1.28E+08	6.12E+07	2.92E+07	1.39E+07	6.63E+06

0 principal photon sources in group 13, photons/sec
mean energy = 2.8000 mev. nuclides exceeding 1.0E-03 of total group release rate (7.81E+06) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
rh106	1.14E+08	6.48E+07	3.68E+07	2.08E+07	1.18E+07	6.69E+06	3.79E+06
pr144	4.54E+07	2.17E+07	1.03E+07	4.93E+06	2.35E+06	1.12E+06	5.34E+05

0 principal photon sources in group 14, photons/sec
mean energy = 3.2500 mev. nuclides exceeding 1.0E-03 of total group release rate (1.15E+06) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d

```
     rh106   1.97E+07  1.11E+07  6.32E+06  3.58E+06  2.03E+06  1.15E+06  6.52E+05
0                    principal photon sources in group 15, photons/sec
       mean energy = 3.7500 mev.  nuclides exceeding  1.0E-03 of total group release rate (5.07E+02) at  1521.9 d
    nuclide                                          time after discharge
              initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
     rh106   8.67E+03  4.92E+03  2.79E+03  1.58E+03  8.95E+02  5.07E+02  2.88E+02
0                    principal photon sources in group 16, photons/sec
       mean energy = 4.2500 mev.  nuclides exceeding  1.0E-03 of total group release rate (2.02E-06) at  1521.9 d
    nuclide                                          time after discharge
              initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
     ce142   1.46E-06  1.46E-06  1.46E-06  1.46E-06  1.46E-06  1.46E-06  1.46E-06
     sm147   5.56E-07  5.57E-07  5.57E-07  5.57E-07  5.57E-07  5.58E-07  5.58E-07
0                    principal photon sources in group 17, photons/sec
       mean energy = 4.7500 mev.  nuclides exceeding  1.0E-03 of total group release rate (1.01E-06) at  1521.9 d
    nuclide                                          time after discharge
              initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
     ce142   7.31E-07  7.31E-07  7.31E-07  7.31E-07  7.31E-07  7.31E-07  7.31E-07
     sm147   2.79E-07  2.79E-07  2.79E-07  2.79E-07  2.80E-07  2.80E-07  2.80E-07
1                                                                                    page 125
0                    principal photon sources in group 18, photons/sec
       mean energy = 5.5000 mev.  nuclides exceeding  1.0E-03 of total group release rate (7.50E-07) at  1521.9 d
    nuclide                                          time after discharge
              initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
     ce142   5.42E-07  5.42E-07  5.42E-07  5.42E-07  5.42E-07  5.42E-07  5.42E-07
     sm147   2.07E-07  2.07E-07  2.07E-07  2.07E-07  2.07E-07  2.07E-07  2.07E-07
1                                                                                    page 126
               photon spectrum as a function of time for heavy metals and their daughters

0                          sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
                                power=     .00 mw, burnup=   1461.mwd, flux= 2.74E+08 n**2-sec
0                                    actinide photon release rates, photons/sec
                                   basis = single reactor assembly
0
             emean                                  time after discharge
             (mev)      initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
           1.00E-02  1.34E+14  1.26E+12  1.25E+12  1.25E+12  1.25E+12  1.24E+12  1.24E+12
           3.00E-02  8.46E+12  4.66E+10  4.66E+10  4.66E+10  4.66E+10  4.66E+10  4.66E+10
           5.50E-02  1.09E+13  2.33E+10  2.33E+10  2.33E+10  2.33E+10  2.33E+10  2.33E+10
           8.50E-02  5.26E+13  1.51E+11  1.51E+11  1.51E+11  1.51E+11  1.51E+11  1.51E+11
           1.20E-01  5.43E+13  2.93E+10  2.93E+10  2.93E+10  2.93E+10  2.93E+10  2.93E+10
           1.70E-01  1.72E+12  1.91E+10  1.91E+10  1.91E+10  1.91E+10  1.91E+10  1.91E+10
           3.00E-01  2.87E+13  1.31E+11  1.31E+11  1.31E+11  1.31E+11  1.31E+11  1.31E+11
           6.50E-01  1.45E+12  6.89E+09  6.89E+09  6.89E+09  6.90E+09  6.90E+09  6.90E+09
           1.13E+00  1.85E+12  1.17E+09  1.17E+09  1.17E+09  1.18E+09  1.18E+09  1.18E+09
           1.58E+00  4.03E+08  4.03E+08  4.04E+08  4.04E+08  4.05E+08  4.05E+08  4.06E+08
           2.00E+00  9.82E+07  9.83E+07  9.84E+07  9.85E+07  9.86E+07  9.87E+07  9.88E+07
           2.40E+00  3.66E+07  3.66E+07  3.67E+07  3.67E+07  3.68E+07  3.68E+07  3.69E+07
           2.80E+00  1.69E+07  1.69E+07  1.68E+07  1.66E+07  1.65E+07  1.64E+07  1.63E+07
           3.25E+00  3.04E+05  3.04E+05  3.05E+05  3.05E+05  3.06E+05  3.06E+05  3.07E+05
           3.75E+00  7.19E+03  7.18E+03  7.18E+03  7.17E+03  7.16E+03  7.16E+03  7.15E+03
           4.25E+00  4.13E+03  4.13E+03  4.13E+03  4.12E+03  4.12E+03  4.12E+03  4.11E+03
           4.75E+00  2.38E+03  2.38E+03  2.38E+03  2.37E+03  2.37E+03  2.37E+03  2.37E+03
           5.50E+00  2.14E+03  2.13E+03  2.13E+03  2.13E+03  2.13E+03  2.13E+03  2.13E+03
0             total  2.94E+14  1.67E+12  1.66E+12  1.66E+12  1.66E+12  1.65E+12  1.65E+12
0            mev/sec  2.51E+13  8.10E+10  8.10E+10  8.09E+10  8.09E+10  8.09E+10  8.08E+10
0                                 actinide energy release rates, mev/watt-sec
                                   basis = single reactor assembly
0
             emean                                  time after discharge
             (mev)      initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
```

	1.00E-02	3.35E+08	3.14E+06	3.14E+06	3.13E+06	3.12E+06	3.11E+06	3.10E+06
	3.00E-02	6.34E+07	3.50E+05	3.50E+05	3.50E+05	3.50E+05	3.50E+05	3.50E+05
	5.50E-02	1.50E+08	3.20E+05	3.20E+05	3.20E+05	3.20E+05	3.20E+05	3.20E+05
	8.50E-02	1.12E+09	3.21E+06	3.21E+06	3.21E+06	3.21E+06	3.21E+06	3.21E+06
	1.20E-01	1.63E+09	8.80E+05	8.80E+05	8.80E+05	8.80E+05	8.80E+05	8.80E+05
	1.70E-01	7.31E+07	8.10E+05	8.10E+05	8.10E+05	8.10E+05	8.10E+05	8.10E+05
	3.00E-01	2.15E+09	9.84E+06	9.84E+06	9.84E+06	9.84E+06	9.84E+06	9.84E+06
	6.50E-01	2.36E+08	1.12E+06	1.12E+06	1.12E+06	1.12E+06	1.12E+06	1.12E+06
	1.13E+00	5.22E+08	3.30E+05	3.30E+05	3.30E+05	3.30E+05	3.31E+05	3.31E+05
	1.58E+00	1.59E+05	1.59E+05	1.59E+05	1.59E+05	1.59E+05	1.60E+05	1.60E+05
	2.00E+00	4.91E+04	4.91E+04	4.92E+04	4.92E+04	4.93E+04	4.93E+04	4.94E+04
	2.40E+00	2.19E+04	2.20E+04	2.20E+04	2.20E+04	2.21E+04	2.21E+04	2.21E+04
	2.80E+00	1.18E+04	1.18E+04	1.17E+04	1.17E+04	1.16E+04	1.15E+04	1.14E+04
	3.25E+00	2.47E+02	2.47E+02	2.48E+02	2.48E+02	2.48E+02	2.49E+02	2.49E+02
	3.75E+00	6.74E+00	6.73E+00	6.73E+00	6.72E+00	6.72E+00	6.71E+00	6.71E+00
	4.25E+00	4.39E+00	4.39E+00	4.38E+00	4.38E+00	4.38E+00	4.37E+00	4.37E+00
	4.75E+00	2.83E+00	2.82E+00	2.82E+00	2.82E+00	2.82E+00	2.81E+00	2.81E+00
	5.50E+00	2.94E+00	2.93E+00	2.93E+00	2.93E+00	2.93E+00	2.93E+00	2.92E+00
0	total	6.28E+09	2.02E+07	2.02E+07	2.02E+07	2.02E+07	2.02E+07	2.02E+07
0	gamma watts	4.02E+00	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02

1 page 127

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pb210	5.20E-08	5.21E-08	5.22E-08	5.23E-08	5.23E-08	5.24E-08	5.25E-08
bi210	1.33E-05	1.33E-05	1.33E-05	1.33E-05	1.34E-05	1.34E-05	1.34E-05
bi211	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.22E+01	1.22E+01	1.22E+01
bi212	5.57E-01	5.56E-01	5.52E-01	5.48E-01	5.44E-01	5.40E-01	5.36E-01
bi213	3.02E-02	3.02E-02	3.03E-02	3.03E-02	3.04E-02	3.04E-02	3.05E-02
bi214	6.40E-03	6.41E-03	6.42E-03	6.43E-03	6.44E-03	6.45E-03	6.46E-03
po210	1.63E+01	1.62E+01	1.62E+01	1.62E+01	1.62E+01	1.62E+01	1.63E+01
po211	4.79E-02	4.80E-02	4.80E-02	4.81E-02	4.81E-02	4.82E-02	4.82E-02
po212	2.85E+00	2.85E+00	2.83E+00	2.81E+00	2.79E+00	2.77E+00	2.75E+00
po213	3.98E+00	3.99E+00	3.99E+00	4.00E+00	4.01E+00	4.01E+00	4.02E+00
po214	5.70E+01	5.71E+01	5.72E+01	5.73E+01	5.74E+01	5.74E+01	5.75E+01
po215	1.71E+01	1.71E+01	1.71E+01	1.72E+01	1.72E+01	1.72E+01	1.72E+01
po216	2.23E+00	2.22E+00	2.21E+00	2.19E+00	2.17E+00	2.16E+00	2.14E+00
po218	2.71E+01	2.72E+01	2.72E+01	2.72E+01	2.73E+01	2.73E+01	2.74E+01
at217	2.58E+00	2.58E+00	2.59E+00	2.59E+00	2.60E+00	2.60E+00	2.60E+00
rn218	4.01E-11	1.58E-15	6.20E-20	2.44E-24	.00E+00	.00E+00	.00E+00
rn219	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.37E+01	1.37E+01	1.37E+01
rn220	1.76E+00	1.76E+00	1.75E+00	1.73E+00	1.72E+00	1.71E+00	1.70E+00
rn222	1.98E+01	1.98E+01	1.99E+01	1.99E+01	1.99E+01	2.00E+01	2.00E+01
fr221	1.88E+00	1.89E+00	1.89E+00	1.89E+00	1.89E+00	1.90E+00	1.90E+00
fr223	5.15E-06	5.15E-06	5.16E-06	5.16E-06	5.16E-06	5.17E-06	5.17E-06
ra222	3.10E-11	1.22E-15	4.80E-20	1.89E-24	7.16E-29	.00E+00	.00E+00
ra223	7.87E+00	7.89E+00	7.89E+00	7.90E+00	7.91E+00	7.91E+00	7.92E+00
ra224	1.25E+00	1.24E+00	1.24E+00	1.23E+00	1.22E+00	1.21E+00	1.20E+00
ra226	1.16E+01	1.16E+01	1.16E+01	1.16E+01	1.17E+01	1.17E+01	1.17E+01
ac225	1.35E+00	1.36E+00	1.36E+00	1.36E+00	1.36E+00	1.36E+00	1.37E+00
ac227	5.79E-02	5.80E-02	5.80E-02	5.81E-02	5.81E-02	5.82E-02	5.82E-02
ac228	2.28E-12	2.29E-12	2.29E-12	2.29E-12	2.29E-12	2.29E-12	2.29E-12
th226	2.80E-11	1.10E-15	4.33E-20	1.70E-24	6.46E-29	.00E+00	.00E+00
th227	8.68E+00	8.70E+00	8.71E+00	8.72E+00	8.72E+00	8.73E+00	8.74E+00
th228	1.05E+00	1.04E+00	1.04E+00	1.03E+00	1.02E+00	1.02E+00	1.01E+00

th229	7.91E-01	7.92E-01	7.93E-01	7.94E-01	7.96E-01	7.97E-01	7.98E-01
th230	5.67E+01	5.68E+01	5.68E+01	5.69E+01	5.69E+01	5.70E+01	5.70E+01
th232	2.93E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.95E-05	2.95E-05
pa231	4.77E+00	4.78E+00	4.78E+00	4.78E+00	4.79E+00	4.79E+00	4.80E+00
u230	2.20E-11	8.67E-16	3.41E-20	1.34E-24	5.09E-29	.00E+00	.00E+00
u231	1.48E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	9.60E-01	9.53E-01	9.46E-01	9.39E-01	9.31E-01	9.24E-01	9.17E-01
u233	1.61E+01	1.61E+01	1.61E+01	1.61E+01	1.62E+01	1.62E+01	1.62E+01
u234	6.71E+03	6.71E+03	6.71E+03	6.71E+03	6.71E+03	6.71E+03	6.71E+03
u235	1.36E+02	1.36E+02	1.36E+02	1.36E+02	1.36E+02	1.36E+02	1.36E+02
u236	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03
u238	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02
np235	2.42E-08	1.42E-08	8.34E-09	4.90E-09	2.87E-09	1.69E-09	9.91E-10
np237	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03
pu236	1.42E-01	1.16E-01	9.53E-02	7.81E-02	6.40E-02	5.25E-02	4.30E-02
pu237	2.62E-08	2.45E-10	2.30E-12	2.15E-14	2.02E-16	1.89E-18	1.77E-20
pu238	8.27E+04	8.22E+04	8.16E+04	8.11E+04	8.06E+04	8.00E+04	7.95E+04

1 page 128

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pu239	4.87E+04	4.87E+04	4.87E+04	4.87E+04	4.87E+04	4.87E+04	4.87E+04
pu240	8.55E+02	8.55E+02	8.55E+02	8.54E+02	8.54E+02	8.54E+02	8.54E+02
pu241	2.99E-03	2.87E-03	2.75E-03	2.65E-03	2.54E-03	2.44E-03	2.35E-03
pu242	4.87E-05	4.87E-05	4.88E-05	4.88E-05	4.88E-05	4.88E-05	4.88E-05
am239	7.58E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	1.19E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	7.23E+01	7.25E+01	7.26E+01	7.28E+01	7.29E+01	7.30E+01	7.31E+01
am242m	2.57E-04	2.56E-04	2.55E-04	2.54E-04	2.53E-04	2.52E-04	2.51E-04
am243	8.95E-06	8.95E-06	8.95E-06	8.95E-06	8.95E-06	8.95E-06	8.95E-06
cm241	1.02E-14	1.64E-17	2.64E-20	4.25E-23	6.84E-26	1.10E-28	2.56E-31
cm242	7.70E-01	2.69E-01	1.31E-01	9.30E-02	8.23E-02	7.92E-02	7.81E-02
cm243	4.01E-09	3.93E-09	3.85E-09	3.77E-09	3.70E-09	3.62E-09	3.55E-09
cm244	5.50E-07	5.32E-07	5.16E-07	4.99E-07	4.84E-07	4.68E-07	4.54E-07
cm245	1.73E-13	1.73E-13	1.73E-13	1.73E-13	1.73E-13	1.73E-13	1.73E-13
cm246	2.57E-16	2.57E-16	2.57E-16	2.57E-16	2.57E-16	2.57E-16	2.57E-16
cm247	7.78E-25	7.78E-25	7.78E-25	7.78E-25	7.78E-25	7.78E-25	7.78E-25
cm248	5.24E-27	5.24E-27	5.24E-27	5.24E-27	5.24E-27	5.24E-27	5.24E-27
bk249	8.93E-33	4.73E-33	2.36E-33	1.31E-33	5.25E-34	2.63E-34	2.63E-34
cf249	1.51E-28	1.51E-28	1.51E-28	1.51E-28	1.51E-28	1.51E-28	1.51E-28
0 total	1.45E+05	1.44E+05	1.44E+05	1.43E+05	1.43E+05	1.42E+05	1.41E+05

1 page 129

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
th230	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03
pa231	5.98E-04	5.99E-04	5.99E-04	6.00E-04	6.00E-04	6.01E-04	6.01E-04
u232	5.90E-05	5.85E-05	5.81E-05	5.77E-05	5.72E-05	5.68E-05	5.63E-05
u234	1.44E+01	1.44E+01	1.44E+01	1.44E+01	1.44E+01	1.44E+01	1.44E+01
u235	1.66E+00	1.66E+00	1.66E+00	1.66E+00	1.66E+00	1.66E+00	1.66E+00

u236	1.58E+02	1.58E+02	1.58E+02	1.58E+02	1.58E+02	1.58E+02	1.58E+02
u237	1.22E-09	1.05E-16	1.01E-16	9.69E-17	9.31E-17	8.94E-17	8.59E-17
u238	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05
u239	9.66E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	7.33E-09	7.33E-09	7.33E-09	7.33E-09	7.33E-09	7.33E-09	7.33E-09
np238	2.01E-08	7.51E-17	7.48E-17	7.45E-17	7.42E-17	7.39E-17	7.36E-17
np239	1.98E-05	9.28E-17	9.28E-17	9.28E-17	9.28E-17	9.28E-17	9.28E-17
pu236	9.60E-03	7.87E-03	6.45E-03	5.29E-03	4.33E-03	3.55E-03	2.91E-03
pu238	1.53E+04	1.52E+04	1.51E+04	1.50E+04	1.49E+04	1.48E+04	1.47E+04
pu239	2.61E+01	2.61E+01	2.61E+01	2.61E+01	2.61E+01	2.61E+01	2.61E+01
pu240	5.68E+03	5.68E+03	5.68E+03	5.68E+03	5.68E+03	5.68E+03	5.68E+03
pu241	1.07E-04	1.03E-04	9.91E-05	9.52E-05	9.15E-05	8.78E-05	8.44E-05
pu242	3.80E-02	3.80E-02	3.80E-02	3.80E-02	3.80E-02	3.80E-02	3.80E-02
pu243	3.08E-15	3.36E-35	3.36E-35	3.36E-35	3.36E-35	3.36E-35	3.36E-35
pu244	7.37E-28	7.43E-28	7.49E-28	7.55E-28	7.61E-28	7.67E-28	7.73E-28
am241	2.78E-02	2.79E-02	2.80E-02	2.80E-02	2.81E-02	2.81E-02	2.81E-02
am242m	1.22E-03	1.22E-03	1.21E-03	1.21E-03	1.20E-03	1.20E-03	1.19E-03
am242	1.28E-05	1.32E-06	1.31E-06	1.31E-06	1.30E-06	1.30E-06	1.29E-06
am243	4.12E-08	4.12E-08	4.12E-08	4.12E-08	4.12E-08	4.12E-08	4.12E-08
am244	8.31E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm242	3.85E+00	1.35E+00	6.55E-01	4.64E-01	4.11E-01	3.95E-01	3.90E-01
cm243	8.71E-11	8.53E-11	8.36E-11	8.19E-11	8.03E-11	7.87E-11	7.71E-11
cm244	7.17E-05	6.94E-05	6.73E-05	6.51E-05	6.31E-05	6.11E-05	5.92E-05
cm245	4.69E-14	4.69E-14	4.69E-14	4.69E-14	4.69E-14	4.69E-14	4.69E-14
cm246	9.25E-12	9.25E-12	9.25E-12	9.25E-12	9.25E-12	9.25E-12	9.25E-12
cm248	8.59E-20	8.59E-20	8.59E-20	8.59E-20	8.59E-20	8.59E-20	8.59E-20
bk249	4.92E-29	2.55E-29	1.32E-29	6.81E-30	3.52E-30	1.82E-30	9.42E-31
cf249	8.82E-29	8.87E-29	8.89E-29	8.89E-29	8.88E-29	8.87E-29	8.86E-29
cf250	3.95E-26	3.78E-26	3.62E-26	3.46E-26	3.31E-26	3.17E-26	3.03E-26
cf252	4.08E-30	3.26E-30	2.45E-30	1.63E-30	1.63E-30	1.63E-30	1.63E-30
0 total	1.38E+05	1.38E+05	1.38E+05	1.38E+05	1.38E+05	1.38E+05	1.38E+05
0 total	2.83E+05	2.83E+05	2.82E+05	2.81E+05	2.81E+05	2.80E+05	2.79E+05

1 page 130

alpha-n neutron source spectrum as a function of time
(using reaction spectra for uranium dioxide)

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
2	3.00E+00 - 6.43E+00	2.801E+04	2.791E+04	2.780E+04	2.770E+04	2.759E+04	2.749E+04	2.739E+04
3	1.85E+00 - 3.00E+00	7.935E+04	7.905E+04	7.875E+04	7.846E+04	7.817E+04	7.788E+04	7.759E+04
4	1.40E+00 - 1.85E+00	2.131E+04	2.123E+04	2.115E+04	2.107E+04	2.099E+04	2.092E+04	2.084E+04
5	9.00E-01 - 1.40E+00	1.199E+04	1.194E+04	1.190E+04	1.185E+04	1.181E+04	1.177E+04	1.172E+04
6	4.00E-01 - 9.00E-01	3.482E+03	3.469E+03	3.456E+03	3.443E+03	3.430E+03	3.418E+03	3.405E+03
7	1.00E-01 - 4.00E-01	5.442E+02	5.422E+02	5.401E+02	5.381E+02	5.361E+02	5.341E+02	5.321E+02
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00

18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		1.447E+05	1.441E+05	1.436E+05	1.431E+05	1.425E+05	1.420E+05	1.415E+05

1 page 131

spontaneous fission neutron source spectrum as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	2.645E+03	2.643E+03	2.641E+03	2.639E+03	2.637E+03	2.635E+03	2.634E+03
2	3.00E+00 - 6.43E+00	2.899E+04	2.897E+04	2.895E+04	2.893E+04	2.891E+04	2.889E+04	2.887E+04
3	1.85E+00 - 3.00E+00	3.159E+04	3.157E+04	3.155E+04	3.152E+04	3.150E+04	3.148E+04	3.146E+04
4	1.40E+00 - 1.85E+00	1.790E+04	1.789E+04	1.788E+04	1.786E+04	1.785E+04	1.784E+04	1.783E+04
5	9.00E-01 - 1.40E+00	2.457E+04	2.455E+04	2.454E+04	2.452E+04	2.450E+04	2.448E+04	2.447E+04
6	4.00E-01 - 9.00E-01	2.738E+04	2.736E+04	2.734E+04	2.732E+04	2.730E+04	2.728E+04	2.726E+04
7	1.00E-01 - 4.00E-01	5.406E+03	5.402E+03	5.398E+03	5.394E+03	5.390E+03	5.386E+03	5.382E+03
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		1.385E+05	1.384E+05	1.383E+05	1.382E+05	1.381E+05	1.380E+05	1.379E+05

1 page 132

total (alpha-n plus spon. fission) neutron source spectrum as a function of time
(using reaction spectra for uranium dioxide)

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	2.645E+03	2.643E+03	2.641E+03	2.639E+03	2.637E+03	2.635E+03	2.634E+03
2	3.00E+00 - 6.43E+00	5.700E+04	5.687E+04	5.675E+04	5.662E+04	5.650E+04	5.638E+04	5.625E+04

3	1.85E+00 - 3.00E+00	1.109E+05	1.106E+05	1.103E+05	1.100E+05	1.097E+05	1.094E+05	1.090E+05
4	1.40E+00 - 1.85E+00	3.921E+04	3.912E+04	3.903E+04	3.894E+04	3.885E+04	3.875E+04	3.866E+04
5	9.00E-01 - 1.40E+00	3.656E+04	3.650E+04	3.643E+04	3.637E+04	3.631E+04	3.625E+04	3.619E+04
6	4.00E-01 - 9.00E-01	3.086E+04	3.083E+04	3.080E+04	3.076E+04	3.073E+04	3.070E+04	3.067E+04
7	1.00E-01 - 4.00E-01	5.950E+03	5.944E+03	5.938E+03	5.932E+03	5.926E+03	5.920E+03	5.915E+03
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		2.832E+05	2.825E+05	2.819E+05	2.812E+05	2.806E+05	2.800E+05	2.794E+05

1

1 * gamma sources determined *

0case applies the following photon data base
master photon library
in binary mode

0 the sources include photons of nuclides for...

light elements
actinides
fission products

1 gamma source spectrum for gamma lines (sas2)

0 1826.25 day time of the requested nuclides

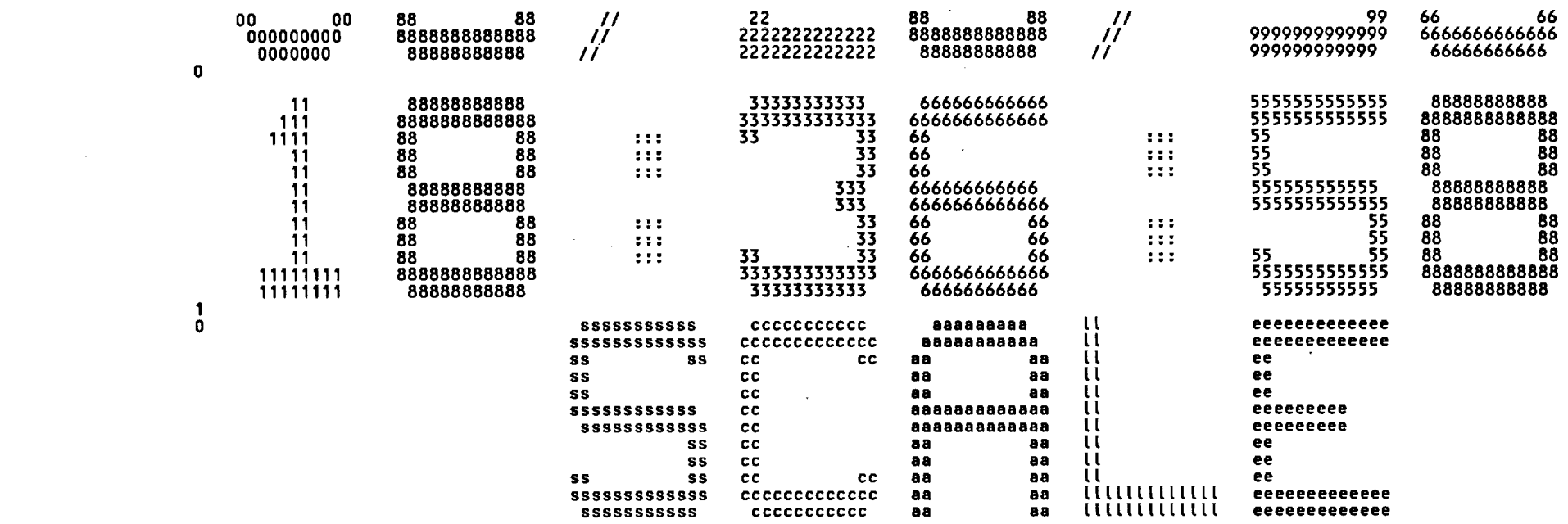
0	energy interval in mev		photons / second	mev / second
0	1.0000E-02 to	5.0000E-02	4.2926E+12	1.2878E+11
	5.0000E-02 to	1.0000E-01	1.2905E+12	9.6789E+10
	1.0000E-01 to	2.0000E-01	7.9924E+11	1.1989E+11
	2.0000E-01 to	3.0000E-01	2.5376E+11	6.3439E+10
	3.0000E-01 to	4.0000E-01	2.7579E+11	9.6525E+10
	4.0000E-01 to	6.0000E-01	1.3287E+11	6.6435E+10
	6.0000E-01 to	8.0000E-01	5.6825E+12	3.9777E+12
	8.0000E-01 to	1.0000E+00	2.8643E+10	2.5779E+10
	1.0000E+00 to	1.3300E+00	2.0943E+10	2.4399E+10
	1.3300E+00 to	1.6600E+00	7.7815E+09	1.1633E+10
	1.6600E+00 to	2.0000E+00	7.8011E+08	1.4276E+09
	2.0000E+00 to	2.5000E+00	7.4369E+08	1.6733E+09
	2.5000E+00 to	3.0000E+00	2.1896E+07	6.0214E+07
	3.0000E+00 to	4.0000E+00	8.9081E+05	3.1178E+06
	4.0000E+00 to	5.0000E+00	6.3857E+03	2.8736E+04
	5.0000E+00 to	6.5000E+00	2.5277E+03	1.4534E+04
	6.5000E+00 to	8.0000E+00	4.8968E+02	3.5502E+03
	8.0000E+00 to	1.0000E+01	1.0307E+02	9.2764E+02
0	totals		1.2786E+13	4.6146E+12

0

```
0                    total energy from nuclides with spectrum data     =   4.6146E+12
0                    total energy from nuclides with no spectrum data  =   7.5490E+05
1
0  .results on logical unit no. 71, position  2, for time step  6, subcase12. (run position 1, case position 2)
   title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
0     .terminated logical unit no. 71 with zero flag record.
1  * normal termination of execution *
```

```
1          primary module access and input record ( scale driver - 95/03/29 - 09:06:37 )
-    module sas2h     will be called
       SAS2H: Far-Field Crit based on B&W 15x15, 3.00wt%, 20gwd/mtu 40% H2O/ 8% UO2
       44group    latticecell
       '
       '  mixtures of tuff infinite slabs:
       arbm-ftuff  2.6344 14 0 0 0 1001 1.055 8016 40.755 11023 0.570 12000 0.354
                              13027 4.434 14000 20.193 19000 1.370 20000 1.439
                              26000 0.494 92235 0.567 92234 0.007 92236 0.136
                              92238 28.593 93237 0.033 1 1.0 538   end
       kr-83      1 0 1-20 538 end
       kr-85      1 0 1-20 538 end
       sr-90      1 0 1-20 538 end
        y-89      1 0 1-20 538 end
       mo-95      1 0 1-20 538 end
       zr-93      1 0 1-20 538 end
       zr-94      1 0 1-20 538 end
       zr-95      1 0 1-20 538 end
       nb-94      1 0 1-20 538 end
       tc-99      1 0 1-20 538 end
       rh-103     1 0 1-20 538 end
       rh-105     1 0 1-20 538 end
       ru-101     1 0 1-20 538 end
       ru-106     1 0 1-20 538 end
       pd-105     1 0 1-20 538 end
       pd-108     1 0 1-20 538 end
       ag-109     1 0 1-20 538 end
       sb-124     1 0 1-20 538 end
       xe-131     1 0 1-20 538 end
       xe-132     1 0 1-20 538 end
       xe-135     1 0 1-20 538 end
       xe-136     1 0 1-20 538 end
       cs-134     1 0 1-20 538 end
       cs-135     1 0 1-20 538 end
       cs-137     1 0 1-20 538 end
       ba-136     1 0 1-20 538 end
       la-139     1 0 1-20 538 end
       pr-141     1 0 1-20 538 end
       pr-143     1 0 1-20 538 end
       ce-144     1 0 1-20 538 end
       nd-143     1 0 1-20 538 end
       nd-145     1 0 1-20 538 end
       pm-147     1 0 1-20 538 end
       pm-148     1 0 1-20 538 end
       nd-147     1 0 1-20 538 end
       sm-147     1 0 1-20 538 end
       sm-149     1 0 1-20 538 end
       sm-150     1 0 1-20 538 end
       sm-151     1 0 1-20 538 end
       sm-152     1 0 1-20 538 end
       gd-155     1 0 1-20 538 end
       eu-153     1 0 1-20 538 end
       eu-154     1 0 1-20 538 end
       eu-155     1 0 1-20 538 end
       arbm-tuff1  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                              13027 6.130 14000 27.919 19000 1.894 20000 1.989
                              26000 0.683 2 1.0 323.   end
       arbm-tuff2  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                              13027 6.130 14000 27.919 19000 1.894 20000 1.989
                              26000 0.683 3 1.0 323.   end
```

```
'
' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
end comp
'
' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
'
'  fuel-pin-cell geometry:
'
symmslabcell  340.  280. 1 3 281. 2 end
'
' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
'
'
'  assembly and cycle parameters:
'
npin/assm=1 fuelngth=280. ncycles=5 nlib/cyc=1 volfueltot=1.1494E7
printlevel=6 inplevel=0 end
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=1.82625e3
   end
1  ooooooooooo    rrrrrrrrrrrr    iiiiiiiiiiii     gggggggggg    eeeeeeeeeeeee   nn          nn   sssssssssss
   oooooooooooo   rrrrrrrrrrrrr   iiiiiiiiiiii    gggggggggggg   eeeeeeeeeeeee   nnn         nn  ssssssssssssss
   oo         oo   rr         rr        ii         gg         gg   ee              nnnn        nn  ss         ss
   oo         oo   rr         rr        ii         gg              ee              nn nn       nn  ss
   oo         oo   rr         rr        ii         gg              ee              nn   nn     nn  ss
   oo         oo   rrrrrrrrrrrrr        ii         gg    gggggg    eeeeeeeee       nn    nn    nn  ssssssssssss
   oo         oo   rrrrrrrrrrrr         ii         gg    gggggg    eeeeeeeee       nn     nn   nn   ssssssssssss
   oo         oo   rr       rr          ii         gg         gg   ee              nn      nn  nn             ss
   oo         oo   rr        rr         ii         gg         gg   ee              nn       nn nn             ss
   oo         oo   rr         rr        ii         gg         gg   ee              nn        nnnn  ss         ss
   oooooooooooo   rr          rr  iiiiiiiiiiii    gggggggggggg   eeeeeeeeeeeee   nn         nnn  ssssssssssssss
    ooooooooooo   rr          rr  iiiiiiiiiiii     gggggggggg    eeeeeeeeeeeee   nn          nn   sssssssssss
0

   dddddddddddd      aaaaaaaaa     vv          vv  iiiiiiiiiiii     sssssssssss
   dddddddddddd    aaaaaaaaaaa    vv          vv  iiiiiiiiiiii    ssssssssssssss
   dd         dd   aa         aa   vv          vv       ii         ss         ss
   dd         dd   aa         aa   vv          vv       ii         ss
   dd         dd   aa         aa   vv          vv       ii         ss
   dd         dd   aaaaaaaaaaaaa   vv          vv       ii         ssssssssssss
   dd         dd   aaaaaaaaaaaaa    vv        vv        ii          ssssssssssss
   dd         dd   aa         aa      vv     vv         ii                   ss
   dd         dd   aa         aa       vv   vv          ii                   ss
   dd         dd   aa         aa        vv vv           ii         ss         ss
   dddddddddddd   aa         aa         vvv       iiiiiiiiiiii    ssssssssssssss
   dddddddddddd   aa         aa          v        iiiiiiiiiiii     sssssssssss
0

     0000000      88888888888              //   22222222222     88888888888              //   99999999999    666666666666
    000000000    8888888888888            //   2222222222222   8888888888888            //   9999999999999  6666666666666
   00       00   88         88            //   22         22   88         88            //   99         99  66
   00        00  88         88           //                22   88         88           //   99         99  66
   00        00  88         88          //                 22   88         88          //   99         99  66
   00        00   88888888888          //               22     88888888888          //   9999999999999  666666666666
   00        00   88888888888         //              22       88888888888         //    999999999999  6666666666666
   00        00  88         88       //             22        88         88       //                 99  66         66
   00        00  88         88      //            22          88         88      //                 99  66         66
```




```
**********************************************************************************
**********************************************************************************
**********************************************************************************
*****                                                                        *****
*****                  program verification information                   *****
*****                                                                        *****
*****                 code system:    scale  version:    4.3              *****
*****                                                                        *****
**********************************************************************************
**********************************************************************************
*****                                                                        *****
*****                                                                        *****
*****              program:  o0o004                                          *****
*****                                                                        *****
*****         creation date:  03/13/96                                       *****
*****                                                                        *****
*****              library:  /usr1/ornl/Scale/bin                            *****
*****                                                                        *****
*****                                                                        *****
*****             test code:  origens                                        *****
*****                                                                        *****
*****               version:  3.0                                            *****
*****                                                                        *****
*****               jobname:  davis                                          *****
*****                                                                        *****
```

```
                        *****    date of execution:  08/28/96                                    *****
                        *****                                                                    *****
                        *****    time of execution:  18:36:58                                    *****
                        *****                                                                    *****
                        *****                                                                    *****
                        ************************************************************************************
                        ************************************************************************************
                        ************************************************************************************

1
0       -1q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0        dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0            short-lived split test fraction, qxn =    9.1188E-04
0            half-norm of matrix used, axn =    7.0000E+00
0            4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
0        1q array has     20 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        4q array has      1 entries.
0       54q array has     12 entries.
1library information...

          cross-section data taken from position number  1 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *          made from modified card-image origen-s libraries of scale 4.2       *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                  fission product yields are from endf/b-v                    *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *        see information above this box (if present) for later updates         *
```

```
         *                                                                      *
         ************************************************************************
         *                                                                      *
0        ************************************************************************
0                 .other identification and sizes of library.
0                  data set name:  ft33f001
0               8/28/1996    date library was produced
0                    1697    total number of nuclides in library
                      689    number of light-element nuclides
                      129    number of actinide nuclides
                      879    number of fission product nuclides
0                    7993    number of nonzero off-diagonal matrix elements
0        ************************************************************************
1
    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              light elements          page    1
0                                       nuclide concentrations, grams
                                        basis =single reactor assembly
             initial  1E-18 d
    na 23   1.73E+05  1.73E+05
    al 27   1.35E+06  1.35E+06
  total     1.52E+06  1.52E+06
1
    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                  actinides           page    2
0                                       nuclide concentrations, grams
                                        basis =single reactor assembly
             initial  1E-18 d
     u234   2.12E+03  2.12E+03
     u235   1.72E+05  1.72E+05
     u236   4.12E+04  4.12E+04
     u238   8.66E+06  8.66E+06
    np237   9.99E+03  9.99E+03
  total     8.88E+06  8.88E+06
1   sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                  page    3
       power=    .00mw, burnup=   1461.mwd, flux= 2.99E+08n/cm**2-sec
0                                       basis =
0   (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                  initial       91313. d      182625. d      273938. d      365250. d      365250. d
    productions  1.022622E+06  1.024453E+06  1.026237E+06  1.027977E+06  1.029673E+06  1.029673E+06
    absorptions  8.468353E+05  8.494152E+05  8.515743E+05  8.534369E+05  8.550839E+05  8.550839E+05
    k infinity   1.207580E+00  1.206068E+00  1.205106E+00  1.204514E+00  1.204177E+00  1.204177E+00
0                  initial       91313. d      182625. d      273938. d      365250. d      365250. d
    actinide
    absorptions  8.430638E+05  8.441381E+05  8.451858E+05  8.462119E+05  8.472176E+05  8.472176E+05
    non-actinide
    abs. fracs.  4.453659E-03  6.212592E-03  7.502079E-03  8.465767E-03  9.199560E-03  9.199560E-03
1   sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products      page    4
0                               fraction of total absorption rate
       power=    .00mw, burnup=   1461.mwd, flux= 2.99E+08n/cm**2-sec
0            initial  91313. d 182625. d 273938. d 365250. d 365250. d

    sm149      .00E+00  1.54E-03  2.63E-03  3.40E-03  3.95E-03  3.95E-03
    eu151      .00E+00  3.10E-05  8.18E-05  1.34E-04  1.85E-04  1.85E-04
    nd143      .00E+00  3.63E-05  7.24E-05  1.08E-04  1.44E-04  1.44E-04
    gd155      .00E+00  2.23E-05  4.25E-05  6.03E-05  7.59E-05  7.59E-05
    rh103      .00E+00  1.73E-05  3.45E-05  5.18E-05  6.90E-05  6.90E-05
    xe131      .00E+00  1.18E-05  2.36E-05  3.53E-05  4.70E-05  4.70E-05
    cd113      .00E+00  1.45E-05  2.66E-05  3.68E-05  4.53E-05  4.53E-05
    sm151      .00E+00  3.37E-05  3.84E-05  3.91E-05  3.93E-05  3.93E-05
    cs133      .00E+00  9.18E-06  1.83E-05  2.74E-05  3.64E-05  3.64E-05
    gd157      .00E+00  1.48E-05  2.39E-05  2.98E-05  3.37E-05  3.37E-05
```

sm147	.00E+00	6.72E-06	1.35E-05	2.02E-05	2.70E-05	2.70E-05
tc 99	.00E+00	6.78E-06	1.35E-05	2.02E-05	2.69E-05	2.69E-05
nd145	.00E+00	5.19E-06	1.03E-05	1.55E-05	2.06E-05	2.06E-05
mo 95	.00E+00	3.61E-06	7.21E-06	1.08E-05	1.43E-05	1.43E-05
sm152	.00E+00	2.83E-06	5.73E-06	8.68E-06	1.17E-05	1.17E-05
kr 83	.00E+00	2.21E-06	4.41E-06	6.59E-06	8.76E-06	8.76E-06
cs135	.00E+00	2.06E-06	4.11E-06	6.15E-06	8.18E-06	8.18E-06
ru101	.00E+00	1.62E-06	3.24E-06	4.85E-06	6.45E-06	6.45E-06
pr141	.00E+00	1.51E-06	3.02E-06	4.52E-06	6.01E-06	6.01E-06
eu153	.00E+00	1.39E-06	2.79E-06	4.18E-06	5.58E-06	5.58E-06
sm150	.00E+00	4.29E-07	1.54E-06	3.13E-06	5.07E-06	5.07E-06
la139	.00E+00	1.24E-06	2.46E-06	3.69E-06	4.91E-06	4.91E-06
xe135	.00E+00	2.27E-06	2.27E-06	2.26E-06	2.26E-06	2.26E-06
ba137	.00E+00	4.86E-07	1.07E-06	1.65E-06	2.23E-06	2.23E-06
pd105	.00E+00	5.36E-07	1.08E-06	1.62E-06	2.17E-06	2.17E-06
zr 93	.00E+00	5.13E-07	1.02E-06	1.53E-06	2.03E-06	2.03E-06
i129	.00E+00	3.82E-07	7.63E-07	1.14E-06	1.53E-06	1.53E-06
nd144	.00E+00	3.68E-07	7.35E-07	1.10E-06	1.47E-06	1.47E-06
mo 97	.00E+00	2.81E-07	5.61E-07	8.39E-07	1.12E-06	1.12E-06
ag109	.00E+00	2.17E-07	4.64E-07	7.40E-07	1.05E-06	1.05E-06
zr 91	.00E+00	1.32E-07	2.63E-07	3.94E-07	5.23E-07	5.23E-07
y 89	.00E+00	1.26E-07	2.52E-07	3.76E-07	5.00E-07	5.00E-07
ru102	.00E+00	1.14E-07	2.28E-07	3.41E-07	4.54E-07	4.54E-07
ce142	.00E+00	1.02E-07	2.04E-07	3.05E-07	4.06E-07	4.06E-07
nd148	.00E+00	9.94E-08	1.98E-07	2.97E-07	3.95E-07	3.95E-07
nd146	.00E+00	8.27E-08	1.65E-07	2.47E-07	3.28E-07	3.28E-07
pd108	.00E+00	7.18E-08	1.49E-07	2.32E-07	3.21E-07	3.21E-07
ba138	.00E+00	7.04E-08	1.40E-07	2.10E-07	2.80E-07	2.80E-07
in115	.00E+00	6.92E-08	1.38E-07	2.08E-07	2.77E-07	2.77E-07
pm147	.00E+00	2.75E-07	2.74E-07	2.73E-07	2.72E-07	2.72E-07
ce140	.00E+00	6.59E-08	1.32E-07	1.97E-07	2.62E-07	2.62E-07
xe132	.00E+00	6.04E-08	1.20E-07	1.80E-07	2.40E-07	2.40E-07
pd107	.00E+00	4.10E-08	8.43E-08	1.30E-07	1.78E-07	1.78E-07
mo 98	.00E+00	4.22E-08	8.43E-08	1.26E-07	1.68E-07	1.68E-07
eu155	.00E+00	1.61E-07	1.63E-07	1.64E-07	1.66E-07	1.66E-07
mo100	.00E+00	4.04E-08	8.05E-08	1.21E-07	1.60E-07	1.60E-07
xe134	.00E+00	3.91E-08	7.79E-08	1.17E-07	1.55E-07	1.55E-07
zr 92	.00E+00	3.18E-08	6.33E-08	9.46E-08	1.26E-07	1.26E-07
i127	.00E+00	2.63E-08	5.27E-08	7.92E-08	1.06E-07	1.06E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 5
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.99E+08n/cm**2-sec
0 initial 91313. d 182625. d 273938. d 365250. d 365250. d

zr 96	.00E+00	2.60E-08	5.19E-08	7.77E-08	1.03E-07	1.03E-07
ru104	.00E+00	2.48E-08	4.97E-08	7.47E-08	9.98E-08	9.98E-08
gd152	.00E+00	3.29E-09	1.91E-08	4.98E-08	9.52E-08	9.52E-08
nd150	.00E+00	2.22E-08	4.42E-08	6.63E-08	8.82E-08	8.82E-08
xe136	.00E+00	2.11E-08	4.22E-08	6.31E-08	8.40E-08	8.40E-08
br 81	.00E+00	1.61E-08	3.21E-08	4.80E-08	6.39E-08	6.39E-08
rb 85	.00E+00	1.55E-08	3.10E-08	4.65E-08	6.19E-08	6.19E-08
zr 94	.00E+00	1.37E-08	2.74E-08	4.10E-08	5.45E-08	5.45E-08
eu152	.00E+00	8.12E-09	2.14E-08	3.50E-08	4.84E-08	4.84E-08
zr 90	.00E+00	1.05E-08	2.29E-08	3.52E-08	4.75E-08	4.75E-08
cd111	.00E+00	1.05E-08	2.13E-08	3.26E-08	4.43E-08	4.43E-08
te130	.00E+00	9.57E-09	1.91E-08	2.86E-08	3.81E-08	3.81E-08
sm154	.00E+00	9.39E-09	1.88E-08	2.83E-08	3.78E-08	3.78E-08
rb 87	.00E+00	9.08E-09	1.81E-08	2.71E-08	3.60E-08	3.60E-08
se 77	.00E+00	6.33E-09	1.26E-08	1.89E-08	2.51E-08	2.51E-08
pd106	.00E+00	4.68E-09	9.50E-09	1.44E-08	1.95E-08	1.95E-08

kr 84	.00E+00	4.34E-09	8.65E-09	1.29E-08	1.72E-08	1.72E-08
sr 90	.00E+00	1.68E-08	1.68E-08	1.67E-08	1.66E-08	1.66E-08
se 79	.00E+00	3.24E-09	6.47E-09	9.68E-09	1.29E-08	1.29E-08
sb121	.00E+00	3.17E-09	6.35E-09	9.54E-09	1.27E-08	1.27E-08
gd156	.00E+00	1.94E-09	4.39E-09	7.30E-09	1.06E-08	1.06E-08
sb123	.00E+00	2.58E-09	5.16E-09	7.75E-09	1.03E-08	1.03E-08
kr 86	.00E+00	2.35E-09	4.69E-09	7.01E-09	9.32E-09	9.32E-09
rh105	.00E+00	8.37E-09	8.47E-09	8.56E-09	8.66E-09	8.66E-09
te128	.00E+00	2.13E-09	4.26E-09	6.38E-09	8.51E-09	8.51E-09
ru 99	.00E+00	4.68E-10	1.80E-09	3.98E-09	7.02E-09	7.02E-09
dy161	.00E+00	1.41E-09	2.99E-09	4.73E-09	6.64E-09	6.64E-09
se 80	.00E+00	1.52E-09	3.02E-09	4.53E-09	6.02E-09	6.02E-09
te125	.00E+00	1.33E-09	2.68E-09	4.05E-09	5.42E-09	5.42E-09
tb159	.00E+00	9.36E-10	1.92E-09	2.95E-09	4.02E-09	4.02E-09
cs137	.00E+00	3.77E-09	3.77E-09	3.76E-09	3.75E-09	3.75E-09
gd154	.00E+00	2.28E-10	9.26E-10	2.09E-09	3.73E-09	3.73E-09
cd112	.00E+00	8.77E-10	1.77E-09	2.68E-09	3.60E-09	3.60E-09
li 6	.00E+00	8.59E-10	1.71E-09	2.56E-09	3.39E-09	3.39E-09
eu154	.00E+00	7.20E-10	1.43E-09	2.14E-09	2.85E-09	2.85E-09
sn117	.00E+00	6.92E-10	1.39E-09	2.09E-09	2.80E-09	2.80E-09
gd158	.00E+00	4.26E-10	1.06E-09	1.83E-09	2.69E-09	2.69E-09
pr143	.00E+00	2.65E-09	2.64E-09	2.63E-09	2.62E-09	2.62E-09
sn119	.00E+00	5.64E-10	1.13E-09	1.69E-09	2.26E-09	2.26E-09
sn115	.00E+00	5.15E-10	1.03E-09	1.55E-09	2.07E-09	2.07E-09
xe133	.00E+00	1.98E-09	1.98E-09	1.97E-09	1.97E-09	1.97E-09
sr 88	.00E+00	4.34E-10	8.64E-10	1.29E-09	1.72E-09	1.72E-09
cd114	.00E+00	3.41E-10	7.39E-10	1.19E-09	1.67E-09	1.67E-09
ce141	.00E+00	1.57E-09	1.56E-09	1.56E-09	1.56E-09	1.56E-09
pd110	.00E+00	3.25E-10	6.67E-10	1.03E-09	1.40E-09	1.40E-09
ru100	.00E+00	7.91E-11	3.09E-10	6.87E-10	1.21E-09	1.21E-09
se 82	.00E+00	2.94E-10	5.86E-10	8.76E-10	1.16E-09	1.16E-09
dy164	.00E+00	1.83E-10	4.20E-10	7.08E-10	1.05E-09	1.05E-09
dy162	.00E+00	1.96E-10	4.35E-10	7.16E-10	1.04E-09	1.04E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 6
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.99E+08n/cm**2-sec
0 initial 91313. d 182625. d 273938. d 365250. d 365250. d

sn126	.00E+00	2.36E-10	4.74E-10	7.15E-10	9.58E-10	9.58E-10
pm149	.00E+00	9.59E-10	9.57E-10	9.55E-10	9.53E-10	9.53E-10
nd147	.00E+00	9.43E-10	9.40E-10	9.38E-10	9.35E-10	9.35E-10
se 78	.00E+00	2.25E-10	4.49E-10	6.73E-10	8.96E-10	8.96E-10
nd142	.00E+00	5.19E-11	2.07E-10	4.64E-10	8.22E-10	8.22E-10
ba134	.00E+00	5.17E-11	2.06E-10	4.62E-10	8.19E-10	8.19E-10
sm148	.00E+00	5.04E-11	1.95E-10	4.33E-10	7.63E-10	7.63E-10
sn124	.00E+00	1.85E-10	3.70E-10	5.56E-10	7.43E-10	7.43E-10
ba135	.00E+00	4.14E-11	1.65E-10	3.70E-10	6.56E-10	6.56E-10
ce144	.00E+00	5.97E-10	5.95E-10	5.93E-10	5.91E-10	5.91E-10
pd104	.00E+00	3.57E-11	1.43E-10	3.20E-10	5.69E-10	5.69E-10
kr 85	.00E+00	5.66E-10	5.63E-10	5.61E-10	5.59E-10	5.59E-10
as 75	.00E+00	1.34E-10	2.68E-10	4.01E-10	5.34E-10	5.34E-10
in113	.00E+00	9.33E-11	1.95E-10	2.98E-10	4.01E-10	4.01E-10
ru103	.00E+00	3.57E-10	3.57E-10	3.58E-10	3.59E-10	3.59E-10
ba136	.00E+00	7.64E-11	1.62E-10	2.56E-10	3.59E-10	3.59E-10
sn118	.00E+00	7.59E-11	1.52E-10	2.28E-10	3.05E-10	3.05E-10
cs134	.00E+00	6.91E-11	1.37E-10	2.05E-10	2.72E-10	2.72E-10
cd116	.00E+00	6.39E-11	1.28E-10	1.92E-10	2.56E-10	2.56E-10
mo 96	.00E+00	2.87E-11	8.07E-11	1.56E-10	2.53E-10	2.53E-10
sn122	.00E+00	6.22E-11	1.25E-10	1.87E-10	2.50E-10	2.50E-10
dy163	.00E+00	4.42E-11	9.98E-11	1.67E-10	2.45E-10	2.45E-10

kr 82	.00E+00	4.37E-11	9.68E-11	1.59E-10	2.31E-10	2.31E-10
sn120	.00E+00	4.69E-11	9.39E-11	1.41E-10	1.88E-10	1.88E-10
xe130	.00E+00	2.91E-11	6.90E-11	1.20E-10	1.81E-10	1.81E-10
zr 95	.00E+00	1.68E-10	1.67E-10	1.66E-10	1.66E-10	1.66E-10
nb 95	.00E+00	1.53E-10	1.52E-10	1.52E-10	1.51E-10	1.51E-10
ge 73	.00E+00	3.63E-11	7.26E-11	1.09E-10	1.45E-10	1.45E-10
y 91	.00E+00	1.41E-10	1.40E-10	1.40E-10	1.39E-10	1.39E-10
pm151	.00E+00	1.09E-10	1.09E-10	1.09E-10	1.09E-10	1.09E-10
nb 93	.00E+00	6.03E-12	2.53E-11	5.77E-11	1.03E-10	1.03E-10
cd110	.00E+00	4.89E-12	2.03E-11	4.76E-11	8.80E-11	8.80E-11
br 79	.00E+00	3.36E-12	1.34E-11	3.00E-11	5.33E-11	5.33E-11
ge 76	.00E+00	1.33E-11	2.64E-11	3.95E-11	5.26E-11	5.26E-11
ba140	.00E+00	4.70E-11	4.68E-11	4.67E-11	4.66E-11	4.66E-11
te126	.00E+00	7.59E-12	1.75E-11	2.96E-11	4.41E-11	4.41E-11
gd160	.00E+00	8.77E-12	1.82E-11	2.82E-11	3.89E-11	3.89E-11
sm153	.00E+00	3.81E-11	3.83E-11	3.85E-11	3.87E-11	3.87E-11
eu156	.00E+00	3.46E-11	3.53E-11	3.60E-11	3.68E-11	3.68E-11
ag107	.00E+00	1.80E-12	7.33E-12	1.68E-11	3.04E-11	3.04E-11
xe129	.00E+00	1.90E-12	7.59E-12	1.71E-11	3.03E-11	3.03E-11
sr 89	.00E+00	3.02E-11	3.00E-11	2.99E-11	2.98E-11	2.98E-11
ru106	.00E+00	2.66E-11	2.72E-11	2.79E-11	2.86E-11	2.86E-11
kr 87	.00E+00	2.25E-11	2.24E-11	2.23E-11	2.22E-11	2.22E-11
ho165	.00E+00	3.06E-12	6.96E-12	1.17E-11	1.73E-11	1.73E-11
ce143	.00E+00	1.73E-11	1.73E-11	1.72E-11	1.72E-11	1.72E-11
y 90	.00E+00	1.60E-11	1.59E-11	1.59E-11	1.58E-11	1.58E-11
sb125	.00E+00	1.51E-11	1.52E-11	1.53E-11	1.54E-11	1.54E-11
la140	.00E+00	1.54E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 7
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.99E+08n/cm**2-sec
0 initial 91313. d 182625. d 273938. d 365250. d 365250. d

mo 99	.00E+00	1.31E-11	1.31E-11	1.31E-11	1.30E-11	1.30E-11
pm148m	.00E+00	9.64E-12	9.63E-12	9.62E-12	9.62E-12	9.62E-12
te127m	.00E+00	7.41E-12	7.47E-12	7.52E-12	7.58E-12	7.58E-12
te124	.00E+00	1.57E-12	3.24E-12	5.00E-12	6.84E-12	6.84E-12
i131	.00E+00	6.76E-12	6.75E-12	6.74E-12	6.73E-12	6.73E-12
sr 87	.00E+00	1.52E-12	3.04E-12	4.56E-12	6.09E-12	6.09E-12
dy160	.00E+00	3.06E-13	1.12E-12	2.47E-12	4.36E-12	4.36E-12
nb 94	.00E+00	8.78E-13	1.76E-12	2.64E-12	3.54E-12	3.54E-12
xe128	.00E+00	2.54E-13	8.79E-13	1.87E-12	3.24E-12	3.24E-12
sr 86	.00E+00	5.17E-13	1.21E-12	2.09E-12	3.14E-12	3.14E-12
ge 74	.00E+00	7.30E-13	1.46E-12	2.19E-12	2.91E-12	2.91E-12
ge 72	.00E+00	4.92E-13	9.85E-13	1.48E-12	1.98E-12	1.98E-12
te129m	.00E+00	1.78E-12	1.78E-12	1.79E-12	1.79E-12	1.79E-12
se 76	.00E+00	3.05E-13	6.53E-13	1.04E-12	1.48E-12	1.48E-12
sn116	.00E+00	7.63E-14	3.03E-13	6.80E-13	1.21E-12	1.21E-12
er166	.00E+00	9.78E-14	2.54E-13	4.69E-13	7.40E-13	7.40E-13
te122	.00E+00	3.37E-14	1.30E-13	2.87E-13	5.07E-13	5.07E-13
pm148	.00E+00	3.86E-13	3.85E-13	3.84E-13	3.83E-13	3.83E-13
ag111	.00E+00	3.35E-13	3.48E-13	3.62E-13	3.75E-13	3.75E-13
eu157	.00E+00	3.04E-13	3.13E-13	3.22E-13	3.31E-13	3.31E-13
cd115m	.00E+00	2.37E-13	2.38E-13	2.39E-13	2.40E-13	2.40E-13
kr 80	.00E+00	2.13E-14	4.44E-14	6.95E-14	9.71E-14	9.71E-14
cs136	.00E+00	6.30E-14	7.00E-14	7.70E-14	8.39E-14	8.39E-14
ru105	.00E+00	3.04E-14	3.08E-14	3.11E-14	3.15E-14	3.15E-14
sn125	.00E+00	2.95E-14	2.96E-14	2.98E-14	2.99E-14	2.99E-14
rb 88	.00E+00	1.26E-14	1.26E-14	1.25E-14	1.25E-14	1.25E-14
tb160	.00E+00	2.92E-15	5.64E-15	8.45E-15	1.13E-14	1.13E-14
er167	.00E+00	7.36E-16	2.59E-15	5.83E-15	1.07E-14	1.07E-14

sn123	.00E+00	1.04E-14	1.04E-14	1.04E-14	1.04E-14	1.04E-14
i135	.00E+00	9.97E-15	9.95E-15	9.92E-15	9.90E-15	9.90E-15
te123	.00E+00	1.65E-15	3.73E-15	6.38E-15	9.73E-15	9.73E-15
te132	.00E+00	9.47E-15	9.45E-15	9.43E-15	9.42E-15	9.42E-15
pr142	.00E+00	1.73E-15	3.44E-15	5.14E-15	6.83E-15	6.83E-15
be 9	.00E+00	1.71E-15	3.41E-15	5.10E-15	6.79E-15	6.79E-15
te134	.00E+00	5.74E-15	5.72E-15	5.70E-15	5.68E-15	5.68E-15
sb126	.00E+00	3.41E-15	3.85E-15	4.28E-15	4.71E-15	4.71E-15
li 7	.00E+00	6.63E-16	1.32E-15	1.98E-15	2.63E-15	2.63E-15
sb124	.00E+00	2.23E-15	2.36E-15	2.49E-15	2.62E-15	2.62E-15
in117m	.00E+00	2.09E-15	2.11E-15	2.13E-15	2.15E-15	2.15E-15
i130	.00E+00	1.03E-15	1.34E-15	1.66E-15	1.97E-15	1.97E-15
rb 86	.00E+00	3.41E-16	4.42E-16	5.43E-16	6.43E-16	6.43E-16
in117	.00E+00	6.13E-16	6.20E-16	6.27E-16	6.34E-16	6.34E-16
dy165	.00E+00	2.76E-16	3.44E-16	4.12E-16	4.80E-16	4.80E-16
cd108	.00E+00	2.48E-17	8.36E-17	1.94E-16	3.74E-16	3.74E-16
sn114	.00E+00	1.67E-17	6.95E-17	1.58E-16	2.83E-16	2.83E-16
cd118	.00E+00	1.19E-16	1.20E-16	1.20E-16	1.21E-16	1.21E-16
ge 75	.00E+00	8.47E-17	8.45E-17	8.43E-17	8.42E-17	8.42E-17
cs134m	.00E+00	1.28E-17	2.55E-17	3.81E-17	5.06E-17	5.06E-17
in119m	.00E+00	2.98E-17	2.99E-17	3.00E-17	3.01E-17	3.01E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 8
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.99E+08n/cm**2-sec
0 initial 91313. d 182625. d 273938. d 365250. d 365250. d

in119	.00E+00	2.33E-18	2.35E-18	2.36E-18	2.38E-18	2.38E-18
cd109	.00E+00	6.19E-19	1.05E-18	1.47E-18	1.89E-18	1.89E-18
ag110	.00E+00	2.83E-19	6.08E-19	9.67E-19	1.36E-18	1.36E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 9
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.99E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	91313. d	182625. d	273938. d	365250. d	365250. d
h 1	.00E+00	2.22E-05	4.43E-05	6.64E-05	8.84E-05	8.84E-05
h 2	.00E+00	6.57E-08	1.31E-07	1.97E-07	2.62E-07	2.62E-07
h 3	.00E+00	3.50E-11	3.56E-11	3.63E-11	3.69E-11	3.69E-11
h 4	.00E+00	1.41E-34	1.44E-34	1.46E-34	1.49E-34	1.49E-34
he 3	.00E+00	4.77E-10	9.79E-10	1.47E-09	1.95E-09	1.95E-09
he 4	.00E+00	3.66E-06	7.32E-06	1.10E-05	1.46E-05	1.46E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	.00E+00	4.40E-07	8.79E-07	1.32E-06	1.76E-06	1.76E-06
ne 21	.00E+00	3.97E-12	1.59E-11	3.57E-11	6.33E-11	6.33E-11
ne 22	.00E+00	2.87E-09	5.77E-09	8.68E-09	1.16E-08	1.16E-08
ne 23	.00E+00	7.33E-15	7.32E-15	7.31E-15	7.30E-15	7.30E-15
na 22	.00E+00	4.31E-11	4.30E-11	4.29E-11	4.29E-11	4.29E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	.00E+00	3.65E-08	3.64E-08	3.64E-08	3.64E-08	3.64E-08
na 24m	.00E+00	6.00E-15	5.99E-15	5.98E-15	5.97E-15	5.97E-15
na 25	.00E+00	2.60E-26	7.47E-26	1.46E-25	2.40E-25	2.40E-25
mg 24	.00E+00	3.78E-03	7.56E-03	1.13E-02	1.51E-02	1.51E-02
mg 25	.00E+00	8.61E-10	2.48E-09	4.84E-09	7.96E-09	7.96E-09
mg 26	.00E+00	6.57E-08	1.31E-07	1.97E-07	2.62E-07	2.62E-07
mg 27	.00E+00	2.19E-12	2.18E-12	2.18E-12	2.18E-12	2.18E-12
mg 28	.00E+00	4.43E-24	4.42E-24	4.41E-24	4.40E-24	4.40E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	.00E+00	2.71E-10	2.70E-10	2.70E-10	2.70E-10	2.70E-10
al 29	.00E+00	9.55E-25	3.81E-24	8.55E-24	1.52E-23	1.52E-23
al 30	.00E+00	4.38E-36	3.49E-35	1.18E-34	2.78E-34	2.78E-34

si 28	.00E+00	1.10E-02	2.20E-02	3.30E-02	4.40E-02	4.40E-02
si 29	.00E+00	3.53E-09	1.41E-08	3.17E-08	5.62E-08	5.62E-08
si 30	.00E+00	1.21E-15	9.68E-15	3.26E-14	7.71E-14	7.71E-14
si 31	.00E+00	8.67E-28	6.91E-27	2.33E-26	5.50E-26	5.50E-26
si 32	.00E+00	3.17E-34	4.28E-33	1.86E-32	5.14E-32	5.14E-32
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		3.00E+08	3.00E+08	2.99E+08	2.99E+08	2.99E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 10
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.99E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	91313. d	182625. d	273938. d	365250. d	365250. d
he 4	.00E+00	4.39E-02	1.15E-01	1.97E-01	2.89E-01	2.89E-01
pb206	.00E+00	2.25E-07	1.86E-06	6.26E-06	1.47E-05	1.47E-05
pb207	.00E+00	4.16E-07	1.78E-06	4.11E-06	7.38E-06	7.38E-06
pb208	.00E+00	8.05E-08	3.16E-07	7.02E-07	1.24E-06	1.24E-06
pb209	.00E+00	8.67E-14	3.44E-13	7.67E-13	1.35E-12	1.35E-12
pb210	.00E+00	9.86E-08	3.81E-07	8.28E-07	1.42E-06	1.42E-06
pb211	.00E+00	3.77E-13	7.55E-13	1.13E-12	1.51E-12	1.51E-12
pb212	.00E+00	1.11E-12	2.16E-12	3.21E-12	4.25E-12	4.25E-12
pb214	.00E+00	2.25E-13	8.70E-13	1.89E-12	3.25E-12	3.25E-12
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	1.35E-08	1.07E-07	3.60E-07	8.49E-07	8.49E-07
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	.00E+00	6.07E-11	2.34E-10	5.10E-10	8.76E-10	8.76E-10
bi211	.00E+00	2.23E-14	4.47E-14	6.72E-14	8.96E-14	8.96E-14
bi212	.00E+00	1.05E-13	2.05E-13	3.04E-13	4.03E-13	4.03E-13
bi213	.00E+00	2.02E-14	8.03E-14	1.79E-13	3.16E-13	3.16E-13
bi214	.00E+00	1.67E-13	6.46E-13	1.41E-12	2.42E-12	2.42E-12
po210	.00E+00	1.68E-09	6.47E-09	1.41E-08	2.42E-08	2.42E-08
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	.00E+00	2.47E-19	4.94E-19	7.42E-19	9.90E-19	9.90E-19
po212	.00E+00	5.52E-24	1.08E-23	1.60E-23	2.12E-23	2.12E-23
po213	.00E+00	3.04E-23	1.21E-22	2.69E-22	4.75E-22	4.75E-22
po214	.00E+00	2.30E-20	8.89E-20	1.93E-19	3.32E-19	3.32E-19
po215	.00E+00	3.10E-19	6.20E-19	9.31E-19	1.24E-18	1.24E-18
po216	.00E+00	4.19E-18	8.18E-18	1.21E-17	1.61E-17	1.61E-17
po218	.00E+00	2.61E-14	1.01E-13	2.19E-13	3.76E-13	3.76E-13
rn218	.00E+00	1.70E-29	3.31E-29	4.90E-29	6.49E-29	6.49E-29
rn219	.00E+00	6.89E-16	1.38E-15	2.07E-15	2.76E-15	2.76E-15
rn220	.00E+00	1.61E-15	3.14E-15	4.65E-15	6.17E-15	6.17E-15
rn222	.00E+00	4.63E-11	1.79E-10	3.89E-10	6.69E-10	6.69E-10
ra222	.00E+00	1.84E-26	3.59E-26	5.32E-26	7.04E-26	7.04E-26
ra223	.00E+00	1.72E-10	3.44E-10	5.17E-10	6.90E-10	6.90E-10
ra224	.00E+00	9.14E-12	1.78E-11	2.65E-11	3.51E-11	3.51E-11
ra225	.00E+00	9.47E-12	3.76E-11	8.38E-11	1.48E-10	1.48E-10
ra226	.00E+00	7.08E-06	2.73E-05	5.94E-05	1.02E-04	1.02E-04
ra228	.00E+00	5.28E-13	1.06E-12	1.59E-12	2.12E-12	2.12E-12
ac225	.00E+00	6.40E-12	2.54E-11	5.66E-11	9.98E-11	9.98E-11
ac227	.00E+00	1.20E-07	2.39E-07	3.59E-07	4.80E-07	4.80E-07
ac228	.00E+00	6.45E-17	1.29E-16	1.94E-16	2.59E-16	2.59E-16
th226	.00E+00	9.00E-25	1.75E-24	2.60E-24	3.44E-24	3.44E-24
th227	.00E+00	2.78E-10	5.56E-10	8.34E-10	1.11E-09	1.11E-09
th228	.00E+00	1.75E-09	3.41E-09	5.05E-09	6.70E-09	6.70E-09
th229	.00E+00	1.84E-06	7.30E-06	1.63E-05	2.87E-05	2.87E-05
th230	.00E+00	6.38E-03	1.28E-02	1.92E-02	2.56E-02	2.56E-02
th231	.00E+00	3.04E-09	3.07E-09	3.09E-09	3.11E-09	3.11E-09
th232	.00E+00	1.29E-03	2.59E-03	3.88E-03	5.18E-03	5.18E-03
th233	.00E+00	1.20E-14	2.39E-14	3.59E-14	4.78E-14	4.78E-14

th234	.00E+00	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	.00E+00	1.80E-04	3.60E-04	5.41E-04	7.21E-04	7.21E-04
pa232	.00E+00	3.09E-12	6.18E-12	9.26E-12	1.23E-11	1.23E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 11
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.99E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	91313. d	182625. d	273938. d	365250. d	365250. d
pa233	.00E+00	1.46E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	.00E+00	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	.00E+00	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	8.72E-22	1.70E-21	2.52E-21	3.33E-21	3.33E-21
u231	.00E+00	2.74E-18	5.45E-18	8.16E-18	1.08E-17	1.08E-17
u232	.00E+00	6.37E-08	1.24E-07	1.84E-07	2.44E-07	2.44E-07
u233	.00E+00	3.41E-03	6.80E-03	1.02E-02	1.35E-02	1.35E-02
u234	9.06E+00	9.07E+00	9.10E+00	9.14E+00	9.18E+00	9.18E+00
u235	7.30E+02	7.29E+02	7.27E+02	7.25E+02	7.23E+02	7.23E+02
u236	1.74E+02	1.75E+02	1.75E+02	1.75E+02	1.76E+02	1.76E+02
u237	.00E+00	3.25E-06	3.25E-06	3.25E-06	3.26E-06	3.26E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	.00E+00	3.29E-07	3.29E-07	3.29E-07	3.28E-07	3.28E-07
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	9.13E-12	9.11E-12	9.10E-12	9.08E-12	9.08E-12
np236m	.00E+00	2.17E-12	2.17E-12	2.16E-12	2.16E-12	2.16E-12
np236	.00E+00	5.15E-08	1.03E-07	1.54E-07	2.05E-07	2.05E-07
np237	4.22E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	.00E+00	1.58E-06	1.58E-06	1.57E-06	1.57E-06	1.57E-06
np239	.00E+00	4.76E-05	4.76E-05	4.75E-05	4.74E-05	4.74E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	.00E+00	9.77E-15	9.74E-15	9.72E-15	9.69E-15	9.69E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	.00E+00	1.18E-09	1.18E-09	1.17E-09	1.17E-09	1.17E-09
pu237	.00E+00	2.22E-13	2.61E-13	2.76E-13	2.87E-13	2.87E-13
pu238	.00E+00	2.06E-02	2.34E-02	2.37E-02	2.38E-02	2.38E-02
pu239	.00E+00	1.27E+00	2.52E+00	3.75E+00	4.97E+00	4.97E+00
pu240	.00E+00	1.55E-03	6.10E-03	1.35E-02	2.36E-02	2.36E-02
pu241	.00E+00	6.62E-07	2.60E-06	5.76E-06	1.01E-05	1.01E-05
pu242	.00E+00	7.37E-10	8.71E-09	3.72E-08	1.04E-07	1.04E-07
pu243	.00E+00	1.62E-18	1.92E-17	8.18E-17	2.28E-16	2.28E-16
pu244	.00E+00	4.00E-39	3.81E-36	1.89E-34	2.93E-33	2.93E-33
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	6.45E-22	4.76E-21	1.47E-20	3.18E-20	3.18E-20
am240	.00E+00	2.95E-19	2.18E-18	6.73E-18	1.46E-17	1.46E-17
am241	.00E+00	2.23E-06	1.65E-05	5.09E-05	1.10E-04	1.10E-04
am242m	.00E+00	2.89E-10	3.64E-09	1.43E-08	3.57E-08	3.57E-08
am242	.00E+00	8.20E-14	6.25E-13	1.97E-12	4.32E-12	4.32E-12
am243	.00E+00	5.26E-13	1.38E-11	8.38E-11	2.90E-10	2.90E-10
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	4.15E-21	1.08E-19	6.60E-19	2.28E-18	2.28E-18
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	5.04E-24	3.83E-23	1.21E-22	2.65E-22	2.65E-22
cm242	.00E+00	1.65E-11	1.26E-10	3.98E-10	8.73E-10	8.73E-10
cm243	.00E+00	.00E+00	1.40E-20	1.07E-19	3.36E-19	3.36E-19
cm244	.00E+00	6.52E-17	1.70E-15	1.04E-14	3.58E-14	3.58E-14

1

power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.99E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	91313. d	182625. d	273938. d	365250. d	365250. d
cm245	.00E+00	2.85E-21	1.54E-19	1.46E-18	6.91E-18	6.91E-18
cm246	.00E+00	6.11E-25	6.80E-23	9.96E-22	6.36E-21	6.36E-21
cm247	.00E+00	2.25E-30	5.17E-28	1.15E-26	9.86E-26	9.86E-26
cm248	.00E+00	8.27E-35	3.89E-32	1.29E-30	1.49E-29	1.49E-29
cm249	.00E+00	.00E+00	.00E+00	3.89E-41	4.82E-40	4.82E-40
cm250	.00E+00	.00E+00	.00E+00	.00E+00	1.40E-45	1.40E-45
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		3.00E+08	3.00E+08	2.99E+08	2.99E+08	2.99E-07

```
0       1q array has     20 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       4q array has      1 entries.
0      54q array has     12 entries.
1library information...

         cross-section data taken from position number  2 of library on unit 33.

         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         ********************************************************************************
         *                                                                              *
         *            prelim lwr origen-s binary working library--id = 1143             *
         *          made from modified card-image origen-s libraries of scale 4.2       *
         *       data from the light element, actinide, and fission product libraries   *
         *         decay data, including gamma and total energy, are from endf/b-vi     *
         *                                                                              *
         *       neutron flux spectrum factors and cross sections were produced from    *
         *      the "presas2" case updating all nuclides on the scale "burnup" library  *
         *                                                                              *
         *                   fission product yields are from endf/b-v                   *
         *                                                                              *
         *              photon libraries use an 18-energy-group structure               *
         *             the photon data are from the master photon data base,            *
         *              produced to include bremsstrahlung from uo2 matrix              *
         *                                                                              *
         *        see information above this box (if present) for later updates         *
         *                                                                              *
         ********************************************************************************
         *                                                                              *
0        ********************************************************************************
0                 .other identification and sizes of library.
```

0 data set name: ft33f001
0 8/28/1996 date library was produced
0 1697 total number of nuclides in library
689 number of light-element nuclides
129 number of actinide nuclides
879 number of fission product nuclides
0 7993 number of nonzero off-diagonal matrix elements
0 **********
1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 page 13
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec
0 basis =
0 (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)

0	initial	456563. d	547875. d	639188. d	730500. d	730500. d
productions	1.096527E+06	1.098196E+06	1.099821E+06	1.101403E+06	1.102943E+06	1.102943E+06
absorptions	9.037413E+05	9.052724E+05	9.066773E+05	9.079868E+05	9.092220E+05	9.092220E+05
k infinity	1.213320E+00	1.213111E+00	1.213024E+00	1.213017E+00	1.213062E+00	1.213062E+00
0 initial		456563. d	547875. d	639188. d	730500. d	730500. d
actinide absorptions	8.959688E+05	8.969688E+05	8.979482E+05	8.989073E+05	8.998463E+05	8.998463E+05
non-actinide abs. fracs.	8.600354E-03	9.172499E-03	9.627581E-03	9.999692E-03	1.031184E-02	1.031184E-02

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 14
0 fraction of total absorption rate
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec

0 initial	456563. d	547875. d	639188. d	730500. d	730500. d
sm149	3.99E-03	4.38E-03	4.66E-03	4.85E-03	4.99E-03	4.99E-03
eu151	1.87E-04	2.38E-04	2.87E-04	3.35E-04	3.82E-04	3.82E-04
nd143	1.45E-04	1.81E-04	2.17E-04	2.52E-04	2.87E-04	2.87E-04
rh103	6.89E-05	8.61E-05	1.03E-04	1.20E-04	1.38E-04	1.38E-04
gd155	7.68E-05	9.08E-05	1.03E-04	1.14E-04	1.24E-04	1.24E-04
xe131	4.67E-05	5.83E-05	6.98E-05	8.14E-05	9.29E-05	9.29E-05
cs133	3.62E-05	4.52E-05	5.41E-05	6.31E-05	7.20E-05	7.20E-05
cd113	4.58E-05	5.30E-05	5.91E-05	6.43E-05	6.87E-05	6.87E-05
sm147	2.68E-05	3.34E-05	4.01E-05	4.67E-05	5.32E-05	5.32E-05
tc 99	2.67E-05	3.33E-05	3.98E-05	4.64E-05	5.29E-05	5.29E-05
gd157	3.41E-05	3.68E-05	3.88E-05	4.04E-05	4.18E-05	4.18E-05
nd145	2.06E-05	2.56E-05	3.07E-05	3.57E-05	4.08E-05	4.08E-05
sm151	3.97E-05	3.97E-05	3.98E-05	3.99E-05	4.00E-05	4.00E-05
mo 95	1.43E-05	1.78E-05	2.13E-05	2.48E-05	2.83E-05	2.83E-05
sm152	1.16E-05	1.47E-05	1.78E-05	2.09E-05	2.41E-05	2.41E-05
kr 83	8.83E-06	1.10E-05	1.32E-05	1.53E-05	1.75E-05	1.75E-05
cs135	8.15E-06	1.02E-05	1.22E-05	1.42E-05	1.62E-05	1.62E-05
sm150	5.08E-06	7.26E-06	9.60E-06	1.21E-05	1.46E-05	1.46E-05
ru101	6.37E-06	7.96E-06	9.53E-06	1.11E-05	1.27E-05	1.27E-05
pr141	6.04E-06	7.54E-06	9.03E-06	1.05E-05	1.20E-05	1.20E-05
eu153	5.58E-06	6.98E-06	8.39E-06	9.80E-06	1.12E-05	1.12E-05
la139	4.94E-06	6.16E-06	7.38E-06	8.59E-06	9.80E-06	9.80E-06
ba137	2.25E-06	2.84E-06	3.42E-06	4.00E-06	4.58E-06	4.58E-06
pd105	2.17E-06	2.72E-06	3.28E-06	3.85E-06	4.42E-06	4.42E-06
zr 93	2.02E-06	2.52E-06	3.01E-06	3.51E-06	4.00E-06	4.00E-06
i129	1.54E-06	1.92E-06	2.31E-06	2.69E-06	3.08E-06	3.08E-06
nd144	1.48E-06	1.85E-06	2.21E-06	2.58E-06	2.94E-06	2.94E-06
ag109	1.04E-06	1.37E-06	1.72E-06	2.11E-06	2.52E-06	2.52E-06
xe135	2.28E-06	2.28E-06	2.28E-06	2.28E-06	2.28E-06	2.28E-06
mo 97	1.12E-06	1.40E-06	1.68E-06	1.95E-06	2.23E-06	2.23E-06
zr 91	5.26E-07	6.56E-07	7.85E-07	9.14E-07	1.04E-06	1.04E-06
y 89	5.04E-07	6.28E-07	7.51E-07	8.74E-07	9.97E-07	9.97E-07
ru102	4.57E-07	5.71E-07	6.85E-07	7.98E-07	9.11E-07	9.11E-07
ce142	4.09E-07	5.11E-07	6.12E-07	7.12E-07	8.13E-07	8.13E-07

nd148	3.96E-07	4.94E-07	5.92E-07	6.89E-07	7.87E-07	7.87E-07
pd108	3.18E-07	4.11E-07	5.09E-07	6.12E-07	7.20E-07	7.20E-07
nd146	3.31E-07	4.13E-07	4.95E-07	5.76E-07	6.57E-07	6.57E-07
ba138	2.82E-07	3.52E-07	4.22E-07	4.91E-07	5.61E-07	5.61E-07
in115	2.78E-07	3.47E-07	4.17E-07	4.88E-07	5.58E-07	5.58E-07
ce140	2.64E-07	3.30E-07	3.95E-07	4.60E-07	5.25E-07	5.25E-07
xe132	2.40E-07	3.00E-07	3.59E-07	4.19E-07	4.78E-07	4.78E-07
gd152	9.62E-08	1.57E-07	2.31E-07	3.20E-07	4.21E-07	4.21E-07
pd107	1.79E-07	2.29E-07	2.81E-07	3.36E-07	3.92E-07	3.92E-07
mo 98	1.66E-07	2.07E-07	2.49E-07	2.90E-07	3.30E-07	3.30E-07
mo100	1.60E-07	2.00E-07	2.39E-07	2.79E-07	3.18E-07	3.18E-07
xe134	1.56E-07	1.95E-07	2.34E-07	2.72E-07	3.11E-07	3.11E-07
pm147	2.71E-07	2.70E-07	2.70E-07	2.69E-07	2.69E-07	2.69E-07
zr 92	1.27E-07	1.58E-07	1.89E-07	2.20E-07	2.51E-07	2.51E-07
i127	1.06E-07	1.32E-07	1.59E-07	1.87E-07	2.14E-07	2.14E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 15
0 fraction of total absorption rate
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec
0 initial 456563. d 547875. d 639188. d 730500. d 730500. d

zr 96	1.02E-07	1.27E-07	1.52E-07	1.77E-07	2.02E-07	2.02E-07
ru104	9.97E-08	1.25E-07	1.50E-07	1.75E-07	2.01E-07	2.01E-07
nd150	8.82E-08	1.10E-07	1.32E-07	1.54E-07	1.76E-07	1.76E-07
eu155	1.66E-07	1.67E-07	1.69E-07	1.70E-07	1.72E-07	1.72E-07
xe136	8.46E-08	1.06E-07	1.26E-07	1.47E-07	1.68E-07	1.68E-07
br 81	6.38E-08	7.96E-08	9.53E-08	1.11E-07	1.27E-07	1.27E-07
rb 85	6.19E-08	7.72E-08	9.25E-08	1.08E-07	1.23E-07	1.23E-07
zr 94	5.42E-08	6.76E-08	8.09E-08	9.42E-08	1.07E-07	1.07E-07
eu152	4.88E-08	6.21E-08	7.48E-08	8.73E-08	9.94E-08	9.94E-08
zr 90	4.77E-08	6.00E-08	7.22E-08	8.44E-08	9.65E-08	9.65E-08
cd111	4.47E-08	5.69E-08	6.95E-08	8.25E-08	9.58E-08	9.58E-08
sm154	3.80E-08	4.76E-08	5.72E-08	6.69E-08	7.67E-08	7.67E-08
te130	3.84E-08	4.80E-08	5.75E-08	6.70E-08	7.66E-08	7.66E-08
rb 87	3.59E-08	4.48E-08	5.36E-08	6.24E-08	7.11E-08	7.11E-08
se 77	2.54E-08	3.16E-08	3.79E-08	4.42E-08	5.04E-08	5.04E-08
pd106	1.94E-08	2.45E-08	2.97E-08	3.50E-08	4.05E-08	4.05E-08
kr 84	1.71E-08	2.13E-08	2.55E-08	2.96E-08	3.38E-08	3.38E-08
ru 99	7.00E-09	1.09E-08	1.56E-08	2.11E-08	2.75E-08	2.75E-08
gd156	1.05E-08	1.41E-08	1.81E-08	2.23E-08	2.68E-08	2.68E-08
se 79	1.30E-08	1.62E-08	1.94E-08	2.26E-08	2.58E-08	2.58E-08
sb121	1.27E-08	1.59E-08	1.91E-08	2.23E-08	2.55E-08	2.55E-08
sb123	1.03E-08	1.29E-08	1.55E-08	1.81E-08	2.07E-08	2.07E-08
kr 86	9.39E-09	1.17E-08	1.40E-08	1.63E-08	1.86E-08	1.86E-08
te128	8.51E-09	1.06E-08	1.28E-08	1.49E-08	1.70E-08	1.70E-08
sr 90	1.68E-08	1.67E-08	1.67E-08	1.66E-08	1.65E-08	1.65E-08
dy161	6.70E-09	8.77E-09	1.10E-08	1.34E-08	1.59E-08	1.59E-08
gd154	3.76E-09	5.86E-09	8.43E-09	1.15E-08	1.50E-08	1.50E-08
se 80	6.07E-09	7.57E-09	9.07E-09	1.06E-08	1.21E-08	1.21E-08
te125	5.42E-09	6.79E-09	8.18E-09	9.57E-09	1.10E-08	1.10E-08
rh105	8.72E-09	8.80E-09	8.89E-09	8.99E-09	9.08E-09	9.08E-09
tb159	4.02E-09	5.13E-09	6.29E-09	7.49E-09	8.73E-09	8.73E-09
cd112	3.62E-09	4.56E-09	5.53E-09	6.50E-09	7.49E-09	7.49E-09
li 6	3.43E-09	4.27E-09	5.11E-09	5.94E-09	6.77E-09	6.77E-09
gd158	2.68E-09	3.60E-09	4.57E-09	5.58E-09	6.61E-09	6.61E-09
sn117	2.82E-09	3.53E-09	4.26E-09	4.99E-09	5.73E-09	5.73E-09
eu154	2.87E-09	3.56E-09	4.27E-09	4.99E-09	5.70E-09	5.70E-09
ru100	1.22E-09	1.89E-09	2.71E-09	3.66E-09	4.76E-09	4.76E-09
sn119	2.28E-09	2.86E-09	3.43E-09	4.01E-09	4.60E-09	4.60E-09
sn115	2.09E-09	2.61E-09	3.14E-09	3.67E-09	4.20E-09	4.20E-09
cd114	1.66E-09	2.17E-09	2.72E-09	3.29E-09	3.88E-09	3.88E-09

cs137	3.75E-09	3.74E-09	3.74E-09	3.73E-09	3.73E-09	3.73E-09
sr 88	1.73E-09	2.15E-09	2.58E-09	3.00E-09	3.42E-09	3.42E-09
nd142	8.30E-10	1.29E-09	1.86E-09	2.52E-09	3.28E-09	3.28E-09
ba134	8.20E-10	1.27E-09	1.82E-09	2.47E-09	3.22E-09	3.22E-09
pd110	1.39E-09	1.78E-09	2.19E-09	2.61E-09	3.04E-09	3.04E-09
sm148	7.64E-10	1.18E-09	1.69E-09	2.28E-09	2.97E-09	2.97E-09
dy164	1.06E-09	1.45E-09	1.89E-09	2.37E-09	2.90E-09	2.90E-09
dy162	1.04E-09	1.40E-09	1.80E-09	2.24E-09	2.72E-09	2.72E-09
ba135	6.56E-10	1.02E-09	1.47E-09	2.00E-09	2.61E-09	2.61E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 16
0 fraction of total absorption rate
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec
0 initial 456563. d 547875. d 639188. d 730500. d 730500. d

pr143	2.63E-09	2.63E-09	2.62E-09	2.61E-09	2.61E-09	2.61E-09
se 82	1.17E-09	1.46E-09	1.75E-09	2.04E-09	2.33E-09	2.33E-09
pd104	5.64E-10	8.77E-10	1.26E-09	1.71E-09	2.23E-09	2.23E-09
sn126	9.68E-10	1.22E-09	1.47E-09	1.72E-09	1.98E-09	1.98E-09
xe133	1.99E-09	1.98E-09	1.98E-09	1.98E-09	1.98E-09	1.98E-09
se 78	8.97E-10	1.12E-09	1.34E-09	1.57E-09	1.79E-09	1.79E-09
ce141	1.57E-09	1.57E-09	1.57E-09	1.56E-09	1.56E-09	1.56E-09
sn124	7.36E-10	9.22E-10	1.11E-09	1.30E-09	1.49E-09	1.49E-09
as 75	5.34E-10	6.66E-10	7.99E-10	9.30E-10	1.06E-09	1.06E-09
pm149	9.63E-10	9.62E-10	9.60E-10	9.59E-10	9.58E-10	9.58E-10
nd147	9.29E-10	9.27E-10	9.25E-10	9.23E-10	9.22E-10	9.22E-10
mo 96	2.53E-10	3.72E-10	5.13E-10	6.77E-10	8.62E-10	8.62E-10
ba136	3.58E-10	4.69E-10	5.88E-10	7.16E-10	8.53E-10	8.53E-10
in113	4.01E-10	5.04E-10	6.09E-10	7.14E-10	8.19E-10	8.19E-10
dy163	2.45E-10	3.34E-10	4.32E-10	5.42E-10	6.61E-10	6.61E-10
sn118	3.01E-10	3.77E-10	4.54E-10	5.30E-10	6.07E-10	6.07E-10
kr 82	2.32E-10	3.13E-10	4.02E-10	5.00E-10	6.06E-10	6.06E-10
ce144	5.93E-10	5.92E-10	5.90E-10	5.88E-10	5.87E-10	5.87E-10
kr 85	5.62E-10	5.61E-10	5.59E-10	5.57E-10	5.55E-10	5.55E-10
xe130	1.83E-10	2.55E-10	3.38E-10	4.32E-10	5.36E-10	5.36E-10
cs134	2.74E-10	3.36E-10	4.02E-10	4.68E-10	5.34E-10	5.34E-10
cd116	2.54E-10	3.18E-10	3.82E-10	4.47E-10	5.11E-10	5.11E-10
sn122	2.52E-10	3.15E-10	3.79E-10	4.43E-10	5.07E-10	5.07E-10
nb 93	1.03E-10	1.62E-10	2.34E-10	3.18E-10	4.15E-10	4.15E-10
cd110	8.86E-11	1.43E-10	2.13E-10	2.99E-10	4.03E-10	4.03E-10
sn120	1.88E-10	2.36E-10	2.83E-10	3.31E-10	3.79E-10	3.79E-10
ru103	3.60E-10	3.60E-10	3.61E-10	3.62E-10	3.63E-10	3.63E-10
ge 73	1.46E-10	1.82E-10	2.19E-10	2.55E-10	2.92E-10	2.92E-10
br 79	5.34E-11	8.33E-11	1.20E-10	1.63E-10	2.12E-10	2.12E-10
zr 95	1.65E-10	1.64E-10	1.64E-10	1.63E-10	1.63E-10	1.63E-10
nb 95	1.51E-10	1.51E-10	1.51E-10	1.50E-10	1.50E-10	1.50E-10
y 91	1.40E-10	1.40E-10	1.39E-10	1.39E-10	1.38E-10	1.38E-10
ag107	3.06E-11	4.87E-11	7.13E-11	9.86E-11	1.31E-10	1.31E-10
te126	4.42E-11	6.10E-11	8.01E-11	1.02E-10	1.26E-10	1.26E-10
xe129	3.04E-11	4.74E-11	6.82E-11	9.28E-11	1.21E-10	1.21E-10
pm151	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10
ge 76	5.27E-11	6.57E-11	7.87E-11	9.17E-11	1.05E-10	1.05E-10
gd160	3.89E-11	5.01E-11	6.19E-11	7.43E-11	8.73E-11	8.73E-11
ho165	1.74E-11	2.38E-11	3.11E-11	3.92E-11	4.82E-11	4.82E-11
ba140	4.68E-11	4.67E-11	4.66E-11	4.65E-11	4.64E-11	4.64E-11
eu156	3.71E-11	3.77E-11	3.84E-11	3.91E-11	3.97E-11	3.97E-11
sm153	3.89E-11	3.91E-11	3.93E-11	3.95E-11	3.97E-11	3.97E-11
ru106	2.83E-11	2.88E-11	2.95E-11	3.01E-11	3.07E-11	3.07E-11
sr 89	3.00E-11	2.99E-11	2.98E-11	2.97E-11	2.96E-11	2.96E-11
kr 87	2.24E-11	2.23E-11	2.23E-11	2.22E-11	2.21E-11	2.21E-11
dy160	4.34E-12	6.76E-12	9.75E-12	1.33E-11	1.75E-11	1.75E-11

ce143	1.72E-11	1.72E-11	1.72E-11	1.71E-11	1.71E-11	1.71E-11
sb125	1.54E-11	1.55E-11	1.56E-11	1.57E-11	1.58E-11	1.58E-11
y 90	1.59E-11	1.59E-11	1.58E-11	1.58E-11	1.57E-11	1.57E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 17
0 fraction of total absorption rate
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec
0 initial 456563. d 547875. d 639188. d 730500. d 730500. d

te124	6.90E-12	8.86E-12	1.09E-11	1.30E-11	1.53E-11	1.53E-11
la140	1.52E-11	1.52E-11	1.52E-11	1.51E-11	1.51E-11	1.51E-11
mo 99	1.30E-11	1.30E-11	1.30E-11	1.30E-11	1.30E-11	1.30E-11
xe128	3.27E-12	5.00E-12	7.11E-12	9.59E-12	1.24E-11	1.24E-11
sr 87	6.13E-12	7.67E-12	9.23E-12	1.08E-11	1.23E-11	1.23E-11
pm148m	9.70E-12	9.57E-12	9.57E-12	9.57E-12	9.57E-12	9.57E-12
sr 86	3.17E-12	4.41E-12	5.81E-12	7.40E-12	9.15E-12	9.15E-12
te127m	7.63E-12	7.69E-12	7.74E-12	7.80E-12	7.85E-12	7.85E-12
nb 94	3.52E-12	4.42E-12	5.32E-12	6.24E-12	7.17E-12	7.17E-12
i131	6.74E-12	6.73E-12	6.73E-12	6.73E-12	6.72E-12	6.72E-12
ge 74	2.94E-12	3.67E-12	4.40E-12	5.13E-12	5.86E-12	5.86E-12
sn116	1.19E-12	1.86E-12	2.67E-12	3.63E-12	4.73E-12	4.73E-12
ge 72	2.00E-12	2.50E-12	3.01E-12	3.53E-12	4.04E-12	4.04E-12
se 76	1.49E-12	1.97E-12	2.49E-12	3.06E-12	3.66E-12	3.66E-12
er166	7.45E-13	1.07E-12	1.45E-12	1.89E-12	2.38E-12	2.38E-12
te122	5.05E-13	7.82E-13	1.12E-12	1.52E-12	1.98E-12	1.98E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.81E-12	1.81E-12	1.81E-12
ag111	3.73E-13	3.85E-13	3.97E-13	4.09E-13	4.22E-13	4.22E-13
pm148	3.79E-13	3.74E-13	3.73E-13	3.72E-13	3.72E-13	3.72E-13
eu157	3.33E-13	3.40E-13	3.48E-13	3.57E-13	3.65E-13	3.65E-13
cd115m	2.42E-13	2.43E-13	2.44E-13	2.45E-13	2.46E-13	2.46E-13
kr 80	9.78E-14	1.28E-13	1.62E-13	1.99E-13	2.40E-13	2.40E-13
cs136	8.34E-14	9.00E-14	9.66E-14	1.03E-13	1.10E-13	1.10E-13
er167	1.08E-14	1.76E-14	2.65E-14	3.78E-14	5.17E-14	5.17E-14
te123	9.74E-15	1.39E-14	1.90E-14	2.52E-14	3.26E-14	3.26E-14
ru105	3.12E-14	3.15E-14	3.19E-14	3.22E-14	3.25E-14	3.25E-14
sn125	2.97E-14	2.98E-14	3.00E-14	3.01E-14	3.02E-14	3.02E-14
tb160	1.14E-14	1.43E-14	1.74E-14	2.06E-14	2.38E-14	2.38E-14
pr142	6.86E-15	8.53E-15	1.02E-14	1.19E-14	1.35E-14	1.35E-14
be 9	6.70E-15	8.36E-15	1.00E-14	1.17E-14	1.33E-14	1.33E-14
rb 88	1.26E-14	1.26E-14	1.25E-14	1.25E-14	1.24E-14	1.24E-14
sn123	1.02E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14
i135	1.00E-14	9.98E-15	9.97E-15	9.95E-15	9.94E-15	9.94E-15
te132	9.47E-15	9.46E-15	9.45E-15	9.44E-15	9.44E-15	9.44E-15
sb126	4.73E-15	5.16E-15	5.59E-15	6.02E-15	6.45E-15	6.45E-15
te134	5.74E-15	5.72E-15	5.71E-15	5.69E-15	5.68E-15	5.68E-15
li 7	2.66E-15	3.32E-15	3.98E-15	4.63E-15	5.29E-15	5.29E-15
i130	1.97E-15	2.29E-15	2.59E-15	2.90E-15	3.21E-15	3.21E-15
sb124	2.62E-15	2.75E-15	2.88E-15	3.00E-15	3.13E-15	3.13E-15
in117m	2.17E-15	2.19E-15	2.21E-15	2.23E-15	2.25E-15	2.25E-15
cd108	3.76E-16	6.46E-16	1.03E-15	1.54E-15	2.20E-15	2.20E-15
sn114	2.86E-16	4.48E-16	6.46E-16	8.81E-16	1.15E-15	1.15E-15
rb 86	6.47E-16	7.44E-16	8.42E-16	9.40E-16	1.04E-15	1.04E-15
dy165	4.85E-16	5.51E-16	6.19E-16	6.87E-16	7.54E-16	7.54E-16
in117	6.41E-16	6.47E-16	6.54E-16	6.60E-16	6.67E-16	6.67E-16
cd118	1.22E-16	1.23E-16	1.23E-16	1.24E-16	1.25E-16	1.25E-16
cs134m	5.11E-17	6.29E-17	7.52E-17	8.76E-17	9.98E-17	9.98E-17
ge 75	8.51E-17	8.50E-17	8.49E-17	8.48E-17	8.47E-17	8.47E-17
in119m	3.04E-17	3.05E-17	3.06E-17	3.08E-17	3.09E-17	3.09E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 18
0 fraction of total absorption rate
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec

0 initial 456563. d 547875. d 639188. d 730500. d 730500. d

cd109	1.91E-18	2.31E-18	2.72E-18	3.12E-18	3.52E-18	3.52E-18
ag110	1.38E-18	1.79E-18	2.25E-18	2.75E-18	3.27E-18	3.27E-18
in119	2.40E-18	2.41E-18	2.43E-18	2.44E-18	2.46E-18	2.46E-18

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 19
power= 4.000E-03mw, burnup=2.9220E+03mwd, flux= 2.80E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	456563. d	547875. d	639188. d	730500. d	730500. d
h 1	8.84E-05	1.10E-04	1.32E-04	1.53E-04	1.75E-04	1.75E-04
h 2	2.62E-07	3.27E-07	3.91E-07	4.56E-07	5.20E-07	5.20E-07
h 3	3.69E-11	3.71E-11	3.77E-11	3.83E-11	3.89E-11	3.89E-11
h 4	1.49E-34	1.49E-34	1.52E-34	1.54E-34	1.56E-34	1.56E-34
he 3	1.95E-09	2.42E-09	2.87E-09	3.32E-09	3.76E-09	3.76E-09
he 4	1.46E-05	1.82E-05	2.18E-05	2.54E-05	2.90E-05	2.90E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.76E-06	2.19E-06	2.62E-06	3.05E-06	3.48E-06	3.48E-06
ne 21	6.33E-11	9.74E-11	1.38E-10	1.85E-10	2.38E-10	2.38E-10
ne 22	1.16E-08	1.44E-08	1.73E-08	2.01E-08	2.30E-08	2.30E-08
ne 23	7.30E-15	7.17E-15	7.17E-15	7.16E-15	7.15E-15	7.15E-15
na 22	4.29E-11	4.22E-11	4.22E-11	4.21E-11	4.21E-11	4.21E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.64E-08	3.08E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08
na 24m	5.97E-15	5.05E-15	5.05E-15	5.04E-15	5.04E-15	5.04E-15
na 25	2.40E-25	3.45E-25	4.74E-25	6.22E-25	7.88E-25	7.88E-25
mg 24	1.51E-02	1.83E-02	2.15E-02	2.47E-02	2.78E-02	2.78E-02
mg 25	7.96E-09	1.18E-08	1.62E-08	2.13E-08	2.70E-08	2.70E-08
mg 26	2.62E-07	3.27E-07	3.91E-07	4.56E-07	5.20E-07	5.20E-07
mg 27	2.18E-12	2.14E-12	2.14E-12	2.14E-12	2.13E-12	2.13E-12
mg 28	4.40E-24	4.33E-24	4.32E-24	4.31E-24	4.31E-24	4.31E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.70E-10	2.28E-10	2.28E-10	2.28E-10	2.27E-10	2.27E-10
al 29	1.52E-23	2.29E-23	3.26E-23	4.38E-23	5.65E-23	5.65E-23
al 30	2.78E-34	5.28E-34	9.06E-34	1.43E-33	2.11E-33	2.11E-33
si 28	4.40E-02	5.32E-02	6.25E-02	7.18E-02	8.10E-02	8.10E-02
si 29	5.62E-08	8.73E-08	1.24E-07	1.67E-07	2.16E-07	2.16E-07
si 30	7.71E-14	1.50E-13	2.59E-13	4.08E-13	6.04E-13	6.04E-13
si 31	5.50E-26	1.07E-25	1.84E-25	2.90E-25	4.29E-25	4.29E-25
si 32	5.14E-32	1.12E-31	2.07E-31	3.46E-31	5.34E-31	5.34E-31
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.80E+08	2.80E+08	2.80E+08	2.80E+08	2.79E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 20
power= 4.000E-03mw, burnup=2.9220E+03mwd, flux= 2.80E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	456563. d	547875. d	639188. d	730500. d	730500. d
he 4	2.89E-01	3.89E-01	4.98E-01	6.16E-01	7.42E-01	7.42E-01
pb206	1.47E-05	2.82E-05	4.78E-05	7.45E-05	1.09E-04	1.09E-04
pb207	7.38E-06	1.16E-05	1.68E-05	2.30E-05	3.01E-05	3.01E-05
pb208	1.24E-06	1.92E-06	2.76E-06	3.74E-06	4.87E-06	4.87E-06
pb209	1.35E-12	2.09E-12	2.99E-12	4.04E-12	5.23E-12	5.23E-12
pb210	1.42E-06	2.15E-06	3.00E-06	3.96E-06	5.01E-06	5.01E-06
pb211	1.51E-12	1.89E-12	2.27E-12	2.65E-12	3.03E-12	3.03E-12
pb212	4.25E-12	5.28E-12	6.32E-12	7.36E-12	8.40E-12	8.40E-12
pb214	3.25E-12	4.92E-12	6.86E-12	9.04E-12	1.15E-11	1.15E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	8.49E-07	1.65E-06	2.83E-06	4.46E-06	6.62E-06	6.62E-06

bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	8.76E-10	1.32E-09	1.85E-09	2.44E-09	3.08E-09	3.08E-09
bi211	8.96E-14	1.12E-13	1.35E-13	1.57E-13	1.80E-13	1.80E-13
bi212	4.03E-13	5.01E-13	6.00E-13	6.99E-13	7.97E-13	7.97E-13
bi213	3.16E-13	4.89E-13	6.99E-13	9.43E-13	1.22E-12	1.22E-12
bi214	2.42E-12	3.65E-12	5.09E-12	6.72E-12	8.50E-12	8.50E-12
po210	2.42E-08	3.66E-08	5.10E-08	6.73E-08	8.52E-08	8.52E-08
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.90E-19	1.24E-18	1.49E-18	1.74E-18	1.99E-18	1.99E-18
po212	2.12E-23	2.63E-23	3.15E-23	3.67E-23	4.19E-23	4.19E-23
po213	4.75E-22	7.35E-22	1.05E-21	1.42E-21	1.84E-21	1.84E-21
po214	3.32E-19	5.02E-19	7.01E-19	9.24E-19	1.17E-18	1.17E-18
po215	1.24E-18	1.55E-18	1.87E-18	2.18E-18	2.49E-18	2.49E-18
po216	1.61E-17	2.00E-17	2.39E-17	2.79E-17	3.18E-17	3.18E-17
po218	3.76E-13	5.69E-13	7.93E-13	1.05E-12	1.32E-12	1.32E-12
rn218	6.49E-29	7.85E-29	9.39E-29	1.09E-28	1.24E-28	1.24E-28
rn219	2.76E-15	3.46E-15	4.15E-15	4.84E-15	5.54E-15	5.54E-15
rn220	6.17E-15	7.67E-15	9.18E-15	1.07E-14	1.22E-14	1.22E-14
rn222	6.69E-10	1.01E-09	1.41E-09	1.86E-09	2.35E-09	2.35E-09
ra222	7.04E-26	8.52E-26	1.02E-25	1.19E-25	1.35E-25	1.35E-25
ra223	6.90E-10	8.62E-10	1.04E-09	1.21E-09	1.38E-09	1.38E-09
ra224	3.51E-11	4.36E-11	5.22E-11	6.08E-11	6.94E-11	6.94E-11
ra225	1.48E-10	2.29E-10	3.27E-10	4.41E-10	5.71E-10	5.71E-10
ra226	1.02E-04	1.54E-04	2.15E-04	2.84E-04	3.60E-04	3.60E-04
ra228	2.12E-12	2.65E-12	3.18E-12	3.72E-12	4.25E-12	4.25E-12
ac225	9.98E-11	1.55E-10	2.21E-10	2.98E-10	3.86E-10	3.86E-10
ac227	4.80E-07	6.00E-07	7.20E-07	8.41E-07	9.61E-07	9.61E-07
ac228	2.59E-16	3.23E-16	3.88E-16	4.54E-16	5.19E-16	5.19E-16
th226	3.44E-24	4.16E-24	4.97E-24	5.78E-24	6.59E-24	6.59E-24
th227	1.11E-09	1.39E-09	1.67E-09	1.95E-09	2.23E-09	2.23E-09
th228	6.70E-09	8.33E-09	9.97E-09	1.16E-08	1.32E-08	1.32E-08
th229	2.87E-05	4.45E-05	6.35E-05	8.57E-05	1.11E-04	1.11E-04
th230	2.56E-02	3.20E-02	3.84E-02	4.48E-02	5.13E-02	5.13E-02
th231	3.11E-09	3.13E-09	3.15E-09	3.17E-09	3.20E-09	3.20E-09
th232	5.18E-03	6.48E-03	7.78E-03	9.08E-03	1.04E-02	1.04E-02
th233	4.78E-14	5.94E-14	7.13E-14	8.32E-14	9.50E-14	9.50E-14
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	7.21E-04	9.02E-04	1.08E-03	1.26E-03	1.45E-03	1.45E-03
pa232	1.23E-11	1.54E-11	1.85E-11	2.16E-11	2.46E-11	2.46E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 21
power= 4.000E-03mw, burnup=2.9220E+03mwd, flux= 2.80E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 456563. d	547875. d	639188. d	730500. d	730500. d	
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	3.33E-21	4.03E-21	4.82E-21	5.61E-21	6.39E-21	6.39E-21
u231	1.08E-17	1.32E-17	1.58E-17	1.83E-17	2.09E-17	2.09E-17
u232	2.44E-07	3.03E-07	3.63E-07	4.23E-07	4.82E-07	4.82E-07
u233	1.35E-02	1.69E-02	2.02E-02	2.36E-02	2.69E-02	2.69E-02
u234	9.18E+00	9.21E+00	9.25E+00	9.28E+00	9.32E+00	9.32E+00
u235	7.23E+02	7.21E+02	7.19E+02	7.18E+02	7.16E+02	7.16E+02
u236	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.77E+02	1.77E+02
u237	3.26E-06	3.19E-06	3.19E-06	3.19E-06	3.19E-06	3.19E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	3.28E-07	3.22E-07	3.22E-07	3.22E-07	3.21E-07	3.21E-07
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	9.08E-12	8.87E-12	8.86E-12	8.84E-12	8.83E-12	8.83E-12
np236m	2.16E-12	2.11E-12	2.11E-12	2.10E-12	2.10E-12	2.10E-12
np236	2.05E-07	2.55E-07	3.04E-07	3.53E-07	4.03E-07	4.03E-07
np237	4.21E+01	4.20E+01	4.20E+01	4.20E+01	4.20E+01	4.20E+01
np238	1.57E-06	1.56E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06
np239	4.74E-05	4.66E-05	4.65E-05	4.65E-05	4.64E-05	4.64E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	9.69E-15	9.47E-15	9.45E-15	9.43E-15	9.41E-15	9.41E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.17E-09	1.14E-09	1.14E-09	1.14E-09	1.14E-09	1.14E-09
pu237	2.87E-13	2.89E-13	2.98E-13	3.07E-13	3.16E-13	3.16E-13
pu238	2.38E-02	2.36E-02	2.35E-02	2.35E-02	2.34E-02	2.34E-02
pu239	4.97E+00	6.14E+00	7.29E+00	8.43E+00	9.55E+00	9.55E+00
pu240	2.36E-02	3.62E-02	5.12E-02	6.85E-02	8.79E-02	8.79E-02
pu241	1.01E-05	1.51E-05	2.14E-05	2.86E-05	3.67E-05	3.67E-05
pu242	1.04E-07	2.27E-07	4.27E-07	7.25E-07	1.14E-06	1.14E-06
pu243	2.28E-16	4.88E-16	9.17E-16	1.56E-15	2.45E-15	2.45E-15
pu244	2.93E-33	2.38E-32	1.29E-31	5.32E-31	1.80E-30	1.80E-30
pu245	.00E+00	.00E+00	.00E+00	.00E+00	7.64E-41	7.64E-41
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	3.18E-20	5.50E-20	8.68E-20	1.26E-19	1.74E-19	1.74E-19
am240	1.46E-17	2.52E-17	3.97E-17	5.78E-17	7.95E-17	7.95E-17
am241	1.10E-04	1.95E-04	3.08E-04	4.49E-04	6.18E-04	6.18E-04
am242m	3.57E-08	6.90E-08	1.16E-07	1.76E-07	2.51E-07	2.51E-07
am242	4.32E-12	7.68E-12	1.22E-11	1.79E-11	2.47E-11	2.47E-11
am243	2.90E-10	7.36E-10	1.54E-09	2.86E-09	4.82E-09	4.82E-09
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	2.28E-18	5.68E-18	1.19E-17	2.20E-17	3.71E-17	3.71E-17
am245	.00E+00	.00E+00	.00E+00	.00E+00	1.49E-41	1.49E-41
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	2.65E-22	4.59E-22	7.28E-22	1.07E-21	1.47E-21	1.47E-21
cm242	8.73E-10	1.55E-09	2.46E-09	3.61E-09	4.98E-09	4.98E-09
cm243	3.36E-19	7.28E-19	1.29E-18	2.05E-18	3.00E-18	3.00E-18
cm244	3.58E-14	8.92E-14	1.87E-13	3.45E-13	5.83E-13	5.83E-13

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 22
power= 4.000E-03mw, burnup=2.9220E+03mwd, flux= 2.80E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 456563. d	547875. d	639188. d	730500. d	730500. d	
cm245	6.91E-18	2.19E-17	5.57E-17	1.22E-16	2.36E-16	2.36E-16
cm246	6.36E-21	2.57E-20	7.88E-20	2.00E-19	4.46E-19	4.46E-19
cm247	9.86E-26	4.97E-25	1.84E-24	5.48E-24	1.40E-23	1.40E-23
cm248	1.49E-29	9.49E-29	4.24E-28	1.49E-27	4.38E-27	4.38E-27
cm249	4.82E-40	3.03E-39	1.35E-38	4.74E-38	1.39E-37	1.39E-37
cm250	1.40E-45	1.54E-44	8.83E-44	3.69E-43	1.25E-42	1.25E-42
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.80E+08	2.80E+08	2.80E+08	2.80E+08	2.79E-07

0 1q array has 20 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 4q array has 1 entries.
0 54q array has 12 entries.
1library information...

cross-section data taken from position number 3 of library on unit 33.

```
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ******************************************************************************
          *                                                                            *
          *            prelim lwr origen-s binary working library--id = 1143            *
          *         made from modified card-image origen-s libraries of scale 4.2       *
          *      data from the light element, actinide, and fission product libraries   *
          *        decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                            *
          *      neutron flux spectrum factors and cross sections were produced from    *
          *     the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                            *
          *                  fission product yields are from endf/b-v                  *
          *                                                                            *
          *              photon libraries use an 18-energy-group structure             *
          *             the photon data are from the master photon data base,          *
          *              produced to include bremsstrahlung from uo2 matrix            *
          *                                                                            *
          *        see information above this box (if present) for later updates       *
          *                                                                            *
          ******************************************************************************
          *                                                                            *
0         ******************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                 8/28/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
                        879    number of fission product nuclides
0                      7993    number of nonzero off-diagonal matrix elements
0         ******************************************************************************
1     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   23
          power=    .00mw, burnup=   4383.mwd, flux= 2.71E+08n/cm**2-sec
0                                                basis =
0     (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial      821813. d      913125. d      ******* d      ******* d      ******* d
      productions   1.133886E+06   1.135393E+06   1.136859E+06   1.138285E+06   1.139671E+06   1.139671E+06
      absorptions   9.323096E+05   9.334989E+05   9.346394E+05   9.357402E+05   9.368058E+05   9.368058E+05
      k infinity    1.216212E+00   1.216277E+00   1.216361E+00   1.216455E+00   1.216550E+00   1.216550E+00
0                    initial      821813. d      913125. d      ******* d      ******* d      ******* d
      actinide
      absorptions   9.229046E+05   9.238316E+05   9.247386E+05   9.256261E+05   9.264941E+05   9.264941E+05
      non-actinide
      abs. fracs.   1.008779E-02   1.035595E-02   1.059318E-02   1.080871E-02   1.100731E-02   1.100731E-02
1     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products    page   24
0                                  fraction of total absorption rate
          power=    .00mw, burnup=   4383.mwd, flux= 2.71E+08n/cm**2-sec
```

0 initial 821813. d 913125. d ******* d ******* d ******* d

sm149	5.01E-03	5.11E-03	5.18E-03	5.23E-03	5.27E-03	5.27E-03
eu151	3.83E-04	4.29E-04	4.74E-04	5.17E-04	5.60E-04	5.60E-04
nd143	2.88E-04	3.24E-04	3.59E-04	3.94E-04	4.29E-04	4.29E-04
rh103	1.38E-04	1.55E-04	1.72E-04	1.89E-04	2.06E-04	2.06E-04
gd155	1.24E-04	1.33E-04	1.41E-04	1.48E-04	1.54E-04	1.54E-04
xe131	9.27E-05	1.04E-04	1.16E-04	1.27E-04	1.38E-04	1.38E-04
cs133	7.18E-05	8.07E-05	8.95E-05	9.83E-05	1.07E-04	1.07E-04
cd113	6.89E-05	7.27E-05	7.59E-05	7.87E-05	8.11E-05	8.11E-05
sm147	5.31E-05	5.96E-05	6.62E-05	7.27E-05	7.92E-05	7.92E-05
tc 99	5.27E-05	5.92E-05	6.57E-05	7.21E-05	7.85E-05	7.85E-05
nd145	4.08E-05	4.58E-05	5.08E-05	5.57E-05	6.07E-05	6.07E-05
gd157	4.20E-05	4.32E-05	4.43E-05	4.53E-05	4.64E-05	4.64E-05
mo 95	2.83E-05	3.18E-05	3.52E-05	3.87E-05	4.22E-05	4.22E-05
sm151	4.02E-05	4.02E-05	4.03E-05	4.04E-05	4.05E-05	4.05E-05
sm152	2.40E-05	2.73E-05	3.06E-05	3.39E-05	3.73E-05	3.73E-05
kr 83	1.75E-05	1.97E-05	2.18E-05	2.39E-05	2.60E-05	2.60E-05
sm150	1.46E-05	1.72E-05	1.99E-05	2.25E-05	2.52E-05	2.52E-05
cs135	1.62E-05	1.82E-05	2.02E-05	2.22E-05	2.42E-05	2.42E-05
ru101	1.26E-05	1.42E-05	1.57E-05	1.73E-05	1.89E-05	1.89E-05
pr141	1.20E-05	1.35E-05	1.50E-05	1.65E-05	1.79E-05	1.79E-05
eu153	1.12E-05	1.26E-05	1.41E-05	1.55E-05	1.69E-05	1.69E-05
la139	9.82E-06	1.10E-05	1.22E-05	1.34E-05	1.46E-05	1.46E-05
ba137	4.60E-06	5.18E-06	5.76E-06	6.34E-06	6.92E-06	6.92E-06
pd105	4.41E-06	4.99E-06	5.57E-06	6.15E-06	6.74E-06	6.74E-06
zr 93	3.99E-06	4.48E-06	4.97E-06	5.46E-06	5.94E-06	5.94E-06
i129	3.09E-06	3.47E-06	3.86E-06	4.25E-06	4.63E-06	4.63E-06
nd144	2.95E-06	3.32E-06	3.68E-06	4.05E-06	4.41E-06	4.41E-06
ag109	2.51E-06	2.94E-06	3.40E-06	3.88E-06	4.39E-06	4.39E-06
mo 97	2.23E-06	2.51E-06	2.78E-06	3.05E-06	3.33E-06	3.33E-06
xe135	2.28E-06	2.28E-06	2.28E-06	2.28E-06	2.28E-06	2.28E-06
zr 91	1.04E-06	1.17E-06	1.30E-06	1.43E-06	1.55E-06	1.55E-06
y 89	9.99E-07	1.12E-06	1.24E-06	1.36E-06	1.49E-06	1.49E-06
ru102	9.13E-07	1.03E-06	1.14E-06	1.25E-06	1.37E-06	1.37E-06
ce142	8.16E-07	9.16E-07	1.02E-06	1.12E-06	1.22E-06	1.22E-06
pd108	7.18E-07	8.30E-07	9.48E-07	1.07E-06	1.20E-06	1.20E-06
nd148	7.88E-07	8.85E-07	9.82E-07	1.08E-06	1.18E-06	1.18E-06
nd146	6.59E-07	7.40E-07	8.21E-07	9.02E-07	9.83E-07	9.83E-07
gd152	4.23E-07	5.38E-07	6.66E-07	8.06E-07	9.58E-07	9.58E-07
in115	5.58E-07	6.29E-07	7.00E-07	7.71E-07	8.42E-07	8.42E-07
ba138	5.62E-07	6.32E-07	7.01E-07	7.70E-07	8.39E-07	8.39E-07
ce140	5.27E-07	5.92E-07	6.56E-07	7.21E-07	7.86E-07	7.86E-07
xe132	4.78E-07	5.37E-07	5.97E-07	6.56E-07	7.15E-07	7.15E-07
pd107	3.93E-07	4.52E-07	5.12E-07	5.75E-07	6.40E-07	6.40E-07
mo 98	3.29E-07	3.70E-07	4.11E-07	4.51E-07	4.92E-07	4.92E-07
mo100	3.18E-07	3.57E-07	3.96E-07	4.36E-07	4.75E-07	4.75E-07
xe134	3.11E-07	3.50E-07	3.88E-07	4.26E-07	4.65E-07	4.65E-07
zr 92	2.51E-07	2.82E-07	3.13E-07	3.44E-07	3.74E-07	3.74E-07
i127	2.14E-07	2.41E-07	2.69E-07	2.97E-07	3.25E-07	3.25E-07
ru104	2.01E-07	2.26E-07	2.52E-07	2.78E-07	3.03E-07	3.03E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 25
0 fraction of total absorption rate
power= .00mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 821813. d 913125. d ******* d ******* d ******* d

zr 96	2.01E-07	2.25E-07	2.50E-07	2.74E-07	2.99E-07	2.99E-07
pm147	2.68E-07	2.68E-07	2.67E-07	2.67E-07	2.66E-07	2.66E-07
nd150	1.76E-07	1.98E-07	2.20E-07	2.41E-07	2.63E-07	2.63E-07
xe136	1.69E-07	1.89E-07	2.10E-07	2.31E-07	2.52E-07	2.52E-07

br 81	1.27E-07	1.42E-07	1.58E-07	1.73E-07	1.89E-07	1.89E-07
rb 85	1.23E-07	1.38E-07	1.53E-07	1.68E-07	1.83E-07	1.83E-07
eu155	1.72E-07	1.73E-07	1.75E-07	1.76E-07	1.78E-07	1.78E-07
zr 94	1.07E-07	1.20E-07	1.34E-07	1.47E-07	1.60E-07	1.60E-07
cd111	9.61E-08	1.10E-07	1.24E-07	1.38E-07	1.53E-07	1.53E-07
eu152	9.97E-08	1.12E-07	1.23E-07	1.34E-07	1.45E-07	1.45E-07
zr 90	9.66E-08	1.09E-07	1.21E-07	1.33E-07	1.45E-07	1.45E-07
sm154	7.68E-08	8.66E-08	9.65E-08	1.06E-07	1.16E-07	1.16E-07
te130	7.68E-08	8.63E-08	9.58E-08	1.05E-07	1.15E-07	1.15E-07
rb 87	7.11E-08	7.98E-08	8.84E-08	9.71E-08	1.06E-07	1.06E-07
se 77	5.05E-08	5.68E-08	6.30E-08	6.92E-08	7.54E-08	7.54E-08
pd106	4.04E-08	4.59E-08	5.15E-08	5.73E-08	6.31E-08	6.31E-08
ru 99	2.75E-08	3.47E-08	4.27E-08	5.15E-08	6.12E-08	6.12E-08
kr 84	3.37E-08	3.79E-08	4.20E-08	4.61E-08	5.02E-08	5.02E-08
gd156	2.67E-08	3.14E-08	3.63E-08	4.14E-08	4.66E-08	4.66E-08
se 79	2.59E-08	2.91E-08	3.23E-08	3.55E-08	3.87E-08	3.87E-08
sb121	2.55E-08	2.87E-08	3.19E-08	3.52E-08	3.84E-08	3.84E-08
gd154	1.50E-08	1.90E-08	2.34E-08	2.83E-08	3.37E-08	3.37E-08
sb123	2.06E-08	2.33E-08	2.59E-08	2.85E-08	3.11E-08	3.11E-08
kr 86	1.86E-08	2.09E-08	2.32E-08	2.55E-08	2.77E-08	2.77E-08
dy161	1.59E-08	1.86E-08	2.14E-08	2.44E-08	2.75E-08	2.75E-08
te128	1.70E-08	1.92E-08	2.13E-08	2.35E-08	2.56E-08	2.56E-08
se 80	1.21E-08	1.36E-08	1.51E-08	1.66E-08	1.80E-08	1.80E-08
te125	1.10E-08	1.24E-08	1.38E-08	1.52E-08	1.67E-08	1.67E-08
sr 90	1.66E-08	1.65E-08	1.65E-08	1.64E-08	1.64E-08	1.64E-08
tb159	8.73E-09	1.00E-08	1.13E-08	1.27E-08	1.41E-08	1.41E-08
cd112	7.51E-09	8.52E-09	9.54E-09	1.06E-08	1.16E-08	1.16E-08
gd158	6.61E-09	7.67E-09	8.77E-09	9.89E-09	1.10E-08	1.10E-08
ru100	4.78E-09	6.02E-09	7.40E-09	8.92E-09	1.06E-08	1.06E-08
li 6	6.79E-09	7.62E-09	8.44E-09	9.26E-09	1.01E-08	1.01E-08
rh105	9.10E-09	9.19E-09	9.27E-09	9.36E-09	9.45E-09	9.45E-09
sn117	5.74E-09	6.49E-09	7.24E-09	8.00E-09	8.77E-09	8.77E-09
eu154	5.71E-09	6.41E-09	7.13E-09	7.85E-09	8.57E-09	8.57E-09
nd142	3.29E-09	4.16E-09	5.12E-09	6.19E-09	7.35E-09	7.35E-09
ba134	3.22E-09	4.06E-09	4.99E-09	6.02E-09	7.15E-09	7.15E-09
sn119	4.61E-09	5.20E-09	5.78E-09	6.37E-09	6.97E-09	6.97E-09
sm148	2.97E-09	3.74E-09	4.60E-09	5.55E-09	6.58E-09	6.58E-09
cd114	3.87E-09	4.48E-09	5.10E-09	5.74E-09	6.39E-09	6.39E-09
sn115	4.22E-09	4.75E-09	5.29E-09	5.83E-09	6.38E-09	6.38E-09
ba135	2.61E-09	3.29E-09	4.06E-09	4.91E-09	5.84E-09	5.84E-09
dy164	2.91E-09	3.48E-09	4.10E-09	4.75E-09	5.45E-09	5.45E-09
sr 88	3.43E-09	3.85E-09	4.26E-09	4.68E-09	5.09E-09	5.09E-09
dy162	2.72E-09	3.24E-09	3.79E-09	4.37E-09	5.00E-09	5.00E-09
pd104	2.22E-09	2.80E-09	3.46E-09	4.18E-09	4.96E-09	4.96E-09
pd110	3.04E-09	3.49E-09	3.95E-09	4.43E-09	4.92E-09	4.92E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 26
0 fraction of total absorption rate
power= .00mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 821813. d 913125. d ******* d ******* d ******* d

cs137	3.73E-09	3.72E-09	3.72E-09	3.71E-09	3.71E-09	3.71E-09
se 82	2.33E-09	2.62E-09	2.90E-09	3.19E-09	3.47E-09	3.47E-09
sn126	1.98E-09	2.24E-09	2.50E-09	2.77E-09	3.03E-09	3.03E-09
se 78	1.79E-09	2.01E-09	2.23E-09	2.45E-09	2.68E-09	2.68E-09
pr143	2.61E-09	2.60E-09	2.60E-09	2.59E-09	2.59E-09	2.59E-09
sn124	1.48E-09	1.67E-09	1.86E-09	2.05E-09	2.24E-09	2.24E-09
xe133	1.98E-09	1.98E-09	1.98E-09	1.97E-09	1.97E-09	1.97E-09
mo 96	8.61E-10	1.07E-09	1.30E-09	1.54E-09	1.82E-09	1.82E-09
as 75	1.06E-09	1.19E-09	1.32E-09	1.46E-09	1.59E-09	1.59E-09
ce141	1.56E-09	1.56E-09	1.56E-09	1.56E-09	1.55E-09	1.55E-09

ba136	8.52E-10	9.96E-10	1.15E-09	1.31E-09	1.48E-09	1.48E-09
in113	8.19E-10	9.25E-10	1.03E-09	1.14E-09	1.25E-09	1.25E-09
dy163	6.61E-10	7.90E-10	9.29E-10	1.08E-09	1.23E-09	1.23E-09
kr 82	6.07E-10	7.22E-10	8.45E-10	9.76E-10	1.11E-09	1.11E-09
xe130	5.38E-10	6.53E-10	7.78E-10	9.14E-10	1.06E-09	1.06E-09
cd110	4.04E-10	5.27E-10	6.69E-10	8.33E-10	1.02E-09	1.02E-09
pm149	9.62E-10	9.61E-10	9.60E-10	9.59E-10	9.58E-10	9.58E-10
nb 93	4.16E-10	5.26E-10	6.49E-10	7.85E-10	9.33E-10	9.33E-10
nd147	9.19E-10	9.18E-10	9.16E-10	9.15E-10	9.14E-10	9.14E-10
sn118	6.04E-10	6.81E-10	7.58E-10	8.36E-10	9.14E-10	9.14E-10
cs134	5.35E-10	5.97E-10	6.62E-10	7.27E-10	7.91E-10	7.91E-10
cd116	5.10E-10	5.75E-10	6.39E-10	7.04E-10	7.70E-10	7.70E-10
sn122	5.08E-10	5.72E-10	6.37E-10	7.02E-10	7.68E-10	7.68E-10
ce144	5.88E-10	5.86E-10	5.85E-10	5.84E-10	5.82E-10	5.82E-10
sn120	3.79E-10	4.27E-10	4.75E-10	5.24E-10	5.72E-10	5.72E-10
kr 85	5.56E-10	5.55E-10	5.53E-10	5.52E-10	5.50E-10	5.50E-10
br 79	2.12E-10	2.68E-10	3.31E-10	4.00E-10	4.75E-10	4.75E-10
ge 73	2.93E-10	3.29E-10	3.66E-10	4.03E-10	4.39E-10	4.39E-10
ru103	3.63E-10	3.64E-10	3.65E-10	3.66E-10	3.66E-10	3.66E-10
ag107	1.31E-10	1.69E-10	2.11E-10	2.59E-10	3.13E-10	3.13E-10
xe129	1.21E-10	1.53E-10	1.89E-10	2.29E-10	2.73E-10	2.73E-10
te126	1.26E-10	1.52E-10	1.81E-10	2.12E-10	2.45E-10	2.45E-10
zr 95	1.63E-10	1.62E-10	1.62E-10	1.62E-10	1.61E-10	1.61E-10
ge 76	1.05E-10	1.18E-10	1.30E-10	1.43E-10	1.56E-10	1.56E-10
nb 95	1.50E-10	1.50E-10	1.49E-10	1.49E-10	1.49E-10	1.49E-10
gd160	8.73E-11	1.01E-10	1.15E-10	1.29E-10	1.45E-10	1.45E-10
y 91	1.39E-10	1.38E-10	1.38E-10	1.38E-10	1.37E-10	1.37E-10
pm151	1.10E-10	1.10E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10
ho165	4.82E-11	5.80E-11	6.86E-11	8.01E-11	9.24E-11	9.24E-11
ba140	4.65E-11	4.64E-11	4.63E-11	4.62E-11	4.62E-11	4.62E-11
eu156	3.98E-11	4.05E-11	4.11E-11	4.18E-11	4.24E-11	4.24E-11
sm153	3.98E-11	4.00E-11	4.02E-11	4.04E-11	4.07E-11	4.07E-11
dy160	1.75E-11	2.22E-11	2.76E-11	3.37E-11	4.03E-11	4.03E-11
ru106	3.06E-11	3.11E-11	3.17E-11	3.23E-11	3.28E-11	3.28E-11
sr 89	2.97E-11	2.96E-11	2.95E-11	2.94E-11	2.93E-11	2.93E-11
xe128	1.25E-11	1.57E-11	1.93E-11	2.33E-11	2.77E-11	2.77E-11
te124	1.53E-11	1.76E-11	2.00E-11	2.25E-11	2.51E-11	2.51E-11
kr 87	2.22E-11	2.21E-11	2.20E-11	2.20E-11	2.19E-11	2.19E-11
sr 87	1.24E-11	1.39E-11	1.55E-11	1.71E-11	1.87E-11	1.87E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 27
0 fraction of total absorption rate
power= .00mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 821813. d 913125. d ******* d ******* d ******* d

sr 86	9.18E-12	1.11E-11	1.32E-11	1.55E-11	1.79E-11	1.79E-11
ce143	1.71E-11	1.71E-11	1.70E-11	1.70E-11	1.70E-11	1.70E-11
sb125	1.58E-11	1.59E-11	1.60E-11	1.61E-11	1.62E-11	1.62E-11
y 90	1.58E-11	1.57E-11	1.56E-11	1.56E-11	1.55E-11	1.55E-11
la140	1.51E-11	1.51E-11	1.50E-11	1.50E-11	1.50E-11	1.50E-11
mo 99	1.30E-11	1.29E-11	1.29E-11	1.29E-11	1.29E-11	1.29E-11
nb 94	7.16E-12	8.09E-12	9.05E-12	1.00E-11	1.10E-11	1.10E-11
sn116	4.71E-12	5.96E-12	7.35E-12	8.89E-12	1.06E-11	1.06E-11
pm148m	9.60E-12	9.56E-12	9.56E-12	9.56E-12	9.57E-12	9.57E-12
ge 74	5.88E-12	6.61E-12	7.35E-12	8.08E-12	8.82E-12	8.82E-12
te127m	7.87E-12	7.93E-12	7.98E-12	8.03E-12	8.08E-12	8.08E-12
i131	6.73E-12	6.72E-12	6.72E-12	6.72E-12	6.72E-12	6.72E-12
se 76	3.68E-12	4.33E-12	5.02E-12	5.75E-12	6.52E-12	6.52E-12
ge 72	4.05E-12	4.57E-12	5.09E-12	5.62E-12	6.15E-12	6.15E-12
er166	2.38E-12	2.92E-12	3.51E-12	4.15E-12	4.84E-12	4.84E-12
te122	1.98E-12	2.49E-12	3.07E-12	3.71E-12	4.41E-12	4.41E-12

te129m	1.81E-12	1.82E-12	1.82E-12	1.82E-12	1.83E-12	1.83E-12
ag111	4.21E-13	4.32E-13	4.44E-13	4.55E-13	4.66E-13	4.66E-13
kr 80	2.40E-13	2.85E-13	3.35E-13	3.89E-13	4.48E-13	4.48E-13
eu157	3.65E-13	3.73E-13	3.80E-13	3.88E-13	3.96E-13	3.96E-13
pm148	3.71E-13	3.68E-13	3.68E-13	3.67E-13	3.67E-13	3.67E-13
cd115m	2.47E-13	2.48E-13	2.49E-13	2.51E-13	2.52E-13	2.52E-13
er167	5.18E-14	6.86E-14	8.84E-14	1.11E-13	1.38E-13	1.38E-13
cs136	1.09E-13	1.16E-13	1.22E-13	1.28E-13	1.35E-13	1.35E-13
te123	3.26E-14	4.13E-14	5.14E-14	6.32E-14	7.66E-14	7.66E-14
tb160	2.39E-14	2.71E-14	3.05E-14	3.39E-14	3.75E-14	3.75E-14
ru105	3.24E-14	3.27E-14	3.31E-14	3.34E-14	3.37E-14	3.37E-14
sn125	3.01E-14	3.02E-14	3.04E-14	3.05E-14	3.06E-14	3.06E-14
pr142	1.36E-14	1.52E-14	1.69E-14	1.85E-14	2.01E-14	2.01E-14
be 9	1.33E-14	1.49E-14	1.65E-14	1.82E-14	1.98E-14	1.98E-14
rb 88	1.25E-14	1.24E-14	1.24E-14	1.24E-14	1.23E-14	1.23E-14
sn123	1.02E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14
i135	9.97E-15	9.96E-15	9.95E-15	9.93E-15	9.92E-15	9.92E-15
te132	9.45E-15	9.45E-15	9.44E-15	9.43E-15	9.43E-15	9.43E-15
sb126	6.46E-15	6.89E-15	7.33E-15	7.76E-15	8.19E-15	8.19E-15
li 7	5.30E-15	5.96E-15	6.61E-15	7.27E-15	7.92E-15	7.92E-15
cd108	2.20E-15	3.04E-15	4.07E-15	5.33E-15	6.83E-15	6.83E-15
te134	5.70E-15	5.69E-15	5.67E-15	5.66E-15	5.65E-15	5.65E-15
i130	3.21E-15	3.52E-15	3.82E-15	4.12E-15	4.42E-15	4.42E-15
sb124	3.13E-15	3.25E-15	3.38E-15	3.50E-15	3.63E-15	3.63E-15
sn114	1.16E-15	1.46E-15	1.81E-15	2.19E-15	2.61E-15	2.61E-15
in117m	2.26E-15	2.28E-15	2.30E-15	2.32E-15	2.34E-15	2.34E-15
rb 86	1.04E-15	1.13E-15	1.23E-15	1.33E-15	1.42E-15	1.42E-15
dy165	7.57E-16	8.24E-16	8.92E-16	9.60E-16	1.03E-15	1.03E-15
in117	6.69E-16	6.75E-16	6.82E-16	6.88E-16	6.94E-16	6.94E-16
cs134m	1.00E-16	1.12E-16	1.24E-16	1.36E-16	1.48E-16	1.48E-16
cd118	1.25E-16	1.26E-16	1.26E-16	1.27E-16	1.27E-16	1.27E-16
ge 75	8.50E-17	8.49E-17	8.48E-17	8.47E-17	8.46E-17	8.46E-17
in119m	3.10E-17	3.11E-17	3.12E-17	3.13E-17	3.14E-17	3.14E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 28

0 fraction of total absorption rate

power= .00mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec

0 initial 821813. d 913125. d ******* d ******* d ******* d

ag110	3.29E-18	3.83E-18	4.42E-18	5.04E-18	5.70E-18	5.70E-18
cd109	3.53E-18	3.92E-18	4.32E-18	4.72E-18	5.12E-18	5.12E-18
in119	2.47E-18	2.48E-18	2.49E-18	2.51E-18	2.52E-18	2.52E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 29

power= 4.000E-03mw, burnup=4.3830E+03mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

charge	821813. d	913125. d	******* d	******* d	******* d
h 1	1.75E-04	1.97E-04	2.18E-04	2.40E-04	2.61E-04	2.61E-04
h 2	5.20E-07	5.84E-07	6.48E-07	7.13E-07	7.77E-07	7.77E-07
h 3	3.89E-11	3.95E-11	4.00E-11	4.06E-11	4.11E-11	4.11E-11
h 4	1.56E-34	1.59E-34	1.61E-34	1.63E-34	1.65E-34	1.65E-34
he 3	3.76E-09	4.19E-09	4.61E-09	5.02E-09	5.43E-09	5.43E-09
he 4	2.90E-05	3.25E-05	3.61E-05	3.97E-05	4.32E-05	4.32E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	3.48E-06	3.91E-06	4.34E-06	4.76E-06	5.19E-06	5.19E-06
ne 21	2.38E-10	2.97E-10	3.62E-10	4.33E-10	5.10E-10	5.10E-10
ne 22	2.30E-08	2.58E-08	2.87E-08	3.15E-08	3.43E-08	3.43E-08
ne 23	7.15E-15	7.14E-15	7.13E-15	7.13E-15	7.12E-15	7.12E-15
na 22	4.21E-11	4.21E-11	4.20E-11	4.20E-11	4.20E-11	4.20E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03

na 24	3.07E-08	2.86E-08	2.85E-08	2.85E-08	2.85E-08	2.85E-08
na 24m	5.04E-15	4.69E-15	4.69E-15	4.68E-15	4.68E-15	4.68E-15
na 25	7.88E-25	9.63E-25	1.16E-24	1.38E-24	1.61E-24	1.61E-24
mg 24	2.78E-02	3.08E-02	3.37E-02	3.67E-02	3.97E-02	3.97E-02
mg 25	2.70E-08	3.33E-08	4.02E-08	4.76E-08	5.57E-08	5.57E-08
mg 26	5.20E-07	5.84E-07	6.48E-07	7.12E-07	7.76E-07	7.76E-07
mg 27	2.13E-12	2.13E-12	2.13E-12	2.13E-12	2.13E-12	2.13E-12
mg 28	4.31E-24	4.30E-24	4.29E-24	4.28E-24	4.28E-24	4.28E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.27E-10	2.12E-10	2.11E-10	2.11E-10	2.11E-10	2.11E-10
al 29	5.65E-23	7.00E-23	8.55E-23	1.02E-22	1.20E-22	1.20E-22
al 30	2.11E-33	2.95E-33	4.01E-33	5.29E-33	6.81E-33	6.81E-33
si 28	8.10E-02	8.96E-02	9.82E-02	1.07E-01	1.15E-01	1.15E-01
si 29	2.16E-07	2.70E-07	3.30E-07	3.95E-07	4.66E-07	4.66E-07
si 30	6.04E-13	8.52E-13	1.16E-12	1.53E-12	1.97E-12	1.97E-12
si 31	4.29E-25	6.06E-25	8.23E-25	1.09E-24	1.40E-24	1.40E-24
si 32	5.34E-31	7.81E-31	1.09E-30	1.47E-30	1.93E-30	1.93E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.72E+08	2.71E+08	2.71E+08	2.71E+08	2.71E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 30
power= 4.000E-03mw, burnup=4.3830E+03mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 821813. d	913125. d	******* d	******* d	******* d	
he 4	7.42E-01	8.77E-01	1.02E+00	1.17E+00	1.33E+00	1.33E+00
pb206	1.09E-04	1.52E-04	2.04E-04	2.66E-04	3.38E-04	3.38E-04
pb207	3.01E-05	3.81E-05	4.72E-05	5.71E-05	6.81E-05	6.81E-05
pb208	4.87E-06	6.16E-06	7.59E-06	9.17E-06	1.09E-05	1.09E-05
pb209	5.23E-12	6.56E-12	8.03E-12	9.64E-12	1.14E-11	1.14E-11
pb210	5.01E-06	6.15E-06	7.37E-06	8.66E-06	1.00E-05	1.00E-05
pb211	3.03E-12	3.41E-12	3.79E-12	4.17E-12	4.55E-12	4.55E-12
pb212	8.40E-12	9.44E-12	1.05E-11	1.15E-11	1.26E-11	1.26E-11
pb214	1.15E-11	1.41E-11	1.68E-11	1.98E-11	2.29E-11	2.29E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	6.62E-06	9.37E-06	1.28E-05	1.69E-05	2.18E-05	2.18E-05
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	3.08E-09	3.79E-09	4.54E-09	5.33E-09	6.17E-09	6.17E-09
bi211	1.80E-13	2.02E-13	2.25E-13	2.47E-13	2.70E-13	2.70E-13
bi212	7.97E-13	8.96E-13	9.94E-13	1.09E-12	1.19E-12	1.19E-12
bi213	1.22E-12	1.53E-12	1.88E-12	2.25E-12	2.66E-12	2.66E-12
bi214	8.50E-12	1.04E-11	1.25E-11	1.47E-11	1.70E-11	1.70E-11
po210	8.52E-08	1.05E-07	1.25E-07	1.47E-07	1.70E-07	1.70E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	1.99E-18	2.23E-18	2.48E-18	2.73E-18	2.98E-18	2.98E-18
po212	4.19E-23	4.71E-23	5.22E-23	5.74E-23	6.26E-23	6.26E-23
po213	1.84E-21	2.30E-21	2.82E-21	3.38E-21	3.99E-21	3.99E-21
po214	1.17E-18	1.44E-18	1.72E-18	2.02E-18	2.34E-18	2.34E-18
po215	2.49E-18	2.80E-18	3.12E-18	3.43E-18	3.74E-18	3.74E-18
po216	3.18E-17	3.57E-17	3.97E-17	4.36E-17	4.75E-17	4.75E-17
po218	1.32E-12	1.63E-12	1.95E-12	2.29E-12	2.65E-12	2.65E-12
rn218	1.24E-28	1.39E-28	1.54E-28	1.69E-28	1.84E-28	1.84E-28
rn219	5.54E-15	6.24E-15	6.93E-15	7.63E-15	8.33E-15	8.33E-15
rn220	1.22E-14	1.37E-14	1.52E-14	1.67E-14	1.82E-14	1.82E-14
rn222	2.35E-09	2.89E-09	3.46E-09	4.07E-09	4.70E-09	4.70E-09
ra222	1.35E-25	1.50E-25	1.67E-25	1.83E-25	2.00E-25	2.00E-25
ra223	1.38E-09	1.56E-09	1.73E-09	1.90E-09	2.08E-09	2.08E-09
ra224	6.94E-11	7.79E-11	8.65E-11	9.51E-11	1.04E-10	1.04E-10
ra225	5.71E-10	7.17E-10	8.77E-10	1.05E-09	1.24E-09	1.24E-09
ra226	3.60E-04	4.42E-04	5.29E-04	6.22E-04	7.19E-04	7.19E-04

ra228	4.25E-12	4.79E-12	5.32E-12	5.86E-12	6.40E-12	6.40E-12
ac225	3.86E-10	4.84E-10	5.93E-10	7.11E-10	8.39E-10	8.39E-10
ac227	9.61E-07	1.08E-06	1.20E-06	1.32E-06	1.44E-06	1.44E-06
ac228	5.19E-16	5.84E-16	6.49E-16	7.15E-16	7.81E-16	7.81E-16
th226	6.59E-24	7.34E-24	8.14E-24	8.94E-24	9.73E-24	9.73E-24
th227	2.23E-09	2.51E-09	2.79E-09	3.07E-09	3.35E-09	3.35E-09
th228	1.32E-08	1.49E-08	1.65E-08	1.82E-08	1.98E-08	1.98E-08
th229	1.11E-04	1.39E-04	1.71E-04	2.05E-04	2.42E-04	2.42E-04
th230	5.13E-02	5.77E-02	6.41E-02	7.06E-02	7.71E-02	7.71E-02
th231	3.20E-09	3.22E-09	3.24E-09	3.26E-09	3.28E-09	3.28E-09
th232	1.04E-02	1.17E-02	1.30E-02	1.43E-02	1.56E-02	1.56E-02
th233	9.50E-14	1.07E-13	1.19E-13	1.30E-13	1.42E-13	1.42E-13
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	1.45E-03	1.63E-03	1.81E-03	1.99E-03	2.17E-03	2.17E-03
pa232	2.46E-11	2.77E-11	3.08E-11	3.38E-11	3.69E-11	3.69E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 31
power= 4.000E-03mw, burnup=4.3830E+03mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	821813. d	913125. d	******* d	******* d	******* d
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	6.39E-21	7.11E-21	7.89E-21	8.66E-21	9.43E-21	9.43E-21
u231	2.09E-17	2.32E-17	2.57E-17	2.82E-17	3.07E-17	3.07E-17
u232	4.82E-07	5.42E-07	6.01E-07	6.61E-07	7.21E-07	7.21E-07
u233	2.69E-02	3.02E-02	3.35E-02	3.68E-02	4.00E-02	4.00E-02
u234	9.32E+00	9.35E+00	9.39E+00	9.42E+00	9.46E+00	9.46E+00
u235	7.16E+02	7.14E+02	7.12E+02	7.11E+02	7.09E+02	7.09E+02
u236	1.77E+02	1.77E+02	1.77E+02	1.77E+02	1.78E+02	1.78E+02
u237	3.19E-06	3.17E-06	3.17E-06	3.17E-06	3.17E-06	3.17E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	3.21E-07	3.19E-07	3.19E-07	3.19E-07	3.18E-07	3.18E-07
u240	.00E+00	1.03E-40	3.08E-40	6.16E-40	1.33E-39	1.33E-39
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.83E-12	8.77E-12	8.76E-12	8.75E-12	8.73E-12	8.73E-12
np236m	2.10E-12	2.08E-12	2.08E-12	2.08E-12	2.08E-12	2.08E-12
np236	4.03E-07	4.52E-07	5.00E-07	5.49E-07	5.97E-07	5.97E-07
np237	4.20E+01	4.20E+01	4.19E+01	4.19E+01	4.19E+01	4.19E+01
np238	1.55E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06
np239	4.64E-05	4.61E-05	4.61E-05	4.61E-05	4.60E-05	4.60E-05
np240m	.00E+00	8.76E-43	2.63E-42	5.25E-42	1.14E-41	1.14E-41
np240	9.41E-15	9.32E-15	9.31E-15	9.29E-15	9.27E-15	9.27E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.14E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09
pu237	3.16E-13	3.23E-13	3.32E-13	3.41E-13	3.49E-13	3.49E-13
pu238	2.34E-02	2.34E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02
pu239	9.55E+00	1.06E+01	1.17E+01	1.28E+01	1.38E+01	1.38E+01
pu240	8.79E-02	1.09E-01	1.33E-01	1.58E-01	1.85E-01	1.85E-01
pu241	3.67E-05	4.52E-05	5.48E-05	6.52E-05	7.62E-05	7.62E-05
pu242	1.14E-06	1.69E-06	2.40E-06	3.28E-06	4.36E-06	4.36E-06
pu243	2.45E-15	3.60E-15	5.10E-15	6.97E-15	9.24E-15	9.24E-15
pu244	1.80E-30	5.23E-30	1.35E-29	3.17E-29	6.88E-29	6.88E-29
pu245	7.64E-41	2.29E-40	5.35E-40	1.30E-39	2.75E-39	2.75E-39
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.74E-19	2.26E-19	2.87E-19	3.55E-19	4.29E-19	4.29E-19
am240	7.95E-17	1.04E-16	1.31E-16	1.62E-16	1.96E-16	1.96E-16
am241	6.18E-04	8.11E-04	1.03E-03	1.27E-03	1.54E-03	1.54E-03

```
      am242m  2.51E-07  3.38E-07  4.39E-07  5.52E-07  6.77E-07  6.77E-07
      am242   2.47E-11  3.24E-11  4.12E-11  5.10E-11  6.18E-11  6.18E-11
      am243   4.82E-09  7.58E-09  1.13E-08  1.62E-08  2.23E-08  2.23E-08
      am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am244   3.71E-17  5.80E-17  8.64E-17  1.23E-16  1.70E-16  1.70E-16
      am245   1.49E-41  5.97E-41  1.34E-40  2.98E-40  6.27E-40  6.27E-40
      am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      cm241   1.47E-21  1.92E-21  2.44E-21  3.02E-21  3.65E-21  3.65E-21
      cm242   4.98E-09  6.54E-09  8.32E-09  1.03E-08  1.25E-08  1.25E-08
      cm243   3.00E-18  4.12E-18  5.40E-18  6.87E-18  8.50E-18  8.50E-18
      cm244   5.83E-13  9.11E-13  1.36E-12  1.94E-12  2.67E-12  2.67E-12
1
      sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page   32
        power= 4.000E-03mw, burnup=4.3830E+03mwd, flux= 2.71E+08n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
             charge 821813. d 913125. d ******* d ******* d ******* d
      cm245   2.36E-16  4.20E-16  6.98E-16  1.10E-15  1.66E-15  1.66E-15
      cm246   4.46E-19  8.95E-19  1.66E-18  2.87E-18  4.73E-18  4.73E-18
      cm247   1.40E-23  3.18E-23  6.57E-23  1.26E-22  2.28E-22  2.28E-22
      cm248   4.38E-27  1.12E-26  2.59E-26  5.51E-26  1.09E-25  1.09E-25
      cm249   1.39E-37  3.55E-37  8.19E-37  1.74E-36  3.43E-36  3.43E-36
      cm250   1.25E-42  3.60E-42  9.27E-42  2.17E-41  4.70E-41  4.70E-41
      cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
    totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0     flux              2.72E+08  2.71E+08  2.71E+08  2.71E+08  2.71E-07
0         1q array has     20 entries.
0         3q array has      1 entries.
0         3q array has      1 entries.
0         3q array has      1 entries.
0         4q array has      1 entries.
0        54q array has     12 entries.
1library information...

          cross-section data taken from position number  4 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *          made from modified card-image origen-s libraries of scale 4.2       *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
```

```
         *                 fission product yields are from endf/b-v                  *
         *                                                                           *
         *             photon libraries use an 18-energy-group structure             *
         *            the photon data are from the master photon data base,          *
         *             produced to include bremsstrahlung from uo2 matrix            *
         *                                                                           *
         *       see information above this box (if present) for later updates       *
         *                                                                           *
         ******************************************************************************
         *                                                                           *
0        ******************************************************************************
0                 .other identification and sizes of library.
0                  data set name:  ft33f001
0               8/28/1996    date library was produced
0                    1697    total number of nuclides in library
                      689    number of light-element nuclides
                      129    number of actinide nuclides
                      879    number of fission product nuclides
0                    7993    number of nonzero off-diagonal matrix elements
0        ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   33
        power=    .00mw, burnup=   5844.mwd, flux= 2.68E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.150297E+06   1.151651E+06   1.152966E+06   1.154243E+06   1.155483E+06   1.155483E+06
     absorptions   9.452068E+05   9.462478E+05   9.472621E+05   9.482513E+05   9.492169E+05   9.492169E+05
     k infinity    1.216979E+00   1.217071E+00   1.217156E+00   1.217234E+00   1.217302E+00   1.217302E+00
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   9.348808E+05   9.357344E+05   9.365691E+05   9.373851E+05   9.381828E+05   9.381828E+05
     non-actinide
     abs. fracs.   1.092452E-02   1.111060E-02   1.128829E-02   1.145917E-02   1.162446E-02   1.162446E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products    page   34
0                                 fraction of total absorption rate
        power=    .00mw, burnup=   5844.mwd, flux= 2.68E+08n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.27E-03  5.29E-03  5.31E-03  5.32E-03  5.33E-03  5.33E-03
     eu151     5.60E-04  6.02E-04  6.43E-04  6.82E-04  7.21E-04  7.21E-04
     nd143     4.29E-04  4.64E-04  4.98E-04  5.33E-04  5.67E-04  5.67E-04
     rh103     2.06E-04  2.24E-04  2.41E-04  2.58E-04  2.75E-04  2.75E-04
     xe131     1.38E-04  1.50E-04  1.61E-04  1.72E-04  1.84E-04  1.84E-04
     gd155     1.54E-04  1.60E-04  1.65E-04  1.70E-04  1.74E-04  1.74E-04
     cs133     1.07E-04  1.16E-04  1.25E-04  1.33E-04  1.42E-04  1.42E-04
     sm147     7.91E-05  8.56E-05  9.21E-05  9.85E-05  1.05E-04  1.05E-04
     tc 99     7.85E-05  8.49E-05  9.13E-05  9.76E-05  1.04E-04  1.04E-04
     cd113     8.12E-05  8.33E-05  8.52E-05  8.68E-05  8.83E-05  8.83E-05
     nd145     6.07E-05  6.57E-05  7.06E-05  7.55E-05  8.04E-05  8.04E-05
     mo 95     4.21E-05  4.56E-05  4.90E-05  5.24E-05  5.59E-05  5.59E-05
     sm152     3.73E-05  4.07E-05  4.42E-05  4.77E-05  5.12E-05  5.12E-05
     gd157     4.64E-05  4.74E-05  4.83E-05  4.93E-05  5.02E-05  5.02E-05
     sm151     4.05E-05  4.06E-05  4.07E-05  4.08E-05  4.09E-05  4.09E-05
     sm150     2.52E-05  2.79E-05  3.06E-05  3.33E-05  3.60E-05  3.60E-05
     kr 83     2.60E-05  2.81E-05  3.02E-05  3.23E-05  3.44E-05  3.44E-05
     cs135     2.42E-05  2.62E-05  2.82E-05  3.02E-05  3.21E-05  3.21E-05
     ru101     1.89E-05  2.04E-05  2.20E-05  2.35E-05  2.50E-05  2.50E-05
     pr141     1.79E-05  1.94E-05  2.09E-05  2.23E-05  2.38E-05  2.38E-05
     eu153     1.69E-05  1.84E-05  1.98E-05  2.13E-05  2.27E-05  2.27E-05
     la139     1.47E-05  1.59E-05  1.70E-05  1.82E-05  1.94E-05  1.94E-05
```

ba137	6.92E-06	7.50E-06	8.07E-06	8.65E-06	9.22E-06	9.22E-06
pd105	6.74E-06	7.34E-06	7.94E-06	8.54E-06	9.15E-06	9.15E-06
zr 93	5.94E-06	6.42E-06	6.91E-06	7.39E-06	7.86E-06	7.86E-06
ag109	4.39E-06	4.92E-06	5.47E-06	6.04E-06	6.63E-06	6.63E-06
i129	4.64E-06	5.02E-06	5.41E-06	5.80E-06	6.19E-06	6.19E-06
nd144	4.41E-06	4.77E-06	5.14E-06	5.50E-06	5.86E-06	5.86E-06
mo 97	3.33E-06	3.60E-06	3.87E-06	4.15E-06	4.42E-06	4.42E-06
xe135	2.28E-06	2.28E-06	2.27E-06	2.27E-06	2.27E-06	2.27E-06
zr 91	1.55E-06	1.68E-06	1.80E-06	1.93E-06	2.05E-06	2.05E-06
y 89	1.49E-06	1.61E-06	1.73E-06	1.85E-06	1.96E-06	1.96E-06
ru102	1.37E-06	1.48E-06	1.59E-06	1.71E-06	1.82E-06	1.82E-06
pd108	1.20E-06	1.33E-06	1.46E-06	1.60E-06	1.75E-06	1.75E-06
gd152	9.59E-07	1.12E-06	1.30E-06	1.48E-06	1.68E-06	1.68E-06
ce142	1.22E-06	1.32E-06	1.42E-06	1.51E-06	1.61E-06	1.61E-06
nd148	1.18E-06	1.27E-06	1.37E-06	1.46E-06	1.56E-06	1.56E-06
nd146	9.84E-07	1.06E-06	1.14E-06	1.22E-06	1.31E-06	1.31E-06
in115	8.42E-07	9.13E-07	9.85E-07	1.06E-06	1.13E-06	1.13E-06
ba138	8.39E-07	9.08E-07	9.77E-07	1.05E-06	1.11E-06	1.11E-06
ce140	7.86E-07	8.50E-07	9.15E-07	9.79E-07	1.04E-06	1.04E-06
xe132	7.15E-07	7.74E-07	8.34E-07	8.93E-07	9.52E-07	9.52E-07
pd107	6.40E-07	7.06E-07	7.75E-07	8.45E-07	9.17E-07	9.17E-07
mo 98	4.91E-07	5.32E-07	5.72E-07	6.12E-07	6.52E-07	6.52E-07
mo100	4.75E-07	5.14E-07	5.53E-07	5.92E-07	6.30E-07	6.30E-07
xe134	4.65E-07	5.03E-07	5.41E-07	5.79E-07	6.17E-07	6.17E-07
zr 92	3.74E-07	4.05E-07	4.35E-07	4.65E-07	4.95E-07	4.95E-07
i127	3.25E-07	3.53E-07	3.81E-07	4.10E-07	4.38E-07	4.38E-07
ru104	3.03E-07	3.29E-07	3.55E-07	3.81E-07	4.08E-07	4.08E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 35

0 fraction of total absorption rate

power= .00mw, burnup= 5844.mwd, flux= 2.68E+08n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	2.99E-07	3.23E-07	3.48E-07	3.72E-07	3.96E-07	3.96E-07
nd150	2.63E-07	2.85E-07	3.07E-07	3.29E-07	3.50E-07	3.50E-07
xe136	2.52E-07	2.72E-07	2.93E-07	3.14E-07	3.34E-07	3.34E-07
pm147	2.66E-07	2.66E-07	2.66E-07	2.65E-07	2.65E-07	2.65E-07
br 81	1.89E-07	2.04E-07	2.20E-07	2.35E-07	2.51E-07	2.51E-07
rb 85	1.83E-07	1.98E-07	2.12E-07	2.27E-07	2.42E-07	2.42E-07
cd111	1.53E-07	1.69E-07	1.84E-07	2.00E-07	2.16E-07	2.16E-07
zr 94	1.60E-07	1.73E-07	1.86E-07	1.99E-07	2.12E-07	2.12E-07
zr 90	1.45E-07	1.57E-07	1.68E-07	1.80E-07	1.92E-07	1.92E-07
eu152	1.45E-07	1.56E-07	1.67E-07	1.77E-07	1.87E-07	1.87E-07
eu155	1.78E-07	1.79E-07	1.81E-07	1.82E-07	1.83E-07	1.83E-07
sm154	1.16E-07	1.26E-07	1.36E-07	1.47E-07	1.57E-07	1.57E-07
te130	1.15E-07	1.24E-07	1.34E-07	1.43E-07	1.53E-07	1.53E-07
rb 87	1.06E-07	1.14E-07	1.23E-07	1.31E-07	1.40E-07	1.40E-07
ru 99	6.12E-08	7.17E-08	8.30E-08	9.51E-08	1.08E-07	1.08E-07
se 77	7.54E-08	8.16E-08	8.77E-08	9.39E-08	1.00E-07	1.00E-07
pd106	6.31E-08	6.90E-08	7.50E-08	8.11E-08	8.73E-08	8.73E-08
gd156	4.66E-08	5.20E-08	5.76E-08	6.32E-08	6.90E-08	6.90E-08
kr 84	5.02E-08	5.43E-08	5.83E-08	6.24E-08	6.64E-08	6.64E-08
gd154	3.37E-08	3.96E-08	4.59E-08	5.27E-08	5.99E-08	5.99E-08
sb121	3.84E-08	4.17E-08	4.49E-08	4.82E-08	5.15E-08	5.15E-08
se 79	3.87E-08	4.19E-08	4.50E-08	4.82E-08	5.13E-08	5.13E-08
sb123	3.11E-08	3.38E-08	3.64E-08	3.90E-08	4.17E-08	4.17E-08
dy161	2.75E-08	3.07E-08	3.40E-08	3.75E-08	4.11E-08	4.11E-08
kr 86	2.77E-08	3.00E-08	3.22E-08	3.44E-08	3.67E-08	3.67E-08
te128	2.56E-08	2.78E-08	2.99E-08	3.21E-08	3.42E-08	3.42E-08
se 80	1.80E-08	1.95E-08	2.10E-08	2.25E-08	2.39E-08	2.39E-08
te125	1.67E-08	1.81E-08	1.95E-08	2.10E-08	2.25E-08	2.25E-08

tb159	1.41E-08	1.55E-08	1.70E-08	1.85E-08	2.01E-08	2.01E-08
ru100	1.06E-08	1.24E-08	1.43E-08	1.64E-08	1.86E-08	1.86E-08
sr 90	1.64E-08	1.63E-08	1.63E-08	1.62E-08	1.62E-08	1.62E-08
cd112	1.16E-08	1.27E-08	1.38E-08	1.49E-08	1.60E-08	1.60E-08
gd158	1.10E-08	1.22E-08	1.34E-08	1.46E-08	1.58E-08	1.58E-08
li 6	1.01E-08	1.09E-08	1.17E-08	1.25E-08	1.33E-08	1.33E-08
nd142	7.35E-09	8.61E-09	9.97E-09	1.14E-08	1.30E-08	1.30E-08
ba134	7.15E-09	8.37E-09	9.69E-09	1.11E-08	1.26E-08	1.26E-08
sn117	8.77E-09	9.54E-09	1.03E-08	1.11E-08	1.19E-08	1.19E-08
sm148	6.58E-09	7.70E-09	8.91E-09	1.02E-08	1.16E-08	1.16E-08
eu154	8.57E-09	9.29E-09	1.00E-08	1.07E-08	1.15E-08	1.15E-08
ba135	5.84E-09	6.84E-09	7.93E-09	9.09E-09	1.03E-08	1.03E-08
rh105	9.45E-09	9.53E-09	9.62E-09	9.70E-09	9.78E-09	9.78E-09
sn119	6.97E-09	7.56E-09	8.16E-09	8.76E-09	9.36E-09	9.36E-09
cd114	6.39E-09	7.05E-09	7.72E-09	8.40E-09	9.09E-09	9.09E-09
pd104	4.96E-09	5.82E-09	6.74E-09	7.73E-09	8.78E-09	8.78E-09
dy164	5.45E-09	6.18E-09	6.96E-09	7.76E-09	8.61E-09	8.61E-09
sn115	6.38E-09	6.92E-09	7.47E-09	8.02E-09	8.57E-09	8.57E-09
dy162	5.00E-09	5.66E-09	6.35E-09	7.07E-09	7.83E-09	7.83E-09
pd110	4.92E-09	5.43E-09	5.95E-09	6.48E-09	7.03E-09	7.03E-09
sr 88	5.10E-09	5.51E-09	5.92E-09	6.33E-09	6.74E-09	6.74E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 36
0 fraction of total absorption rate
power= .00mw, burnup= 5844.mwd, flux= 2.68E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

se 82	3.47E-09	3.76E-09	4.04E-09	4.32E-09	4.60E-09	4.60E-09
sn126	3.04E-09	3.30E-09	3.57E-09	3.85E-09	4.12E-09	4.12E-09
cs137	3.71E-09	3.71E-09	3.70E-09	3.70E-09	3.70E-09	3.70E-09
se 78	2.68E-09	2.90E-09	3.12E-09	3.34E-09	3.56E-09	3.56E-09
mo 96	1.82E-09	2.11E-09	2.42E-09	2.75E-09	3.11E-09	3.11E-09
sn124	2.24E-09	2.43E-09	2.63E-09	2.82E-09	3.02E-09	3.02E-09
pr143	2.59E-09	2.58E-09	2.58E-09	2.57E-09	2.57E-09	2.57E-09
ba136	1.48E-09	1.65E-09	1.84E-09	2.03E-09	2.23E-09	2.23E-09
as 75	1.59E-09	1.72E-09	1.85E-09	1.98E-09	2.11E-09	2.11E-09
cd110	1.02E-09	1.23E-09	1.46E-09	1.72E-09	2.00E-09	2.00E-09
xe133	1.97E-09	1.97E-09	1.97E-09	1.97E-09	1.96E-09	1.96E-09
dy163	1.23E-09	1.40E-09	1.58E-09	1.76E-09	1.96E-09	1.96E-09
xe130	1.06E-09	1.22E-09	1.38E-09	1.56E-09	1.75E-09	1.75E-09
kr 82	1.11E-09	1.26E-09	1.41E-09	1.58E-09	1.74E-09	1.74E-09
in113	1.25E-09	1.36E-09	1.46E-09	1.57E-09	1.68E-09	1.68E-09
nb 93	9.33E-10	1.09E-09	1.27E-09	1.45E-09	1.65E-09	1.65E-09
ce141	1.56E-09	1.55E-09	1.55E-09	1.55E-09	1.55E-09	1.55E-09
sn118	9.13E-10	9.91E-10	1.07E-09	1.15E-09	1.23E-09	1.23E-09
cs134	7.91E-10	8.55E-10	9.19E-10	9.82E-10	1.05E-09	1.05E-09
cd116	7.69E-10	8.35E-10	9.00E-10	9.66E-10	1.03E-09	1.03E-09
sn122	7.68E-10	8.34E-10	8.99E-10	9.66E-10	1.03E-09	1.03E-09
pm149	9.59E-10	9.58E-10	9.57E-10	9.57E-10	9.56E-10	9.56E-10
nd147	9.13E-10	9.12E-10	9.11E-10	9.09E-10	9.08E-10	9.08E-10
br 79	4.75E-10	5.57E-10	6.45E-10	7.39E-10	8.40E-10	8.40E-10
sn120	5.72E-10	6.21E-10	6.70E-10	7.19E-10	7.68E-10	7.68E-10
ag107	3.13E-10	3.73E-10	4.38E-10	5.10E-10	5.88E-10	5.88E-10
ge 73	4.39E-10	4.76E-10	5.13E-10	5.50E-10	5.87E-10	5.87E-10
ce144	5.82E-10	5.81E-10	5.80E-10	5.79E-10	5.78E-10	5.78E-10
kr 85	5.50E-10	5.49E-10	5.47E-10	5.46E-10	5.44E-10	5.44E-10
xe129	2.73E-10	3.20E-10	3.71E-10	4.26E-10	4.84E-10	4.84E-10
te126	2.45E-10	2.81E-10	3.19E-10	3.60E-10	4.03E-10	4.03E-10
ru103	3.67E-10	3.67E-10	3.68E-10	3.69E-10	3.70E-10	3.70E-10
gd160	1.45E-10	1.60E-10	1.76E-10	1.93E-10	2.10E-10	2.10E-10
ge 76	1.56E-10	1.69E-10	1.81E-10	1.94E-10	2.07E-10	2.07E-10

zr 95	1.61E-10	1.61E-10	1.61E-10	1.60E-10	1.60E-10	1.60E-10
ho165	9.24E-11	1.06E-10	1.20E-10	1.34E-10	1.50E-10	1.50E-10
nb 95	1.49E-10	1.48E-10	1.48E-10	1.48E-10	1.48E-10	1.48E-10
y 91	1.37E-10	1.37E-10	1.36E-10	1.36E-10	1.36E-10	1.36E-10
pm151	1.11E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10
dy160	4.03E-11	4.77E-11	5.57E-11	6.44E-11	7.38E-11	7.38E-11
xe128	2.77E-11	3.24E-11	3.75E-11	4.30E-11	4.89E-11	4.89E-11
ba140	4.62E-11	4.61E-11	4.60E-11	4.60E-11	4.59E-11	4.59E-11
eu156	4.24E-11	4.30E-11	4.36E-11	4.42E-11	4.48E-11	4.48E-11
sm153	4.07E-11	4.09E-11	4.11E-11	4.14E-11	4.16E-11	4.16E-11
te124	2.51E-11	2.78E-11	3.06E-11	3.34E-11	3.63E-11	3.63E-11
ru106	3.28E-11	3.34E-11	3.39E-11	3.44E-11	3.49E-11	3.49E-11
sr 86	1.79E-11	2.05E-11	2.33E-11	2.62E-11	2.93E-11	2.93E-11
sr 89	2.93E-11	2.92E-11	2.91E-11	2.90E-11	2.89E-11	2.89E-11
sr 87	1.87E-11	2.03E-11	2.19E-11	2.35E-11	2.51E-11	2.51E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 37
0 fraction of total absorption rate
power= .00mw, burnup= 5844.mwd, flux= 2.68E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

kr 87	2.19E-11	2.19E-11	2.18E-11	2.17E-11	2.17E-11	2.17E-11
sn116	1.06E-11	1.24E-11	1.44E-11	1.65E-11	1.88E-11	1.88E-11
ce143	1.70E-11	1.69E-11	1.69E-11	1.69E-11	1.68E-11	1.68E-11
sb125	1.62E-11	1.63E-11	1.64E-11	1.64E-11	1.65E-11	1.65E-11
y 90	1.56E-11	1.55E-11	1.55E-11	1.54E-11	1.54E-11	1.54E-11
nb 94	1.10E-11	1.20E-11	1.30E-11	1.40E-11	1.51E-11	1.51E-11
la140	1.50E-11	1.50E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11
mo 99	1.29E-11	1.29E-11	1.29E-11	1.28E-11	1.28E-11	1.28E-11
ge 74	8.82E-12	9.55E-12	1.03E-11	1.10E-11	1.18E-11	1.18E-11
se 76	6.52E-12	7.34E-12	8.19E-12	9.09E-12	1.00E-11	1.00E-11
pm148m	9.57E-12	9.57E-12	9.57E-12	9.57E-12	9.58E-12	9.58E-12
ge 72	6.15E-12	6.68E-12	7.21E-12	7.75E-12	8.29E-12	8.29E-12
te127m	8.09E-12	8.14E-12	8.19E-12	8.24E-12	8.28E-12	8.28E-12
er166	4.84E-12	5.57E-12	6.36E-12	7.19E-12	8.06E-12	8.06E-12
te122	4.41E-12	5.17E-12	5.99E-12	6.88E-12	7.82E-12	7.82E-12
i131	6.72E-12	6.72E-12	6.71E-12	6.71E-12	6.71E-12	6.71E-12
te129m	1.83E-12	1.83E-12	1.83E-12	1.84E-12	1.84E-12	1.84E-12
kr 80	4.48E-13	5.13E-13	5.83E-13	6.59E-13	7.41E-13	7.41E-13
ag111	4.66E-13	4.77E-13	4.87E-13	4.98E-13	5.08E-13	5.08E-13
eu157	3.96E-13	4.03E-13	4.10E-13	4.17E-13	4.24E-13	4.24E-13
pm148	3.67E-13	3.66E-13	3.66E-13	3.65E-13	3.65E-13	3.65E-13
er167	1.38E-13	1.68E-13	2.02E-13	2.40E-13	2.82E-13	2.82E-13
cd115m	2.52E-13	2.53E-13	2.54E-13	2.55E-13	2.56E-13	2.56E-13
cs136	1.35E-13	1.41E-13	1.47E-13	1.53E-13	1.59E-13	1.59E-13
te123	7.66E-14	9.18E-14	1.09E-13	1.28E-13	1.50E-13	1.50E-13
tb160	3.75E-14	4.11E-14	4.48E-14	4.86E-14	5.24E-14	5.24E-14
ru105	3.37E-14	3.40E-14	3.43E-14	3.45E-14	3.48E-14	3.48E-14
sn125	3.06E-14	3.07E-14	3.08E-14	3.09E-14	3.10E-14	3.10E-14
pr142	2.01E-14	2.18E-14	2.34E-14	2.50E-14	2.66E-14	2.66E-14
be 9	1.98E-14	2.14E-14	2.30E-14	2.46E-14	2.63E-14	2.63E-14
cd108	6.84E-15	8.61E-15	1.07E-14	1.31E-14	1.58E-14	1.58E-14
rb 88	1.23E-14	1.23E-14	1.22E-14	1.22E-14	1.22E-14	1.22E-14
li 7	7.92E-15	8.57E-15	9.22E-15	9.87E-15	1.05E-14	1.05E-14
sn123	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14
sb126	8.19E-15	8.63E-15	9.06E-15	9.49E-15	9.93E-15	9.93E-15
i135	9.93E-15	9.91E-15	9.90E-15	9.89E-15	9.88E-15	9.88E-15
te132	9.43E-15	9.43E-15	9.42E-15	9.41E-15	9.41E-15	9.41E-15
i130	4.42E-15	4.72E-15	5.02E-15	5.32E-15	5.62E-15	5.62E-15
te134	5.65E-15	5.64E-15	5.62E-15	5.61E-15	5.60E-15	5.60E-15
sn114	2.61E-15	3.07E-15	3.57E-15	4.10E-15	4.67E-15	4.67E-15

	sb124	3.63E-15	3.75E-15	3.88E-15	4.00E-15	4.12E-15	4.12E-15
	in117m	2.34E-15	2.36E-15	2.38E-15	2.39E-15	2.41E-15	2.41E-15
	rb 86	1.42E-15	1.52E-15	1.61E-15	1.70E-15	1.80E-15	1.80E-15
	dy165	1.03E-15	1.10E-15	1.16E-15	1.23E-15	1.30E-15	1.30E-15
	in117	6.94E-16	7.00E-16	7.06E-16	7.12E-16	7.18E-16	7.18E-16
	cs134m	1.48E-16	1.60E-16	1.72E-16	1.84E-16	1.96E-16	1.96E-16
	cd118	1.27E-16	1.28E-16	1.28E-16	1.29E-16	1.30E-16	1.30E-16
	ge 75	8.47E-17	8.46E-17	8.45E-17	8.44E-17	8.43E-17	8.43E-17
	in119m	3.15E-17	3.16E-17	3.17E-17	3.18E-17	3.19E-17	3.19E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 38
0 fraction of total absorption rate
power= .00mw, burnup= 5844.mwd, flux= 2.68E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

ag110	5.70E-18	6.38E-18	7.09E-18	7.82E-18	8.59E-18	8.59E-18
cd109	5.12E-18	5.53E-18	5.94E-18	6.35E-18	6.78E-18	6.78E-18
in119	2.52E-18	2.53E-18	2.55E-18	2.56E-18	2.57E-18	2.57E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 39
power= 4.000E-03mw, burnup=5.8440E+03mwd, flux= 2.68E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d	******* d
h 1	2.61E-04	2.83E-04	3.04E-04	3.26E-04	3.48E-04	3.48E-04
h 2	7.77E-07	8.41E-07	9.06E-07	9.70E-07	1.03E-06	1.03E-06
h 3	4.11E-11	4.19E-11	4.24E-11	4.29E-11	4.34E-11	4.34E-11
h 4	1.65E-34	1.68E-34	1.70E-34	1.72E-34	1.74E-34	1.74E-34
he 3	5.43E-09	5.83E-09	6.23E-09	6.61E-09	6.99E-09	6.99E-09
he 4	4.32E-05	4.68E-05	5.04E-05	5.40E-05	5.76E-05	5.76E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	5.19E-06	5.62E-06	6.05E-06	6.48E-06	6.91E-06	6.91E-06
ne 21	5.10E-10	5.92E-10	6.81E-10	7.75E-10	8.74E-10	8.74E-10
ne 22	3.43E-08	3.72E-08	4.00E-08	4.29E-08	4.57E-08	4.57E-08
ne 23	7.12E-15	7.15E-15	7.15E-15	7.14E-15	7.14E-15	7.14E-15
na 22	4.20E-11	4.22E-11	4.22E-11	4.21E-11	4.21E-11	4.21E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.85E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08
na 24m	4.68E-15	4.56E-15	4.56E-15	4.55E-15	4.55E-15	4.55E-15
na 25	1.61E-24	1.85E-24	2.12E-24	2.40E-24	2.69E-24	2.69E-24
mg 24	3.97E-02	4.25E-02	4.54E-02	4.83E-02	5.11E-02	5.11E-02
mg 25	5.57E-08	6.43E-08	7.35E-08	8.32E-08	9.35E-08	9.35E-08
mg 26	7.76E-07	8.41E-07	9.05E-07	9.69E-07	1.03E-06	1.03E-06
mg 27	2.13E-12	2.13E-12	2.13E-12	2.13E-12	2.13E-12	2.13E-12
mg 28	4.28E-24	4.29E-24	4.29E-24	4.28E-24	4.27E-24	4.27E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.11E-10	2.06E-10	2.06E-10	2.05E-10	2.05E-10	2.05E-10
al 29	1.20E-22	1.40E-22	1.61E-22	1.83E-22	2.07E-22	2.07E-22
al 30	6.81E-33	8.58E-33	1.06E-32	1.30E-32	1.56E-32	1.56E-32
si 28	1.15E-01	1.24E-01	1.32E-01	1.41E-01	1.49E-01	1.49E-01
si 29	4.66E-07	5.42E-07	6.23E-07	7.10E-07	8.01E-07	8.01E-07
si 30	1.97E-12	2.49E-12	3.08E-12	3.76E-12	4.53E-12	4.53E-12
si 31	1.40E-24	1.76E-24	2.18E-24	2.66E-24	3.20E-24	3.20E-24
si 32	1.93E-30	2.48E-30	3.11E-30	3.84E-30	4.68E-30	4.68E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.68E+08	2.68E+08	2.68E+08	2.68E+08	2.68E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 40
power= 4.000E-03mw, burnup=5.8440E+03mwd, flux= 2.68E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	1.33E+00	1.50E+00	1.68E+00	1.86E+00	2.06E+00	2.06E+00
pb206	3.38E-04	4.21E-04	5.15E-04	6.21E-04	7.39E-04	7.39E-04
pb207	6.81E-05	8.00E-05	9.29E-05	1.07E-04	1.22E-04	1.22E-04
pb208	1.09E-05	1.28E-05	1.48E-05	1.70E-05	1.93E-05	1.93E-05
pb209	1.14E-11	1.32E-11	1.52E-11	1.73E-11	1.96E-11	1.96E-11
pb210	1.00E-05	1.14E-05	1.29E-05	1.44E-05	1.60E-05	1.60E-05
pb211	4.55E-12	4.94E-12	5.32E-12	5.70E-12	6.09E-12	6.09E-12
pb212	1.26E-11	1.36E-11	1.46E-11	1.57E-11	1.67E-11	1.67E-11
pb214	2.29E-11	2.61E-11	2.95E-11	3.29E-11	3.65E-11	3.65E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.18E-05	2.75E-05	3.42E-05	4.18E-05	5.04E-05	5.04E-05
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	6.17E-09	7.03E-09	7.94E-09	8.87E-09	9.82E-09	9.82E-09
bi211	2.70E-13	2.93E-13	3.15E-13	3.38E-13	3.61E-13	3.61E-13
bi212	1.19E-12	1.29E-12	1.39E-12	1.49E-12	1.59E-12	1.59E-12
bi213	2.66E-12	3.09E-12	3.56E-12	4.05E-12	4.57E-12	4.57E-12
bi214	1.70E-11	1.94E-11	2.19E-11	2.44E-11	2.71E-11	2.71E-11
po210	1.70E-07	1.94E-07	2.19E-07	2.45E-07	2.71E-07	2.71E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.98E-18	3.23E-18	3.48E-18	3.74E-18	3.99E-18	3.99E-18
po212	6.26E-23	6.78E-23	7.29E-23	7.81E-23	8.33E-23	8.33E-23
po213	3.99E-21	4.65E-21	5.35E-21	6.09E-21	6.87E-21	6.87E-21
po214	2.34E-18	2.67E-18	3.01E-18	3.36E-18	3.72E-18	3.72E-18
po215	3.74E-18	4.06E-18	4.37E-18	4.69E-18	5.00E-18	5.00E-18
po216	4.75E-17	5.15E-17	5.54E-17	5.93E-17	6.33E-17	6.33E-17
po218	2.65E-12	3.02E-12	3.41E-12	3.81E-12	4.22E-12	4.22E-12
rn218	1.84E-28	1.99E-28	2.14E-28	2.29E-28	2.44E-28	2.44E-28
rn219	8.33E-15	9.03E-15	9.73E-15	1.04E-14	1.11E-14	1.11E-14
rn220	1.82E-14	1.97E-14	2.12E-14	2.28E-14	2.43E-14	2.43E-14
rn222	4.70E-09	5.37E-09	6.05E-09	6.76E-09	7.49E-09	7.49E-09
ra222	2.00E-25	2.16E-25	2.32E-25	2.48E-25	2.65E-25	2.65E-25
ra223	2.08E-09	2.25E-09	2.43E-09	2.60E-09	2.78E-09	2.78E-09
ra224	1.04E-10	1.12E-10	1.21E-10	1.29E-10	1.38E-10	1.38E-10
ra225	1.24E-09	1.45E-09	1.66E-09	1.89E-09	2.14E-09	2.14E-09
ra226	7.19E-04	8.20E-04	9.25E-04	1.03E-03	1.14E-03	1.14E-03
ra228	6.40E-12	6.93E-12	7.47E-12	8.01E-12	8.55E-12	8.55E-12
ac225	8.39E-10	9.77E-10	1.12E-09	1.28E-09	1.44E-09	1.44E-09
ac227	1.44E-06	1.57E-06	1.69E-06	1.81E-06	1.93E-06	1.93E-06
ac228	7.81E-16	8.46E-16	9.12E-16	9.78E-16	1.04E-15	1.04E-15
th226	9.73E-24	1.05E-23	1.13E-23	1.21E-23	1.29E-23	1.29E-23
th227	3.35E-09	3.63E-09	3.92E-09	4.20E-09	4.48E-09	4.48E-09
th228	1.98E-08	2.14E-08	2.31E-08	2.47E-08	2.63E-08	2.63E-08
th229	2.42E-04	2.81E-04	3.23E-04	3.68E-04	4.15E-04	4.15E-04
th230	7.71E-02	8.36E-02	9.00E-02	9.65E-02	1.03E-01	1.03E-01
th231	3.28E-09	3.30E-09	3.33E-09	3.35E-09	3.37E-09	3.37E-09
th232	1.56E-02	1.69E-02	1.83E-02	1.96E-02	2.09E-02	2.09E-02
th233	1.42E-13	1.54E-13	1.66E-13	1.78E-13	1.90E-13	1.90E-13
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	2.17E-03	2.35E-03	2.54E-03	2.72E-03	2.90E-03	2.90E-03
pa232	3.69E-11	4.00E-11	4.30E-11	4.61E-11	4.91E-11	4.91E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 41
power= 4.000E-03mw, burnup=5.8440E+03mwd, flux= 2.68E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12

pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	9.43E-21	1.02E-20	1.10E-20	1.17E-20	1.25E-20	1.25E-20
u231	3.07E-17	3.32E-17	3.57E-17	3.81E-17	4.05E-17	4.05E-17
u232	7.21E-07	7.80E-07	8.40E-07	8.99E-07	9.59E-07	9.59E-07
u233	4.00E-02	4.33E-02	4.65E-02	4.98E-02	5.30E-02	5.30E-02
u234	9.46E+00	9.49E+00	9.53E+00	9.56E+00	9.59E+00	9.59E+00
u235	7.09E+02	7.07E+02	7.05E+02	7.04E+02	7.02E+02	7.02E+02
u236	1.78E+02	1.78E+02	1.78E+02	1.79E+02	1.79E+02	1.79E+02
u237	3.17E-06	3.17E-06	3.17E-06	3.17E-06	3.18E-06	3.18E-06
u238	3.64E+04	3.64E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.18E-07	3.18E-07	3.18E-07	3.17E-07	3.17E-07	3.17E-07
u240	1.33E-39	2.77E-39	5.44E-39	9.95E-39	1.74E-38	1.74E-38
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.73E-12	8.74E-12	8.73E-12	8.72E-12	8.71E-12	8.71E-12
np236m	2.08E-12	2.08E-12	2.07E-12	2.07E-12	2.07E-12	2.07E-12
np236	5.97E-07	6.45E-07	6.94E-07	7.42E-07	7.90E-07	7.90E-07
np237	4.19E+01	4.19E+01	4.19E+01	4.19E+01	4.18E+01	4.18E+01
np238	1.54E-06	1.53E-06	1.53E-06	1.53E-06	1.53E-06	1.53E-06
np239	4.60E-05	4.59E-05	4.59E-05	4.59E-05	4.58E-05	4.58E-05
np240m	1.14E-41	2.36E-41	4.64E-41	8.49E-41	1.49E-40	1.49E-40
np240	9.27E-15	9.25E-15	9.24E-15	9.22E-15	9.21E-15	9.21E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.12E-09	1.12E-09
pu237	3.49E-13	3.58E-13	3.66E-13	3.75E-13	3.83E-13	3.83E-13
pu238	2.33E-02	2.32E-02	2.32E-02	2.32E-02	2.31E-02	2.31E-02
pu239	1.38E+01	1.49E+01	1.59E+01	1.69E+01	1.79E+01	1.79E+01
pu240	1.85E-01	2.13E-01	2.43E-01	2.74E-01	3.07E-01	3.07E-01
pu241	7.62E-05	8.78E-05	1.00E-04	1.13E-04	1.26E-04	1.26E-04
pu242	4.36E-06	5.64E-06	7.14E-06	8.88E-06	1.09E-05	1.09E-05
pu243	9.24E-15	1.19E-14	1.51E-14	1.88E-14	2.29E-14	2.29E-14
pu244	6.88E-29	1.40E-28	2.69E-28	4.93E-28	8.68E-28	8.68E-28
pu245	2.75E-39	5.65E-39	1.09E-38	1.99E-38	3.49E-38	3.49E-38
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	4.29E-19	5.10E-19	5.96E-19	6.87E-19	7.83E-19	7.83E-19
am240	1.96E-16	2.33E-16	2.73E-16	3.14E-16	3.58E-16	3.58E-16
am241	1.54E-03	1.83E-03	2.14E-03	2.47E-03	2.82E-03	2.82E-03
am242m	6.77E-07	8.12E-07	9.59E-07	1.12E-06	1.28E-06	1.28E-06
am242	6.18E-11	7.34E-11	8.58E-11	9.91E-11	1.13E-10	1.13E-10
am243	2.23E-08	3.00E-08	3.92E-08	5.03E-08	6.34E-08	6.34E-08
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.70E-16	2.28E-16	2.98E-16	3.83E-16	4.82E-16	4.82E-16
am245	6.27E-40	1.28E-39	2.43E-39	4.42E-39	7.70E-39	7.70E-39
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	3.65E-21	4.34E-21	5.07E-21	5.85E-21	6.68E-21	6.68E-21
cm242	1.25E-08	1.48E-08	1.73E-08	2.00E-08	2.28E-08	2.28E-08
cm243	8.50E-18	1.03E-17	1.22E-17	1.43E-17	1.65E-17	1.65E-17
cm244	2.67E-12	3.58E-12	4.69E-12	6.01E-12	7.57E-12	7.57E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 42
power= 4.000E-03mw, burnup=5.8440E+03mwd, flux= 2.68E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
cm245	1.66E-15	2.42E-15	3.42E-15	4.70E-15	6.31E-15	6.31E-15
cm246	4.73E-18	7.45E-18	1.13E-17	1.67E-17	2.38E-17	2.38E-17
cm247	2.28E-22	3.91E-22	6.42E-22	1.02E-21	1.56E-21	1.56E-21
cm248	1.09E-25	2.04E-25	3.62E-25	6.17E-25	1.01E-24	1.01E-24
cm249	3.43E-36	6.41E-36	1.14E-35	1.94E-35	3.18E-35	3.18E-35
cm250	4.70E-41	9.52E-41	1.83E-40	3.34E-40	5.86E-40	5.86E-40
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

```
  totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0   flux              2.68E+08  2.68E+08  2.68E+08  2.68E+08  2.68E-07
0        1q array has     20 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        4q array has      1 entries.
0       54q array has     12 entries.
1library information...

         cross-section data taken from position number  1 of library on unit 15.

         pass   5
         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         ********************************************************************************
         *                                                                              *
         *            prelim lwr origen-s binary working library--id = 1143             *
         *          made from modified card-image origen-s libraries of scale 4.2       *
         *       data from the light element, actinide, and fission product libraries   *
         *         decay data, including gamma and total energy, are from endf/b-vi     *
         *                                                                              *
         *       neutron flux spectrum factors and cross sections were produced from    *
         *      the "presas2" case updating all nuclides on the scale "burnup" library  *
         *                                                                              *
         *                    fission product yields are from endf/b-v                  *
         *                                                                              *
         *               photon libraries use an 18-energy-group structure              *
         *              the photon data are from the master photon data base,           *
         *               produced to include bremsstrahlung from uo2 matrix             *
         *                                                                              *
         *         see information above this box (if present) for later updates        *
         *                                                                              *
         ********************************************************************************
         *                                                                              *
0        ********************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft15f001
0                 8/28/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
                        879    number of fission product nuclides
0                      7993    number of nonzero off-diagonal matrix elements
0
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                page   43
       power=    .00mw, burnup=   7305.mwd, flux= 2.67E+08n/cm**2-sec
0                                      basis =
```

0 (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)

0	initial	******* d	******* d	******* d	******* d
productions	1.157562E+06	1.158774E+06	1.159951E+06	1.161091E+06	1.162197E+06
absorptions	9.515668E+05	9.525161E+05	9.534447E+05	9.543523E+05	9.552406E+05
k infinity	1.216479E+00	1.216540E+00	1.216589E+00	1.216627E+00	1.216654E+00

0	initial	******* d	******* d	******* d	******* d
actinide absorptions	9.405191E+05	9.413034E+05	9.420699E+05	9.428184E+05	9.435494E+05
non-actinide abs. fracs.	1.161009E-02	1.177174E-02	1.193023E-02	1.208556E-02	1.223892E-02

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 44

0 fraction of total absorption rate

power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec

0	initial	******* d	******* d	******* d	******* d
sm149	5.33E-03	5.34E-03	5.34E-03	5.35E-03	5.35E-03
eu151	7.20E-04	7.58E-04	7.95E-04	8.32E-04	8.67E-04
nd143	5.66E-04	6.01E-04	6.35E-04	6.69E-04	7.02E-04
rh103	2.75E-04	2.93E-04	3.10E-04	3.27E-04	3.45E-04
xe131	1.84E-04	1.95E-04	2.06E-04	2.18E-04	2.29E-04
gd155	1.74E-04	1.78E-04	1.82E-04	1.85E-04	1.89E-04
cs133	1.42E-04	1.51E-04	1.60E-04	1.68E-04	1.77E-04
sm147	1.05E-04	1.11E-04	1.18E-04	1.24E-04	1.31E-04
tc 99	1.04E-04	1.10E-04	1.17E-04	1.23E-04	1.29E-04
nd145	8.04E-05	8.53E-05	9.02E-05	9.51E-05	1.00E-04
cd113	8.82E-05	8.96E-05	9.08E-05	9.19E-05	9.29E-05
mo 95	5.59E-05	5.93E-05	6.27E-05	6.61E-05	6.95E-05
sm152	5.12E-05	5.48E-05	5.84E-05	6.21E-05	6.58E-05
gd157	5.02E-05	5.11E-05	5.20E-05	5.29E-05	5.37E-05
sm150	3.60E-05	3.87E-05	4.14E-05	4.41E-05	4.68E-05
kr 83	3.44E-05	3.65E-05	3.85E-05	4.06E-05	4.26E-05
sm151	4.09E-05	4.10E-05	4.11E-05	4.12E-05	4.12E-05
cs135	3.22E-05	3.41E-05	3.61E-05	3.81E-05	4.01E-05
ru101	2.51E-05	2.66E-05	2.82E-05	2.97E-05	3.12E-05
pr141	2.38E-05	2.52E-05	2.67E-05	2.81E-05	2.96E-05
eu153	2.27E-05	2.42E-05	2.57E-05	2.71E-05	2.86E-05
la139	1.94E-05	2.06E-05	2.18E-05	2.30E-05	2.42E-05
pd105	9.15E-06	9.77E-06	1.04E-05	1.10E-05	1.16E-05
ba137	9.21E-06	9.79E-06	1.04E-05	1.09E-05	1.15E-05
zr 93	7.87E-06	8.35E-06	8.83E-06	9.30E-06	9.77E-06
ag109	6.64E-06	7.26E-06	7.89E-06	8.55E-06	9.23E-06
i129	6.18E-06	6.57E-06	6.96E-06	7.35E-06	7.74E-06
nd144	5.86E-06	6.22E-06	6.58E-06	6.94E-06	7.30E-06
mo 97	4.41E-06	4.69E-06	4.96E-06	5.22E-06	5.49E-06
gd152	1.68E-06	1.89E-06	2.11E-06	2.33E-06	2.57E-06
zr 91	2.05E-06	2.18E-06	2.30E-06	2.42E-06	2.55E-06
y 89	1.96E-06	2.08E-06	2.20E-06	2.32E-06	2.43E-06
pd108	1.75E-06	1.90E-06	2.05E-06	2.20E-06	2.37E-06
ru102	1.82E-06	1.93E-06	2.04E-06	2.16E-06	2.27E-06
xe135	2.27E-06	2.27E-06	2.27E-06	2.26E-06	2.26E-06
ce142	1.61E-06	1.71E-06	1.81E-06	1.91E-06	2.01E-06
nd148	1.56E-06	1.66E-06	1.75E-06	1.85E-06	1.94E-06
nd146	1.30E-06	1.38E-06	1.46E-06	1.54E-06	1.62E-06
in115	1.13E-06	1.20E-06	1.27E-06	1.35E-06	1.42E-06
ba138	1.11E-06	1.18E-06	1.25E-06	1.32E-06	1.38E-06
ce140	1.04E-06	1.11E-06	1.17E-06	1.23E-06	1.30E-06
pd107	9.17E-07	9.90E-07	1.07E-06	1.14E-06	1.22E-06
xe132	9.52E-07	1.01E-06	1.07E-06	1.13E-06	1.19E-06
mo 98	6.53E-07	6.93E-07	7.33E-07	7.73E-07	8.13E-07
mo100	6.31E-07	6.69E-07	7.08E-07	7.47E-07	7.85E-07

xe134	6.17E-07	6.54E-07	6.92E-07	7.30E-07	7.67E-07
zr 92	4.95E-07	5.25E-07	5.55E-07	5.85E-07	6.14E-07
i127	4.38E-07	4.67E-07	4.96E-07	5.25E-07	5.54E-07
ru104	4.08E-07	4.34E-07	4.60E-07	4.87E-07	5.13E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 45
0 fraction of total absorption rate
power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d

zr 96	3.97E-07	4.21E-07	4.45E-07	4.69E-07	4.93E-07
nd150	3.50E-07	3.72E-07	3.94E-07	4.16E-07	4.37E-07
xe136	3.34E-07	3.55E-07	3.75E-07	3.96E-07	4.16E-07
br 81	2.51E-07	2.66E-07	2.81E-07	2.97E-07	3.12E-07
rb 85	2.42E-07	2.57E-07	2.71E-07	2.86E-07	3.00E-07
cd111	2.16E-07	2.32E-07	2.49E-07	2.66E-07	2.84E-07
pm147	2.65E-07	2.65E-07	2.64E-07	2.64E-07	2.64E-07
zr 94	2.12E-07	2.25E-07	2.38E-07	2.51E-07	2.63E-07
zr 90	1.92E-07	2.04E-07	2.15E-07	2.27E-07	2.38E-07
eu152	1.87E-07	1.96E-07	2.06E-07	2.15E-07	2.24E-07
sm154	1.57E-07	1.67E-07	1.77E-07	1.87E-07	1.98E-07
te130	1.53E-07	1.62E-07	1.72E-07	1.81E-07	1.90E-07
eu155	1.83E-07	1.85E-07	1.86E-07	1.87E-07	1.89E-07
rb 87	1.40E-07	1.48E-07	1.57E-07	1.65E-07	1.73E-07
ru 99	1.08E-07	1.22E-07	1.36E-07	1.52E-07	1.68E-07
se 77	9.99E-08	1.06E-07	1.12E-07	1.18E-07	1.24E-07
pd106	8.74E-08	9.37E-08	1.00E-07	1.07E-07	1.13E-07
gd154	5.99E-08	6.76E-08	7.59E-08	8.45E-08	9.37E-08
gd156	6.91E-08	7.50E-08	8.10E-08	8.72E-08	9.34E-08
kr 84	6.65E-08	7.05E-08	7.46E-08	7.86E-08	8.26E-08
sb121	5.15E-08	5.48E-08	5.81E-08	6.14E-08	6.48E-08
se 79	5.13E-08	5.44E-08	5.75E-08	6.07E-08	6.38E-08
dy161	4.11E-08	4.48E-08	4.86E-08	5.25E-08	5.66E-08
sb123	4.17E-08	4.44E-08	4.71E-08	4.97E-08	5.24E-08
kr 86	3.66E-08	3.88E-08	4.10E-08	4.32E-08	4.54E-08
te128	3.42E-08	3.64E-08	3.85E-08	4.07E-08	4.29E-08
se 80	2.39E-08	2.54E-08	2.68E-08	2.83E-08	2.97E-08
ru100	1.86E-08	2.10E-08	2.34E-08	2.61E-08	2.88E-08
te125	2.25E-08	2.39E-08	2.54E-08	2.69E-08	2.84E-08
tb159	2.01E-08	2.16E-08	2.33E-08	2.49E-08	2.66E-08
gd158	1.58E-08	1.71E-08	1.84E-08	1.97E-08	2.10E-08
cd112	1.60E-08	1.71E-08	1.82E-08	1.94E-08	2.06E-08
nd142	1.30E-08	1.46E-08	1.63E-08	1.82E-08	2.01E-08
ba134	1.26E-08	1.42E-08	1.59E-08	1.77E-08	1.96E-08
sm148	1.16E-08	1.30E-08	1.46E-08	1.62E-08	1.79E-08
li 6	1.33E-08	1.41E-08	1.48E-08	1.56E-08	1.64E-08
ba135	1.03E-08	1.17E-08	1.31E-08	1.45E-08	1.61E-08
sr 90	1.62E-08	1.61E-08	1.61E-08	1.60E-08	1.60E-08
sn117	1.19E-08	1.27E-08	1.35E-08	1.43E-08	1.51E-08
eu154	1.15E-08	1.22E-08	1.29E-08	1.37E-08	1.44E-08
pd104	8.79E-09	9.91E-09	1.11E-08	1.24E-08	1.37E-08
dy164	8.60E-09	9.48E-09	1.04E-08	1.13E-08	1.23E-08
cd114	9.10E-09	9.79E-09	1.05E-08	1.12E-08	1.19E-08
sn119	9.35E-09	9.95E-09	1.06E-08	1.12E-08	1.18E-08
dy162	7.83E-09	8.62E-09	9.45E-09	1.03E-08	1.12E-08
sn115	8.56E-09	9.11E-09	9.66E-09	1.02E-08	1.08E-08
rh105	9.77E-09	9.85E-09	9.93E-09	1.00E-08	1.01E-08
pd110	7.03E-09	7.59E-09	8.17E-09	8.75E-09	9.35E-09
sr 88	6.73E-09	7.14E-09	7.55E-09	7.95E-09	8.35E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 46
0 fraction of total absorption rate

power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec

	initial ******* d	******* d	******* d	******* d
se 82	4.60E-09	4.88E-09	5.15E-09	5.43E-09	5.71E-09
sn126	4.12E-09	4.39E-09	4.67E-09	4.95E-09	5.24E-09
mo 96	3.11E-09	3.49E-09	3.88E-09	4.30E-09	4.74E-09
se 78	3.56E-09	3.78E-09	4.00E-09	4.22E-09	4.44E-09
sn124	3.02E-09	3.21E-09	3.41E-09	3.61E-09	3.80E-09
cs137	3.70E-09	3.69E-09	3.69E-09	3.69E-09	3.68E-09
cd110	2.00E-09	2.31E-09	2.64E-09	3.01E-09	3.41E-09
ba136	2.23E-09	2.44E-09	2.65E-09	2.87E-09	3.10E-09
dy163	1.95E-09	2.16E-09	2.37E-09	2.59E-09	2.81E-09
as 75	2.11E-09	2.24E-09	2.37E-09	2.49E-09	2.62E-09
xe130	1.75E-09	1.94E-09	2.15E-09	2.37E-09	2.59E-09
nb 93	1.65E-09	1.86E-09	2.09E-09	2.32E-09	2.57E-09
pr143	2.57E-09	2.56E-09	2.56E-09	2.55E-09	2.55E-09
kr 82	1.74E-09	1.92E-09	2.10E-09	2.29E-09	2.49E-09
in113	1.68E-09	1.80E-09	1.91E-09	2.02E-09	2.13E-09
xe133	1.96E-09	1.96E-09	1.96E-09	1.96E-09	1.96E-09
sn118	1.23E-09	1.31E-09	1.39E-09	1.47E-09	1.55E-09
ce141	1.55E-09	1.54E-09	1.54E-09	1.54E-09	1.54E-09
br 79	8.40E-10	9.47E-10	1.06E-09	1.18E-09	1.31E-09
sn122	1.03E-09	1.10E-09	1.16E-09	1.23E-09	1.30E-09
cs134	1.05E-09	1.11E-09	1.17E-09	1.24E-09	1.30E-09
cd116	1.03E-09	1.10E-09	1.17E-09	1.23E-09	1.30E-09
sn120	7.68E-10	8.17E-10	8.67E-10	9.16E-10	9.66E-10
ag107	5.88E-10	6.72E-10	7.63E-10	8.60E-10	9.65E-10
pm149	9.55E-10	9.54E-10	9.54E-10	9.53E-10	9.53E-10
nd147	9.09E-10	9.08E-10	9.06E-10	9.05E-10	9.04E-10
xe129	4.84E-10	5.47E-10	6.13E-10	6.83E-10	7.57E-10
ge 73	5.86E-10	6.23E-10	6.60E-10	6.97E-10	7.34E-10
te126	4.03E-10	4.49E-10	4.97E-10	5.48E-10	6.01E-10
ce144	5.77E-10	5.76E-10	5.75E-10	5.74E-10	5.73E-10
kr 85	5.44E-10	5.42E-10	5.41E-10	5.40E-10	5.38E-10
ru103	3.70E-10	3.70E-10	3.71E-10	3.72E-10	3.72E-10
gd160	2.10E-10	2.28E-10	2.46E-10	2.64E-10	2.83E-10
ge 76	2.07E-10	2.19E-10	2.32E-10	2.44E-10	2.57E-10
ho165	1.50E-10	1.66E-10	1.84E-10	2.02E-10	2.21E-10
zr 95	1.60E-10	1.60E-10	1.60E-10	1.59E-10	1.59E-10
nb 95	1.48E-10	1.47E-10	1.47E-10	1.47E-10	1.46E-10
y 91	1.36E-10	1.35E-10	1.35E-10	1.34E-10	1.34E-10
dy160	7.39E-11	8.40E-11	9.49E-11	1.06E-10	1.19E-10
pm151	1.11E-10	1.11E-10	1.11E-10	1.12E-10	1.12E-10
xe128	4.89E-11	5.51E-11	6.18E-11	6.88E-11	7.63E-11
te124	3.63E-11	3.93E-11	4.24E-11	4.56E-11	4.89E-11
eu156	4.48E-11	4.54E-11	4.59E-11	4.65E-11	4.70E-11
ba140	4.59E-11	4.58E-11	4.57E-11	4.57E-11	4.56E-11
sr 86	2.93E-11	3.25E-11	3.60E-11	3.95E-11	4.33E-11
sm153	4.16E-11	4.18E-11	4.21E-11	4.23E-11	4.25E-11
ru106	3.50E-11	3.55E-11	3.60E-11	3.65E-11	3.70E-11
sr 87	2.51E-11	2.67E-11	2.84E-11	3.00E-11	3.16E-11
sn116	1.88E-11	2.12E-11	2.38E-11	2.65E-11	2.94E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 47
0 fraction of total absorption rate

power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec

	initial ******* d	******* d	******* d	******* d
sr 89	2.89E-11	2.88E-11	2.88E-11	2.87E-11	2.86E-11
kr 87	2.16E-11	2.16E-11	2.15E-11	2.15E-11	2.14E-11
nb 94	1.51E-11	1.62E-11	1.73E-11	1.84E-11	1.95E-11

sb125	1.65E-11	1.66E-11	1.67E-11	1.68E-11	1.69E-11
ce143	1.68E-11	1.68E-11	1.68E-11	1.67E-11	1.67E-11
y 90	1.54E-11	1.53E-11	1.53E-11	1.52E-11	1.52E-11
la140	1.49E-11	1.49E-11	1.49E-11	1.48E-11	1.48E-11
ge 74	1.17E-11	1.25E-11	1.32E-11	1.40E-11	1.47E-11
se 76	1.00E-11	1.10E-11	1.20E-11	1.31E-11	1.42E-11
mo 99	1.28E-11	1.28E-11	1.28E-11	1.28E-11	1.28E-11
te122	7.82E-12	8.83E-12	9.90E-12	1.10E-11	1.22E-11
er166	8.05E-12	8.97E-12	9.94E-12	1.09E-11	1.20E-11
ge 72	8.28E-12	8.82E-12	9.36E-12	9.91E-12	1.05E-11
pm148m	9.57E-12	9.58E-12	9.59E-12	9.59E-12	9.60E-12
te127m	8.28E-12	8.33E-12	8.37E-12	8.42E-12	8.47E-12
i131	6.71E-12	6.71E-12	6.71E-12	6.71E-12	6.70E-12
te129m	1.84E-12	1.84E-12	1.84E-12	1.85E-12	1.85E-12
kr 80	7.41E-13	8.30E-13	9.26E-13	1.03E-12	1.14E-12
ag111	5.08E-13	5.19E-13	5.29E-13	5.38E-13	5.48E-13
er167	2.82E-13	3.29E-13	3.80E-13	4.36E-13	4.97E-13
eu157	4.24E-13	4.31E-13	4.37E-13	4.44E-13	4.50E-13
pm148	3.65E-13	3.65E-13	3.65E-13	3.65E-13	3.64E-13
cd115m	2.56E-13	2.58E-13	2.59E-13	2.60E-13	2.61E-13
te123	1.50E-13	1.74E-13	2.00E-13	2.29E-13	2.60E-13
cs136	1.59E-13	1.65E-13	1.71E-13	1.77E-13	1.83E-13
tb160	5.23E-14	5.63E-14	6.02E-14	6.43E-14	6.84E-14
ru105	3.49E-14	3.51E-14	3.54E-14	3.57E-14	3.60E-14
pr142	2.66E-14	2.82E-14	2.98E-14	3.15E-14	3.30E-14
be 9	2.63E-14	2.79E-14	2.95E-14	3.12E-14	3.28E-14
sn125	3.10E-14	3.11E-14	3.12E-14	3.13E-14	3.14E-14
cd108	1.58E-14	1.90E-14	2.25E-14	2.65E-14	3.09E-14
li 7	1.05E-14	1.11E-14	1.18E-14	1.24E-14	1.31E-14
rb 88	1.22E-14	1.21E-14	1.21E-14	1.21E-14	1.20E-14
sb126	9.92E-15	1.04E-14	1.08E-14	1.12E-14	1.17E-14
sn123	1.03E-14	1.04E-14	1.04E-14	1.04E-14	1.04E-14
i135	9.87E-15	9.86E-15	9.85E-15	9.84E-15	9.83E-15
te132	9.40E-15	9.40E-15	9.39E-15	9.39E-15	9.38E-15
sn114	4.66E-15	5.27E-15	5.92E-15	6.60E-15	7.33E-15
i130	5.62E-15	5.91E-15	6.21E-15	6.50E-15	6.80E-15
te134	5.59E-15	5.58E-15	5.57E-15	5.56E-15	5.55E-15
sb124	4.12E-15	4.25E-15	4.37E-15	4.49E-15	4.61E-15
in117m	2.41E-15	2.43E-15	2.44E-15	2.46E-15	2.48E-15
rb 86	1.80E-15	1.89E-15	1.98E-15	2.07E-15	2.16E-15
dy165	1.30E-15	1.37E-15	1.44E-15	1.50E-15	1.57E-15
in117	7.17E-16	7.23E-16	7.28E-16	7.34E-16	7.39E-16
cs134m	1.96E-16	2.08E-16	2.20E-16	2.32E-16	2.44E-16
cd118	1.29E-16	1.30E-16	1.30E-16	1.31E-16	1.31E-16
ge 75	8.43E-17	8.42E-17	8.41E-17	8.40E-17	8.39E-17
in119m	3.19E-17	3.20E-17	3.21E-17	3.22E-17	3.23E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 48
0 fraction of total absorption rate
power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d

ag110	8.58E-18	9.38E-18	1.02E-17	1.10E-17	1.19E-17
cd109	6.77E-18	7.20E-18	7.64E-18	8.09E-18	8.56E-18
in119	2.57E-18	2.58E-18	2.60E-18	2.61E-18	2.62E-18
in120	4.32E-22	4.33E-22	4.35E-22	4.36E-22	4.38E-22
in120m	6.21E-23	6.30E-23	6.40E-23	6.49E-23	6.59E-23

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 49
power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d
h 1	3.48E-04	3.69E-04	3.91E-04	4.13E-04	4.34E-04
h 2	1.03E-06	1.10E-06	1.16E-06	1.23E-06	1.29E-06
h 3	4.34E-11	4.42E-11	4.47E-11	4.51E-11	4.56E-11
h 4	1.74E-34	1.76E-34	1.78E-34	1.80E-34	1.82E-34
he 3	6.99E-09	7.37E-09	7.73E-09	8.09E-09	8.45E-09
he 4	5.76E-05	6.11E-05	6.47E-05	6.83E-05	7.19E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	6.91E-06	7.35E-06	7.78E-06	8.21E-06	8.64E-06
ne 21	8.74E-10	9.80E-10	1.09E-09	1.21E-09	1.33E-09
ne 22	4.57E-08	4.86E-08	5.15E-08	5.43E-08	5.72E-08
ne 23	7.14E-15	7.18E-15	7.17E-15	7.17E-15	7.16E-15
na 22	4.21E-11	4.24E-11	4.23E-11	4.23E-11	4.23E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.77E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08
na 24m	4.55E-15	4.54E-15	4.54E-15	4.53E-15	4.53E-15
na 25	2.69E-24	3.01E-24	3.34E-24	3.68E-24	4.04E-24
mg 24	5.11E-02	5.40E-02	5.69E-02	5.97E-02	6.26E-02
mg 25	9.35E-08	1.04E-07	1.16E-07	1.28E-07	1.40E-07
mg 26	1.03E-06	1.10E-06	1.16E-06	1.23E-06	1.29E-06
mg 27	2.13E-12	2.14E-12	2.14E-12	2.14E-12	2.14E-12
mg 28	4.27E-24	4.29E-24	4.28E-24	4.28E-24	4.27E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.05E-10	2.05E-10	2.05E-10	2.04E-10	2.04E-10
al 29	2.07E-22	2.32E-22	2.58E-22	2.86E-22	3.15E-22
al 30	1.56E-32	1.86E-32	2.20E-32	2.56E-32	2.97E-32
si 28	1.49E-01	1.57E-01	1.66E-01	1.74E-01	1.82E-01
si 29	8.01E-07	8.98E-07	1.00E-06	1.11E-06	1.22E-06
si 30	4.53E-12	5.40E-12	6.36E-12	7.43E-12	8.62E-12
si 31	3.20E-24	3.81E-24	4.49E-24	5.24E-24	6.08E-24
si 32	4.68E-30	5.62E-30	6.67E-30	7.85E-30	9.16E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.67E+08	2.67E+08	2.67E+08	2.66E+08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 50
power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d
he 4	2.06E+00	2.26E+00	2.47E+00	2.69E+00	2.91E+00
pb206	7.39E-04	8.69E-04	1.01E-03	1.17E-03	1.34E-03
pb207	1.22E-04	1.37E-04	1.54E-04	1.72E-04	1.90E-04
pb208	1.93E-05	2.18E-05	2.44E-05	2.72E-05	3.01E-05
pb209	1.96E-11	2.19E-11	2.44E-11	2.69E-11	2.96E-11
pb210	1.60E-05	1.75E-05	1.92E-05	2.08E-05	2.25E-05
pb211	6.09E-12	6.47E-12	6.85E-12	7.24E-12	7.62E-12
pb212	1.67E-11	1.78E-11	1.88E-11	1.98E-11	2.09E-11
pb214	3.65E-11	4.01E-11	4.38E-11	4.76E-11	5.14E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	5.04E-05	6.01E-05	7.09E-05	8.28E-05	9.60E-05
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	9.82E-09	1.08E-08	1.18E-08	1.28E-08	1.39E-08
bi211	3.61E-13	3.84E-13	4.06E-13	4.29E-13	4.52E-13
bi212	1.59E-12	1.68E-12	1.78E-12	1.88E-12	1.98E-12
bi213	4.57E-12	5.11E-12	5.69E-12	6.29E-12	6.91E-12
bi214	2.71E-11	2.98E-11	3.25E-11	3.53E-11	3.82E-11
po210	2.71E-07	2.98E-07	3.26E-07	3.54E-07	3.83E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.99E-18	4.24E-18	4.49E-18	4.74E-18	4.99E-18

po212	8.33E-23	8.85E-23	9.37E-23	9.88E-23	1.04E-22
po213	6.87E-21	7.69E-21	8.55E-21	9.45E-21	1.04E-20
po214	3.72E-18	4.10E-18	4.47E-18	4.86E-18	5.25E-18
po215	5.00E-18	5.32E-18	5.63E-18	5.95E-18	6.27E-18
po216	6.33E-17	6.72E-17	7.11E-17	7.51E-17	7.90E-17
po218	4.22E-12	4.64E-12	5.07E-12	5.51E-12	5.95E-12
rn218	2.44E-28	2.60E-28	2.75E-28	2.90E-28	3.05E-28
rn219	1.11E-14	1.18E-14	1.25E-14	1.32E-14	1.39E-14
rn220	2.43E-14	2.58E-14	2.73E-14	2.88E-14	3.03E-14
rn222	7.49E-09	8.24E-09	9.00E-09	9.78E-09	1.06E-08
ra222	2.65E-25	2.82E-25	2.98E-25	3.14E-25	3.31E-25
ra223	2.78E-09	2.95E-09	3.13E-09	3.30E-09	3.48E-09
ra224	1.38E-10	1.47E-10	1.55E-10	1.64E-10	1.72E-10
ra225	2.14E-09	2.39E-09	2.66E-09	2.94E-09	3.23E-09
ra226	1.14E-03	1.26E-03	1.38E-03	1.49E-03	1.62E-03
ra228	8.55E-12	9.09E-12	9.64E-12	1.02E-11	1.07E-11
ac225	1.44E-09	1.62E-09	1.80E-09	1.99E-09	2.18E-09
ac227	1.93E-06	2.05E-06	2.17E-06	2.30E-06	2.42E-06
ac228	1.04E-15	1.11E-15	1.18E-15	1.24E-15	1.31E-15
th226	1.29E-23	1.38E-23	1.45E-23	1.53E-23	1.61E-23
th227	4.48E-09	4.76E-09	5.05E-09	5.33E-09	5.61E-09
th228	2.63E-08	2.80E-08	2.96E-08	3.13E-08	3.29E-08
th229	4.15E-04	4.65E-04	5.17E-04	5.72E-04	6.28E-04
th230	1.03E-01	1.10E-01	1.16E-01	1.23E-01	1.29E-01
th231	3.37E-09	3.39E-09	3.42E-09	3.44E-09	3.46E-09
th232	2.09E-02	2.22E-02	2.36E-02	2.49E-02	2.62E-02
th233	1.90E-13	2.02E-13	2.13E-13	2.25E-13	2.37E-13
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	2.90E-03	3.09E-03	3.27E-03	3.45E-03	3.64E-03
pa232	4.91E-11	5.22E-11	5.53E-11	5.83E-11	6.14E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 51
power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d
pa233	1.45E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.25E-20	1.33E-20	1.41E-20	1.49E-20	1.56E-20
u231	4.05E-17	4.31E-17	4.55E-17	4.79E-17	5.03E-17
u232	9.59E-07	1.02E-06	1.08E-06	1.14E-06	1.20E-06
u233	5.30E-02	5.62E-02	5.94E-02	6.26E-02	6.58E-02
u234	9.59E+00	9.63E+00	9.66E+00	9.70E+00	9.73E+00
u235	7.02E+02	7.00E+02	6.99E+02	6.97E+02	6.96E+02
u236	1.79E+02	1.79E+02	1.79E+02	1.80E+02	1.80E+02
u237	3.18E-06	3.19E-06	3.19E-06	3.19E-06	3.19E-06
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	1.74E-38	2.96E-38	4.85E-38	7.75E-38	1.21E-37
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.71E-12	8.75E-12	8.74E-12	8.73E-12	8.72E-12
np236m	2.07E-12	2.08E-12	2.08E-12	2.07E-12	2.07E-12
np236	7.90E-07	8.38E-07	8.86E-07	9.33E-07	9.81E-07
np237	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01
np238	1.53E-06	1.53E-06	1.53E-06	1.53E-06	1.52E-06
np239	4.58E-05	4.59E-05	4.59E-05	4.58E-05	4.58E-05
np240m	1.49E-40	2.52E-40	4.14E-40	6.61E-40	1.03E-39
np240	9.21E-15	9.22E-15	9.20E-15	9.19E-15	9.18E-15

np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.12E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09
pu237	3.83E-13	3.93E-13	4.01E-13	4.09E-13	4.16E-13
pu238	2.31E-02	2.31E-02	2.31E-02	2.31E-02	2.31E-02
pu239	1.79E+01	1.88E+01	1.98E+01	2.07E+01	2.17E+01
pu240	3.07E-01	3.41E-01	3.76E-01	4.13E-01	4.50E-01
pu241	1.26E-04	1.40E-04	1.55E-04	1.70E-04	1.85E-04
pu242	1.09E-05	1.31E-05	1.56E-05	1.85E-05	2.16E-05
pu243	2.29E-14	2.77E-14	3.31E-14	3.90E-14	4.55E-14
pu244	8.68E-28	1.47E-27	2.42E-27	3.86E-27	6.01E-27
pu245	3.49E-38	5.92E-38	9.73E-38	1.55E-37	2.41E-37
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	7.83E-19	8.90E-19	9.96E-19	1.11E-18	1.22E-18
am240	3.58E-16	4.07E-16	4.56E-16	5.06E-16	5.59E-16
am241	2.82E-03	3.18E-03	3.57E-03	3.97E-03	4.38E-03
am242m	1.28E-06	1.46E-06	1.64E-06	1.84E-06	2.04E-06
am242	1.13E-10	1.28E-10	1.43E-10	1.59E-10	1.76E-10
am243	6.34E-08	7.87E-08	9.63E-08	1.16E-07	1.39E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	4.82E-16	5.98E-16	7.32E-16	8.84E-16	1.06E-15
am245	7.70E-39	1.30E-38	2.12E-38	3.36E-38	5.20E-38
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	6.68E-21	7.58E-21	8.49E-21	9.44E-21	1.04E-20
cm242	2.28E-08	2.58E-08	2.90E-08	3.22E-08	3.56E-08
cm243	1.65E-17	1.88E-17	2.12E-17	2.38E-17	2.65E-17
cm244	7.57E-12	9.40E-12	1.15E-11	1.39E-11	1.66E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 52

power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d
cm245	6.31E-15	8.32E-15	1.08E-14	1.38E-14	1.73E-14
cm246	2.38E-17	3.33E-17	4.56E-17	6.13E-17	8.10E-17
cm247	1.56E-21	2.33E-21	3.39E-21	4.82E-21	6.73E-21
cm248	1.01E-24	1.61E-24	2.49E-24	3.76E-24	5.54E-24
cm249	3.18E-35	5.06E-35	7.82E-35	1.18E-34	1.74E-34
cm250	5.86E-40	9.92E-40	1.63E-39	2.59E-39	4.03E-39
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.67E+08	2.67E+08	2.67E+08	2.66E+08

0 .results on logical unit no. 71, position 1, for time step 4, subcase 6. (run position 1, case position 1)

title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 53

decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec

0 nuclide concentrations, grams

basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 1	4.34E-04	4.34E-04	4.34E-04	4.34E-04	4.34E-04	4.34E-04	4.34E-04
h 2	2.59E-06	2.59E-06	2.59E-06	2.59E-06	2.59E-06	2.59E-06	2.59E-06
he 4	2.88E-04	2.88E-04	2.88E-04	2.88E-04	2.88E-04	2.88E-04	2.88E-04
ne 20	1.73E-04	1.73E-04	1.73E-04	1.73E-04	1.73E-04	1.73E-04	1.73E-04
ne 22	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06
na 23	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05
mg 24	1.50E+00	1.50E+00	1.50E+00	1.50E+00	1.50E+00	1.50E+00	1.50E+00
mg 25	3.51E-06	3.51E-06	3.51E-06	3.51E-06	3.51E-06	3.51E-06	3.51E-06
mg 26	3.36E-05	3.36E-05	3.36E-05	3.36E-05	3.36E-05	3.36E-05	3.36E-05
al 27	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06
si 28	5.10E+00	5.10E+00	5.10E+00	5.10E+00	5.10E+00	5.10E+00	5.10E+00

si 29	3.54E-05	3.54E-05	3.54E-05	3.54E-05	3.54E-05	3.54E-05	3.54E-05
total	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 54
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 element radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h	1.32E-06	1.26E-06	1.20E-06	1.15E-06	1.10E-06	1.05E-06	9.99E-07
na	8.43E+00	4.66E-06	3.73E-06	2.99E-06	2.39E-06	1.92E-06	1.53E-06
totals	2.56E+01	5.92E-06	4.93E-06	4.14E-06	3.49E-06	2.96E-06	2.53E-06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 55
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
na	1.71E-01	6.59E-08	5.28E-08	4.23E-08	3.38E-08	2.71E-08	2.17E-08
totals	4.78E-01	6.59E-08	5.28E-08	4.23E-08	3.39E-08	2.71E-08	2.17E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 56
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
na 22	7.56E-08	6.05E-08	4.85E-08	3.88E-08	3.11E-08	2.49E-08	1.99E-08
total	3.32E-01	6.05E-08	4.85E-08	3.88E-08	3.11E-08	2.49E-08	1.99E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 57
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he 4	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.92E+00	2.92E+00	2.92E+00
pb206	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03
pb207	1.90E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04
pb208	3.01E-05	3.01E-05	3.01E-05	3.01E-05	3.01E-05	3.02E-05	3.02E-05
pb210	2.25E-05	2.25E-05	2.25E-05	2.25E-05	2.25E-05	2.25E-05	2.25E-05
bi209	9.60E-05	9.60E-05	9.61E-05	9.61E-05	9.62E-05	9.62E-05	9.63E-05
ra226	1.62E-03	1.62E-03	1.62E-03	1.62E-03	1.62E-03	1.62E-03	1.62E-03
ac227	2.42E-06	2.42E-06	2.42E-06	2.42E-06	2.42E-06	2.42E-06	2.42E-06
th229	6.28E-04	6.28E-04	6.29E-04	6.29E-04	6.29E-04	6.29E-04	6.29E-04
th230	1.29E-01	1.29E-01	1.29E-01	1.29E-01	1.29E-01	1.29E-01	1.29E-01
th232	2.62E-02	2.62E-02	2.62E-02	2.62E-02	2.62E-02	2.62E-02	2.62E-02
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	3.64E-03	3.64E-03	3.64E-03	3.64E-03	3.64E-03	3.64E-03	3.64E-03
pa233	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06
u232	1.20E-06	1.19E-06	1.18E-06	1.17E-06	1.16E-06	1.15E-06	1.14E-06
u233	6.58E-02	6.58E-02	6.58E-02	6.58E-02	6.58E-02	6.58E-02	6.58E-02
u234	9.73E+00	9.73E+00	9.73E+00	9.73E+00	9.73E+00	9.73E+00	9.73E+00
u235	6.96E+02	6.96E+02	6.96E+02	6.96E+02	6.96E+02	6.96E+02	6.96E+02
u236	1.80E+02	1.80E+02	1.80E+02	1.80E+02	1.80E+02	1.80E+02	1.80E+02
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
np236	9.81E-07	9.81E-07	9.81E-07	9.81E-07	9.81E-07	9.81E-07	9.81E-07
np237	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01
pu238	2.31E-02	2.29E-02	2.28E-02	2.26E-02	2.25E-02	2.23E-02	2.22E-02
pu239	2.17E+01	2.17E+01	2.17E+01	2.17E+01	2.17E+01	2.17E+01	2.17E+01
pu240	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01
pu241	1.85E-04	1.78E-04	1.71E-04	1.64E-04	1.57E-04	1.51E-04	1.45E-04
pu242	2.16E-05	2.16E-05	2.16E-05	2.16E-05	2.16E-05	2.16E-05	2.16E-05

am241	4.38E-03	4.38E-03	4.38E-03	4.38E-03	4.38E-03	4.38E-03	4.38E-03
am242m	2.04E-06	2.03E-06	2.02E-06	2.01E-06	2.00E-06	2.00E-06	1.99E-06
total	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 58
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0
element concentrations, gram atoms
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.92E+00	2.92E+00	2.92E+00
pb	1.58E-03	1.58E-03	1.58E-03	1.58E-03	1.58E-03	1.58E-03	1.58E-03
bi	9.60E-05	9.61E-05	9.61E-05	9.62E-05	9.62E-05	9.62E-05	9.63E-05
ra	1.62E-03	1.62E-03	1.62E-03	1.62E-03	1.62E-03	1.62E-03	1.62E-03
ac	2.42E-06	2.42E-06	2.42E-06	2.42E-06	2.42E-06	2.42E-06	2.42E-06
th	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01
pa	3.64E-03	3.64E-03	3.64E-03	3.64E-03	3.64E-03	3.64E-03	3.64E-03
u	3.72E+04	3.72E+04	3.72E+04	3.72E+04	3.72E+04	3.72E+04	3.72E+04
np	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01
pu	2.22E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01
am	4.38E-03	4.38E-03	4.39E-03	4.39E-03	4.39E-03	4.39E-03	4.39E-03
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 59
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0
nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he 4	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01
pb206	2.75E-01	2.75E-01	2.75E-01	2.75E-01	2.76E-01	2.76E-01	2.76E-01
pb207	3.94E-02	3.94E-02	3.95E-02	3.95E-02	3.95E-02	3.95E-02	3.95E-02
pb208	6.26E-03	6.26E-03	6.27E-03	6.27E-03	6.27E-03	6.27E-03	6.27E-03
pb210	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03
bi209	2.01E-02	2.01E-02	2.01E-02	2.01E-02	2.01E-02	2.01E-02	2.01E-02
bi210	2.91E-06	2.91E-06	2.91E-06	2.91E-06	2.91E-06	2.91E-06	2.91E-06
po210	8.04E-05	7.95E-05	7.94E-05	7.93E-05	7.93E-05	7.93E-05	7.93E-05
rn222	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.35E-06
ra223	7.75E-07	7.77E-07	7.77E-07	7.77E-07	7.77E-07	7.77E-07	7.77E-07
ra225	7.27E-07	7.27E-07	7.27E-07	7.28E-07	7.28E-07	7.28E-07	7.28E-07
ra226	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.66E-01	3.66E-01
ac227	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04
th227	1.27E-06	1.28E-06	1.28E-06	1.28E-06	1.28E-06	1.28E-06	1.28E-06
th228	7.50E-06	7.49E-06	7.46E-06	7.43E-06	7.39E-06	7.34E-06	7.29E-06
th229	1.44E-01	1.44E-01	1.44E-01	1.44E-01	1.44E-01	1.44E-01	1.44E-01
th230	2.97E+01	2.97E+01	2.97E+01	2.97E+01	2.97E+01	2.97E+01	2.97E+01
th231	8.00E-07	6.65E-07	6.65E-07	6.65E-07	6.65E-07	6.65E-07	6.65E-07
th232	6.08E+00	6.08E+00	6.08E+00	6.08E+00	6.08E+00	6.09E+00	6.09E+00
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	8.40E-01	8.40E-01	8.40E-01	8.40E-01	8.40E-01	8.40E-01	8.41E-01
pa233	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04
u232	2.78E-04	2.76E-04	2.73E-04	2.71E-04	2.69E-04	2.67E-04	2.65E-04
u233	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.53E+01
u234	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03
u235	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05
u236	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04
u238	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06
np236	2.32E-04	2.32E-04	2.32E-04	2.32E-04	2.32E-04	2.32E-04	2.32E-04
np237	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03
pu238	5.49E+00	5.45E+00	5.41E+00	5.38E+00	5.34E+00	5.31E+00	5.27E+00
pu239	5.18E+03	5.18E+03	5.18E+03	5.18E+03	5.18E+03	5.18E+03	5.18E+03
pu240	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02

pu241	4.45E-02	4.28E-02	4.11E-02	3.95E-02	3.79E-02	3.64E-02	3.50E-02
pu242	5.22E-03	5.22E-03	5.22E-03	5.22E-03	5.22E-03	5.22E-03	5.22E-03
am241	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00
am242m	4.93E-04	4.91E-04	4.89E-04	4.87E-04	4.85E-04	4.83E-04	4.81E-04
am243	3.38E-05	3.38E-05	3.38E-05	3.38E-05	3.38E-05	3.38E-05	3.38E-05
cm242	8.60E-06	3.29E-06	1.83E-06	1.42E-06	1.31E-06	1.27E-06	1.26E-06
total	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 60
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 element concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01
pb	3.25E-01	3.26E-01	3.26E-01	3.26E-01	3.26E-01	3.26E-01	3.26E-01
bi	2.01E-02	2.01E-02	2.01E-02	2.01E-02	2.01E-02	2.01E-02	2.01E-02
po	8.04E-05	7.95E-05	7.94E-05	7.93E-05	7.93E-05	7.93E-05	7.93E-05
rn	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.35E-06
ra	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.66E-01	3.66E-01
ac	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04
th	3.59E+01	3.59E+01	3.59E+01	3.59E+01	3.59E+01	3.59E+01	3.60E+01
pa	8.40E-01	8.40E-01	8.40E-01	8.41E-01	8.41E-01	8.41E-01	8.41E-01
u	8.86E+06	8.86E+06	8.86E+06	8.86E+06	8.86E+06	8.86E+06	8.86E+06
np	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03
pu	5.29E+03	5.29E+03	5.29E+03	5.29E+03	5.29E+03	5.29E+03	5.29E+03
am	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00
cm	8.61E-06	3.30E-06	1.83E-06	1.43E-06	1.31E-06	1.27E-06	1.26E-06
totals	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 61
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl207	3.96E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02
tl208	2.21E-03	2.22E-03	2.21E-03	2.20E-03	2.19E-03	2.17E-03	2.16E-03
tl209	5.99E-04	5.99E-04	5.99E-04	5.99E-04	5.99E-04	6.00E-04	6.00E-04
pb209	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02
pb210	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01
pb211	3.97E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02
pb212	6.15E-03	6.16E-03	6.14E-03	6.11E-03	6.08E-03	6.04E-03	6.00E-03
pb214	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.62E-01
bi210	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01
bi211	3.97E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02
bi212	6.15E-03	6.16E-03	6.14E-03	6.11E-03	6.08E-03	6.04E-03	6.00E-03
bi213	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02
bi214	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.62E-01
po210	3.61E-01	3.57E-01	3.57E-01	3.56E-01	3.56E-01	3.56E-01	3.56E-01
po211	1.09E-04	1.10E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04
po212	3.94E-03	3.95E-03	3.94E-03	3.92E-03	3.90E-03	3.87E-03	3.85E-03
po213	2.79E-02	2.79E-02	2.79E-02	2.79E-02	2.79E-02	2.79E-02	2.80E-02
po214	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01
po215	3.97E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02
po216	6.15E-03	6.16E-03	6.14E-03	6.11E-03	6.08E-03	6.04E-03	6.00E-03
po218	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.62E-01	3.62E-01
at217	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02	2.86E-02
rn219	3.97E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02
rn220	6.15E-03	6.16E-03	6.14E-03	6.11E-03	6.08E-03	6.04E-03	6.00E-03
rn222	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.62E-01	3.62E-01
fr221	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02	2.86E-02

fr223	5.48E-04	5.48E-04	5.48E-04	5.48E-04	5.48E-04	5.48E-04	5.48E-04
ra223	3.97E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02
ra224	6.15E-03	6.16E-03	6.14E-03	6.11E-03	6.08E-03	6.04E-03	6.00E-03
ra225	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02	2.86E-02
ra226	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.62E-01	3.62E-01
ra228	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07
ac225	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02	2.86E-02
ac227	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02
ac228	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07
th227	3.92E-02	3.93E-02	3.93E-02	3.93E-02	3.93E-02	3.93E-02	3.93E-02
th228	6.15E-03	6.14E-03	6.12E-03	6.09E-03	6.06E-03	6.02E-03	5.98E-03
th229	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02	2.86E-02
th230	6.12E-01	6.13E-01	6.13E-01	6.13E-01	6.13E-01	6.13E-01	6.13E-01
th231	4.25E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01
th232	6.67E-07	6.67E-07	6.67E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02
pa233	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
u232	6.14E-03	6.09E-03	6.04E-03	5.99E-03	5.94E-03	5.89E-03	5.84E-03
u233	1.48E-01	1.48E-01	1.48E-01	1.48E-01	1.48E-01	1.48E-01	1.48E-01
u234	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01
u235	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01
u236	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00
u237	6.18E+01	1.06E-04	1.02E-04	9.77E-05	9.38E-05	9.01E-05	8.66E-05

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 62
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0
nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
np236	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.05E-06
np237	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00
np238	9.40E+01	2.32E-05	2.31E-05	2.30E-05	2.29E-05	2.28E-05	2.27E-05
np239	2.54E+03	6.76E-06	6.76E-06	6.76E-06	6.76E-06	6.76E-06	6.76E-06
pu236	1.39E-04	1.14E-04	9.34E-05	7.66E-05	6.28E-05	5.15E-05	4.22E-05
pu238	9.40E+01	9.34E+01	9.28E+01	9.22E+01	9.16E+01	9.10E+01	9.04E+01
pu239	3.22E+02	3.22E+02	3.22E+02	3.22E+02	3.22E+02	3.22E+02	3.22E+02
pu240	2.45E+01	2.45E+01	2.45E+01	2.45E+01	2.45E+01	2.45E+01	2.45E+01
pu241	4.61E+00	4.42E+00	4.25E+00	4.08E+00	3.92E+00	3.77E+00	3.62E+00
pu242	2.07E-05	2.07E-05	2.07E-05	2.07E-05	2.07E-05	2.07E-05	2.07E-05
am241	3.62E+00	3.62E+00	3.62E+00	3.62E+00	3.63E+00	3.63E+00	3.63E+00
am242m	5.17E-03	5.15E-03	5.12E-03	5.10E-03	5.08E-03	5.06E-03	5.04E-03
am242	3.45E-02	5.12E-03	5.10E-03	5.08E-03	5.06E-03	5.04E-03	5.02E-03
am243	6.76E-06	6.76E-06	6.76E-06	6.76E-06	6.76E-06	6.76E-06	6.76E-06
cm242	2.85E-02	1.09E-02	6.05E-03	4.71E-03	4.33E-03	4.21E-03	4.17E-03
total	5.73E+03	4.92E+02	4.92E+02	4.91E+02	4.90E+02	4.89E+02	4.89E+02

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 63
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0
element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl	1.78E-04	1.79E-04	1.79E-04	1.78E-04	1.78E-04	1.78E-04	1.77E-04
pb	1.42E-03	1.42E-03	1.42E-03	1.42E-03	1.42E-03	1.42E-03	1.42E-03
bi	7.27E-03	7.28E-03	7.28E-03	7.28E-03	7.28E-03	7.28E-03	7.28E-03
po	4.51E-02	4.50E-02	4.49E-02	4.49E-02	4.49E-02	4.50E-02	4.50E-02
at	1.22E-03	1.22E-03	1.22E-03	1.22E-03	1.22E-03	1.22E-03	1.22E-03

rn	1.38E-02	1.39E-02	1.39E-02	1.39E-02	1.39E-02	1.39E-02	1.39E-02
fr	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03
ra	1.21E-02	1.21E-02	1.21E-02	1.21E-02	1.21E-02	1.21E-02	1.21E-02
ac	1.01E-03	1.01E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
th	2.15E-02	2.14E-02	2.14E-02	2.14E-02	2.14E-02	2.14E-02	2.14E-02
pa	3.33E-02	3.33E-02	3.33E-02	3.33E-02	3.33E-02	3.33E-02	3.33E-02
u	7.58E+00	5.70E-01	5.70E-01	5.70E-01	5.70E-01	5.70E-01	5.70E-01
np	7.09E+00	1.99E-01	1.99E-01	1.99E-01	1.99E-01	1.99E-01	1.99E-01
pu	1.39E+01	1.39E+01	1.38E+01	1.38E+01	1.38E+01	1.38E+01	1.38E+01
am	1.21E-01	1.21E-01	1.21E-01	1.21E-01	1.21E-01	1.21E-01	1.21E-01
cm	1.04E-03	3.98E-04	2.21E-04	1.72E-04	1.58E-04	1.54E-04	1.52E-04
totals	2.88E+01	1.49E+01	1.49E+01	1.48E+01	1.48E+01	1.48E+01	1.48E+01

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 64
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0

nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl207	5.17E-07	5.18E-07	5.18E-07	5.18E-07	5.18E-07	5.18E-07	5.18E-07
tl208	4.40E-05	4.41E-05	4.40E-05	4.38E-05	4.35E-05	4.33E-05	4.30E-05
tl209	7.53E-06	7.53E-06	7.53E-06	7.53E-06	7.53E-06	7.54E-06	7.54E-06
pb210	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05
pb211	1.59E-05	1.60E-05	1.60E-05	1.60E-05	1.60E-05	1.60E-05	1.60E-05
pb212	5.29E-06	5.30E-06	5.28E-06	5.26E-06	5.23E-06	5.20E-06	5.16E-06
pb214	5.35E-04	5.35E-04	5.35E-04	5.35E-04	5.36E-04	5.36E-04	5.36E-04
bi211	1.10E-05	1.10E-05	1.10E-05	1.10E-05	1.10E-05	1.10E-05	1.10E-05
bi212	3.84E-06	3.84E-06	3.83E-06	3.81E-06	3.79E-06	3.77E-06	3.74E-06
bi213	2.13E-05	2.13E-05	2.14E-05	2.14E-05	2.14E-05	2.14E-05	2.14E-05
bi214	3.23E-03	3.23E-03	3.23E-03	3.23E-03	3.23E-03	3.23E-03	3.23E-03
po210	1.82E-08	1.80E-08	1.80E-08	1.80E-08	1.80E-08	1.80E-08	1.80E-08
po214	1.78E-07	1.78E-07	1.78E-07	1.78E-07	1.78E-07	1.78E-07	1.78E-07
po215	4.13E-08	4.14E-08	4.14E-08	4.14E-08	4.14E-08	4.14E-08	4.14E-08
rn219	1.32E-05	1.32E-05	1.32E-05	1.32E-05	1.32E-05	1.32E-05	1.32E-05
rn220	2.22E-08	2.23E-08	2.22E-08	2.21E-08	2.20E-08	2.19E-08	2.17E-08
rn222	8.33E-07	8.33E-07	8.33E-07	8.33E-07	8.33E-07	8.34E-07	8.34E-07
fr221	5.00E-06	5.00E-06	5.00E-06	5.01E-06	5.01E-06	5.01E-06	5.01E-06
fr223	1.87E-07	1.87E-07	1.87E-07	1.87E-07	1.87E-07	1.87E-07	1.87E-07
ra223	3.16E-05	3.17E-05	3.17E-05	3.17E-05	3.17E-05	3.17E-05	3.17E-05
ra224	3.67E-07	3.68E-07	3.67E-07	3.65E-07	3.63E-07	3.61E-07	3.58E-07
ra225	2.43E-06	2.43E-06	2.43E-06	2.43E-06	2.44E-06	2.44E-06	2.44E-06
ra226	1.55E-05	1.55E-05	1.55E-05	1.55E-05	1.55E-05	1.55E-05	1.55E-05
ac225	2.84E-06	2.84E-06	2.84E-06	2.84E-06	2.84E-06	2.84E-06	2.84E-06
ac227	4.54E-08	4.54E-08	4.54E-08	4.54E-08	4.54E-08	4.54E-08	4.54E-08
th227	2.58E-05	2.58E-05	2.58E-05	2.58E-05	2.58E-05	2.58E-05	2.58E-05
th228	1.28E-07	1.28E-07	1.28E-07	1.27E-07	1.26E-07	1.26E-07	1.25E-07
th229	1.60E-05	1.60E-05	1.60E-05	1.60E-05	1.60E-05	1.60E-05	1.60E-05
th230	6.10E-06	6.10E-06	6.10E-06	6.10E-06	6.10E-06	6.11E-06	6.11E-06
th231	7.82E-05	6.50E-05	6.50E-05	6.50E-05	6.50E-05	6.50E-05	6.50E-05
th234	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04
pa231	9.41E-06	9.41E-06	9.41E-06	9.41E-06	9.42E-06	9.42E-06	9.42E-06
pa233	9.25E-03	9.25E-03	9.25E-03	9.25E-03	9.25E-03	9.25E-03	9.25E-03
pa234m	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04
pa234	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05
u232	7.89E-08	7.83E-08	7.77E-08	7.70E-08	7.64E-08	7.58E-08	7.52E-08
u233	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06
u234	1.35E-04	1.35E-04	1.35E-04	1.35E-04	1.35E-04	1.35E-04	1.35E-04
u235	3.48E-04	3.48E-04	3.48E-04	3.48E-04	3.48E-04	3.48E-04	3.48E-04
u236	2.77E-05	2.77E-05	2.77E-05	2.77E-05	2.77E-05	2.77E-05	2.77E-05
u237	5.22E-02	8.95E-08	8.60E-08	8.26E-08	7.93E-08	7.62E-08	7.32E-08
u238	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05

np237	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03
np238	3.61E-01	8.88E-08	8.84E-08	8.81E-08	8.77E-08	8.74E-08	8.70E-08
np239	2.76E+00	7.36E-09	7.35E-09	7.35E-09	7.35E-09	7.35E-09	7.35E-09
pu238	1.06E-03	1.05E-03	1.05E-03	1.04E-03	1.03E-03	1.02E-03	1.02E-03
pu239	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03
pu240	2.40E-04	2.40E-04	2.40E-04	2.40E-04	2.40E-04	2.40E-04	2.40E-04
pu241	4.78E-08	4.59E-08	4.41E-08	4.23E-08	4.07E-08	3.91E-08	3.75E-08
am241	6.14E-04	6.14E-04	6.14E-04	6.15E-04	6.15E-04	6.15E-04	6.15E-04
am242m	1.87E-07	1.86E-07	1.85E-07	1.85E-07	1.84E-07	1.83E-07	1.82E-07
am242	3.97E-06	5.90E-07	5.87E-07	5.85E-07	5.83E-07	5.80E-07	5.78E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 65
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
cm242	3.56E-07	1.36E-07	7.57E-08	5.89E-08	5.41E-08	5.27E-08	5.21E-08
total	3.97E+00	1.92E-02	1.92E-02	1.92E-02	1.92E-02	1.91E-02	1.91E-02

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 66
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	3.90E-05	3.72E-05	3.55E-05	3.38E-05	3.23E-05	3.08E-05	2.94E-05
li 6	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05
li 7	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06
be 9	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06
be 10	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05
c 14	4.47E-06	4.47E-06	4.47E-06	4.47E-06	4.47E-06	4.47E-06	4.47E-06
zn 70	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07
ga 71	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06
ge 72	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04
ge 73	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03
ge 74	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03
as 75	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02
ge 76	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02
se 76	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05
se 77	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01
se 78	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01
se 79	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
br 79	5.96E-03	5.96E-03	5.96E-03	5.96E-03	5.96E-03	5.97E-03	5.97E-03
se 80	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00
kr 80	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06
br 81	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00
se 82	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00
kr 82	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03
kr 83	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01
kr 84	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01
kr 85	2.18E-02	2.06E-02	1.95E-02	1.85E-02	1.75E-02	1.66E-02	1.58E-02
rb 85	3.32E+01	3.32E+01	3.32E+01	3.32E+01	3.32E+01	3.32E+01	3.32E+01
kr 86	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01
sr 86	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03
rb 87	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01
sr 87	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
sr 88	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02
y 89	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02
sr 90	1.34E+00	1.31E+00	1.28E+00	1.26E+00	1.23E+00	1.21E+00	1.18E+00
y 90	3.47E-04	3.40E-04	3.33E-04	3.26E-04	3.20E-04	3.13E-04	3.07E-04
zr 90	1.66E+02	1.66E+02	1.66E+02	1.66E+02	1.66E+02	1.66E+02	1.66E+02

zr 91	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02
zr 92	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02
zr 93	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02
nb 93	1.43E-01	1.43E-01	1.43E-01	1.43E-01	1.43E-01	1.43E-01	1.43E-01
nb 93m	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03
zr 94	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02
nb 94	5.78E-05	5.78E-05	5.78E-05	5.78E-05	5.78E-05	5.78E-05	5.78E-05
mo 95	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02
zr 96	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02
mo 96	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01
mo 97	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02
mo 98	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02
tc 98	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05
tc 99	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02
ru 99	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00
mo100	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 67
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
ru100	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01
ru101	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02
ru102	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02
rh103	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02
ru104	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01
pd104	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00
pd105	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01
ru106	7.16E-03	4.06E-03	2.30E-03	1.30E-03	7.39E-04	4.19E-04	2.37E-04
pd106	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01
pd107	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00
ag107	2.32E-03	2.32E-03	2.32E-03	2.32E-03	2.32E-03	2.32E-03	2.32E-03
pd108	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00
cd108	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06
ag109	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00
pd110	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00
cd110	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02
cd111	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
cd112	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01
cd113	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01
cd113m	5.05E-05	4.85E-05	4.65E-05	4.47E-05	4.29E-05	4.11E-05	3.95E-05
in113	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02
cd114	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
sn114	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06
in115	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01
sn115	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02
cd116	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01
sn116	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03
sn117	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01
sn118	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01
sn119	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
sn120	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
sn121m	7.28E-05	7.20E-05	7.12E-05	7.05E-05	6.98E-05	6.90E-05	6.83E-05
sb121	5.83E-01	5.83E-01	5.83E-01	5.83E-01	5.83E-01	5.83E-01	5.83E-01
sn122	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01
te122	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04
sb123	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01
sn124	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00
te124	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04

sb125	1.13E-03	9.16E-04	7.41E-04	6.00E-04	4.86E-04	3.93E-04	3.18E-04
te125	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00
te125m	1.51E-05	1.30E-05	1.05E-05	8.52E-06	6.90E-06	5.58E-06	4.52E-06
sn126	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00
te126	4.89E-02	4.89E-02	4.89E-02	4.89E-02	4.89E-02	4.89E-02	4.89E-02
i127	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00
te128	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01
xe128	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03
i129	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01
xe129	3.61E-03	3.61E-03	3.61E-03	3.62E-03	3.62E-03	3.62E-03	3.62E-03
te130	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01
xe130	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02
xe131	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02
xe132	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 68
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0
nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
cs133	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02
xe134	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02
cs134	9.42E-04	7.12E-04	5.38E-04	4.07E-04	3.07E-04	2.32E-04	1.76E-04
ba134	7.97E-01	7.97E-01	7.97E-01	7.97E-01	7.97E-01	7.97E-01	7.97E-01
cs135	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02
ba135	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01
xe136	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02
ba136	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01
cs137	2.44E+00	2.40E+00	2.35E+00	2.31E+00	2.26E+00	2.22E+00	2.18E+00
ba137	2.80E+02	2.80E+02	2.80E+02	2.80E+02	2.80E+02	2.80E+02	2.80E+02
ba138	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02
la138	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03
la139	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02
ce140	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02
pr141	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02
ce142	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
nd142	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01
nd143	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
ce144	5.66E-02	2.70E-02	1.29E-02	6.14E-03	2.93E-03	1.40E-03	6.66E-04
nd144	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02
nd145	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02
nd146	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02
sm146	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05
pm147	8.19E-02	6.65E-02	5.33E-02	4.28E-02	3.43E-02	2.75E-02	2.21E-02
sm147	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02
nd148	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01
sm148	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01
sm149	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00
nd150	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01
sm150	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01
sm151	5.80E-01	5.76E-01	5.72E-01	5.69E-01	5.65E-01	5.62E-01	5.58E-01
eu151	1.65E+01	1.65E+01	1.65E+01	1.65E+01	1.65E+01	1.65E+01	1.65E+01
sm152	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01
eu152	2.19E-02	2.10E-02	2.01E-02	1.93E-02	1.84E-02	1.77E-02	1.69E-02
gd152	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00
eu153	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00
sm154	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00
eu154	7.29E-04	6.82E-04	6.37E-04	5.96E-04	5.57E-04	5.21E-04	4.87E-04
gd154	1.44E-01	1.44E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01
eu155	2.96E-03	2.62E-03	2.31E-03	2.05E-03	1.81E-03	1.60E-03	1.41E-03

gd155	6.99E-01	6.99E-01	7.00E-01	7.00E-01	7.00E-01	7.00E-01	7.00E-01
gd156	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00
gd157	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02
gd158	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01
tb159	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02
gd160	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02
dy160	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04
dy161	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02
dy162	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03
dy163	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03
dy164	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04
ho165	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 69
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
er166	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05
total	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 70
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	3.77E-01	3.59E-01	3.43E-01	3.27E-01	3.12E-01	2.98E-01	2.84E-01
be 10	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07
c 14	1.99E-05	1.99E-05	1.99E-05	1.99E-05	1.99E-05	1.99E-05	1.99E-05
se 79	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02
kr 85	8.54E+00	8.10E+00	7.67E+00	7.27E+00	6.89E+00	6.53E+00	6.18E+00
rb 87	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06
sr 90	1.89E+02	1.85E+02	1.81E+02	1.77E+02	1.74E+02	1.70E+02	1.67E+02
y 90	1.89E+02	1.85E+02	1.81E+02	1.77E+02	1.74E+02	1.70E+02	1.67E+02
y 91	1.91E+02	5.24E+00	1.42E-01	3.86E-03	1.05E-04	2.85E-06	7.74E-08
zr 93	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01
nb 93m	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01
nb 94	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05
zr 95	2.14E+02	7.95E+00	2.94E-01	1.09E-02	4.04E-04	1.50E-05	5.54E-07
nb 95	2.14E+02	1.69E+01	6.47E-01	2.40E-02	8.89E-04	3.29E-05	1.22E-06
tc 99	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.35E+00
rh102	1.18E-05	9.67E-06	7.92E-06	6.49E-06	5.32E-06	4.36E-06	3.57E-06
ru106	2.37E+01	1.35E+01	7.63E+00	4.32E+00	2.45E+00	1.39E+00	7.87E-01
rh106	2.37E+01	1.35E+01	7.63E+00	4.32E+00	2.45E+00	1.39E+00	7.87E-01
pd107	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03
ag110m	2.47E-03	1.06E-03	4.57E-04	1.96E-04	8.43E-05	3.62E-05	1.56E-05
cd113m	1.13E-02	1.09E-02	1.04E-02	1.00E-02	9.62E-03	9.23E-03	8.86E-03
sn119m	1.77E-03	8.62E-04	4.19E-04	2.04E-04	9.94E-05	4.84E-05	2.36E-05
sn121	5.20E-01	3.00E-03	2.97E-03	2.94E-03	2.91E-03	2.88E-03	2.85E-03
sn121m	3.91E-03	3.87E-03	3.83E-03	3.79E-03	3.75E-03	3.71E-03	3.67E-03
sn123	6.09E-02	1.19E-02	2.32E-03	4.53E-04	8.85E-05	1.73E-05	3.38E-06
sb125	1.18E+00	9.60E-01	7.77E-01	6.29E-01	5.09E-01	4.12E-01	3.33E-01
te125m	2.72E-01	2.34E-01	1.90E-01	1.54E-01	1.24E-01	1.01E-01	8.14E-02
sn126	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02
sb126	1.53E-02	7.96E-03	7.96E-03	7.96E-03	7.96E-03	7.96E-03	7.96E-03
sb126m	6.70E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02
te127	4.92E+00	1.27E-01	1.83E-02	2.65E-03	3.82E-04	5.51E-05	7.96E-06
te127m	8.66E-01	1.30E-01	1.87E-02	2.70E-03	3.90E-04	5.63E-05	8.12E-06
i129	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03
cs134	1.22E+00	9.22E-01	6.97E-01	5.26E-01	3.98E-01	3.01E-01	2.27E-01

cs135	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01
cs137	2.13E+02	2.09E+02	2.05E+02	2.01E+02	1.97E+02	1.93E+02	1.90E+02
ba137m	2.01E+02	1.97E+02	1.93E+02	1.90E+02	1.86E+02	1.82E+02	1.79E+02
ce142	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06
ce144	1.80E+02	8.59E+01	4.10E+01	1.95E+01	9.32E+00	4.45E+00	2.12E+00
pr144	1.80E+02	8.59E+01	4.10E+01	1.95E+01	9.32E+00	4.45E+00	2.12E+00
pr144m	2.53E+00	1.20E+00	5.74E-01	2.74E-01	1.31E-01	6.23E-02	2.97E-02
pm147	7.59E+01	6.16E+01	4.95E+01	3.97E+01	3.18E+01	2.55E+01	2.05E+01
sm147	2.47E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06
eu150	1.11E-06	1.09E-06	1.07E-06	1.05E-06	1.04E-06	1.02E-06	1.00E-06
sm151	1.53E+01	1.52E+01	1.51E+01	1.50E+01	1.49E+01	1.48E+01	1.47E+01
eu152	3.87E+00	3.71E+00	3.55E+00	3.40E+00	3.25E+00	3.12E+00	2.98E+00
gd153	1.77E-02	7.38E-03	3.08E-03	1.29E-03	5.37E-04	2.24E-04	9.36E-05
eu154	1.97E-01	1.84E-01	1.72E-01	1.61E-01	1.51E-01	1.41E-01	1.32E-01
eu155	1.46E+00	1.29E+00	1.14E+00	1.01E+00	8.92E-01	7.88E-01	6.97E-01
ho166m	5.32E-07	5.32E-07	5.32E-07	5.32E-07	5.31E-07	5.31E-07	5.31E-07
total	2.06E+04	1.11E+03	9.42E+02	8.66E+02	8.18E+02	7.84E+02	7.58E+02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 71
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h	1.27E-05	1.21E-05	1.16E-05	1.10E-05	1.05E-05	1.01E-05	9.59E-06
c	5.84E-09	5.84E-09	5.84E-09	5.84E-09	5.84E-09	5.84E-09	5.84E-09
se	3.18E+00	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06
kr	1.24E+01	1.21E-02	1.15E-02	1.09E-02	1.03E-02	9.79E-03	9.27E-03
sr	1.96E+01	2.23E-01	2.10E-01	2.06E-01	2.02E-01	1.98E-01	1.94E-01
y	2.76E+01	1.04E+00	1.00E+00	9.82E-01	9.62E-01	9.42E-01	9.23E-01
zr	1.19E+01	4.01E-02	1.52E-03	9.06E-05	3.77E-05	3.57E-05	3.57E-05
nb	2.16E+01	8.11E-02	3.16E-03	1.70E-04	5.88E-05	5.47E-05	5.45E-05
tc	7.19E+00	1.68E-03	1.68E-03	1.68E-03	1.68E-03	1.68E-03	1.68E-03
ru	9.24E-01	2.56E-03	4.62E-04	2.57E-04	1.46E-04	8.26E-05	4.68E-05
rh	6.43E-01	1.29E-01	7.31E-02	4.14E-02	2.35E-02	1.33E-02	7.55E-03
pd	4.86E-02	2.78E-07	2.78E-07	2.78E-07	2.78E-07	2.78E-07	2.78E-07
ag	8.74E-02	1.78E-05	7.66E-06	3.29E-06	1.42E-06	6.09E-07	2.62E-07
cd	7.30E-02	1.25E-05	1.14E-05	1.09E-05	1.05E-05	1.00E-05	9.64E-06
sn	1.87E+00	1.29E-04	9.90E-05	9.31E-05	9.18E-05	9.16E-05	9.15E-05
sb	7.48E+00	3.92E-03	3.34E-03	2.87E-03	2.49E-03	2.19E-03	1.94E-03
te	9.16E+00	4.78E-04	1.95E-04	1.34E-04	1.05E-04	8.48E-05	6.85E-05
i	2.06E+01	2.73E-06	2.73E-06	2.73E-06	2.73E-06	2.73E-06	2.73E-06
cs	1.80E+01	2.41E-01	2.35E-01	2.29E-01	2.23E-01	2.18E-01	2.13E-01
ba	1.18E+01	7.74E-01	7.59E-01	7.45E-01	7.31E-01	7.17E-01	7.03E-01
ce	4.34E+00	5.67E-02	2.68E-02	1.28E-02	6.10E-03	2.91E-03	1.39E-03
pr	6.18E+00	6.31E-01	3.01E-01	1.44E-01	6.85E-02	3.27E-02	1.56E-02
pm	3.61E-01	2.26E-02	1.82E-02	1.46E-02	1.17E-02	9.38E-03	7.53E-03
sm	2.66E-02	1.78E-03	1.77E-03	1.76E-03	1.75E-03	1.74E-03	1.73E-03
eu	5.48E-02	3.10E-02	2.95E-02	2.82E-02	2.69E-02	2.57E-02	2.45E-02
gd	3.26E-04	6.49E-06	2.71E-06	1.13E-06	4.72E-07	1.97E-07	8.23E-08
ho	2.30E-07	5.59E-09	5.59E-09	5.59E-09	5.59E-09	5.58E-09	5.58E-09
totals	2.58E+02	3.29E+00	2.68E+00	2.42E+00	2.27E+00	2.17E+00	2.10E+00

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 72
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.13E-04	1.07E-04	1.01E-04	9.61E-05	9.10E-05	8.63E-05	8.17E-05
y 90	1.90E-06	1.86E-06	1.82E-06	1.79E-06	1.75E-06	1.71E-06	1.68E-06
nb 93m	3.53E-06	3.53E-06	3.53E-06	3.53E-06	3.53E-06	3.53E-06	3.53E-06

nb 94	1.01E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07
zr 95	9.31E-01	3.45E-02	1.28E-03	4.73E-05	1.75E-06	6.49E-08	2.40E-09
nb 95	9.71E-01	7.65E-02	2.93E-03	1.09E-04	4.03E-06	1.49E-07	5.53E-09
tc 99	1.23E-08	1.23E-08	1.23E-08	1.23E-08	1.23E-08	1.23E-08	1.23E-08
rh102	1.51E-07	1.24E-07	1.01E-07	8.31E-08	6.81E-08	5.58E-08	4.57E-08
rh106	2.90E-02	1.64E-02	9.31E-03	5.28E-03	2.99E-03	1.70E-03	9.61E-04
ag110m	4.02E-05	1.73E-05	7.42E-06	3.19E-06	1.37E-06	5.88E-07	2.53E-07
sn121m	1.16E-07	1.15E-07	1.13E-07	1.12E-07	1.11E-07	1.10E-07	1.09E-07
sb125	3.04E-03	2.47E-03	2.00E-03	1.62E-03	1.31E-03	1.06E-03	8.58E-04
te125m	5.74E-05	4.94E-05	4.00E-05	3.24E-05	2.62E-05	2.12E-05	1.72E-05
sn126	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05
sb126	2.50E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
sb126m	6.17E-04	5.24E-04	5.24E-04	5.24E-04	5.24E-04	5.24E-04	5.24E-04
i129	8.51E-07	8.51E-07	8.51E-07	8.51E-07	8.51E-07	8.51E-07	8.51E-07
cs134	1.12E-02	8.50E-03	6.42E-03	4.85E-03	3.67E-03	2.77E-03	2.09E-03
ba137m	7.13E-01	7.00E-01	6.86E-01	6.73E-01	6.60E-01	6.48E-01	6.35E-01
ce144	2.03E-02	9.68E-03	4.62E-03	2.20E-03	1.05E-03	5.01E-04	2.39E-04
pr144	3.09E-02	1.47E-02	7.02E-03	3.35E-03	1.60E-03	7.62E-04	3.63E-04
pr144m	1.87E-04	8.92E-05	4.25E-05	2.03E-05	9.67E-06	4.61E-06	2.20E-06
pm147	1.97E-06	1.60E-06	1.28E-06	1.03E-06	8.27E-07	6.63E-07	5.32E-07
eu150	1.01E-08	9.89E-09	9.74E-09	9.58E-09	9.43E-09	9.28E-09	9.13E-09
sm151	1.28E-06	1.28E-06	1.27E-06	1.26E-06	1.25E-06	1.24E-06	1.24E-06
eu152	2.67E-02	2.55E-02	2.44E-02	2.34E-02	2.24E-02	2.15E-02	2.06E-02
gd153	1.13E-05	4.71E-06	1.97E-06	8.21E-07	3.43E-07	1.43E-07	5.97E-08
eu154	1.46E-03	1.37E-03	1.28E-03	1.20E-03	1.12E-03	1.05E-03	9.79E-04
eu155	5.60E-04	4.95E-04	4.38E-04	3.87E-04	3.42E-04	3.02E-04	2.67E-04
ho166m	5.14E-09	5.13E-09	5.13E-09	5.13E-09	5.13E-09	5.12E-09	5.12E-09
total	1.27E+02	8.93E-01	7.47E-01	7.17E-01	6.96E-01	6.78E-01	6.63E-01

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 73
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec

0 element gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr	6.43E+00	1.07E-04	1.01E-04	9.61E-05	9.10E-05	8.63E-05	8.17E-05
y	9.58E+00	1.15E-04	4.88E-06	1.87E-06	1.75E-06	1.71E-06	1.68E-06
zr	4.75E+00	3.45E-02	1.28E-03	4.73E-05	1.75E-06	6.49E-08	2.40E-09
nb	9.17E+00	7.65E-02	2.94E-03	1.12E-04	7.66E-06	3.78E-06	3.63E-06
tc	3.63E+00	1.25E-08	1.25E-08	1.25E-08	1.25E-08	1.25E-08	1.25E-08
rh	1.92E-01	1.64E-02	9.31E-03	5.28E-03	2.99E-03	1.70E-03	9.61E-04
ag	3.47E-02	1.73E-05	7.42E-06	3.19E-06	1.37E-06	5.89E-07	2.54E-07
sn	1.22E+00	4.47E-05	4.42E-05	4.41E-05	4.41E-05	4.41E-05	4.41E-05
sb	5.14E+00	3.12E-03	2.65E-03	2.27E-03	1.96E-03	1.71E-03	1.51E-03
te	5.49E+00	6.59E-05	4.18E-05	3.27E-05	2.63E-05	2.12E-05	1.72E-05
i	1.35E+01	8.51E-07	8.51E-07	8.51E-07	8.51E-07	8.51E-07	8.51E-07
cs	8.62E+00	8.50E-03	6.42E-03	4.85E-03	3.67E-03	2.77E-03	2.09E-03
ba	5.32E+00	7.00E-01	6.86E-01	6.73E-01	6.60E-01	6.48E-01	6.35E-01
ce	2.05E+00	9.81E-03	4.62E-03	2.20E-03	1.05E-03	5.01E-04	2.39E-04
pr	1.79E+00	1.48E-02	7.07E-03	3.37E-03	1.61E-03	7.67E-04	3.66E-04
pm	9.45E-02	1.67E-06	1.28E-06	1.03E-06	8.27E-07	6.64E-07	5.32E-07
sm	5.77E-03	1.28E-06	1.27E-06	1.26E-06	1.25E-06	1.24E-06	1.24E-06
eu	4.01E-02	2.74E-02	2.62E-02	2.50E-02	2.39E-02	2.28E-02	2.18E-02
gd	1.01E-04	4.71E-06	1.97E-06	8.21E-07	3.43E-07	1.43E-07	5.97E-08
ho	1.43E-08	5.13E-09	5.13E-09	5.13E-09	5.13E-09	5.12E-09	5.12E-09
totals	1.27E+02	8.93E-01	7.47E-01	7.17E-01	6.96E-01	6.78E-01	6.63E-01

1 page 74

photon spectrum as a function of time for light elements, cladding and structural materials

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 7305.mwd, flux= 2.77E+08 n**2-sec

spectrum of photon release rates, photons/sec
basis = single reactor assembly

emean (mev)	initial	time after discharge 304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	5.17E+11	5.67E+04	4.54E+04	3.64E+04	2.91E+04	2.33E+04	1.87E+04
3.00E-02	1.70E+11	1.80E+04	1.44E+04	1.16E+04	9.27E+03	7.42E+03	5.95E+03
5.50E-02	1.18E+11	1.22E+04	9.76E+03	7.82E+03	6.26E+03	5.01E+03	4.02E+03
8.50E-02	6.92E+10	6.86E+03	5.49E+03	4.40E+03	3.52E+03	2.82E+03	2.26E+03
1.20E-01	4.92E+10	4.69E+03	3.75E+03	3.01E+03	2.41E+03	1.93E+03	1.54E+03
1.70E-01	5.15E+10	4.60E+03	3.69E+03	2.95E+03	2.37E+03	1.89E+03	1.52E+03
3.00E-01	5.90E+10	4.58E+03	3.67E+03	2.94E+03	2.35E+03	1.88E+03	1.51E+03
6.50E-01	2.90E+10	2.45E+05	1.96E+05	1.57E+05	1.26E+05	1.01E+05	8.07E+04
1.13E+00	4.99E+09	1.95E+05	1.56E+05	1.25E+05	1.00E+05	8.03E+04	6.43E+04
1.58E+00	9.07E+11	4.89E-01	3.91E-01	3.13E-01	2.51E-01	2.01E-01	1.61E-01
2.00E+00	1.80E+08	4.34E-02	3.48E-02	2.79E-02	2.23E-02	1.79E-02	1.43E-02
2.40E+00	3.64E+07	9.74E-03	7.80E-03	6.25E-03	5.00E-03	4.01E-03	3.21E-03
2.80E+00	2.14E+11	1.53E-04	1.22E-04	9.78E-05	7.83E-05	6.28E-05	5.03E-05
3.25E+00	1.38E+04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
3.75E+00	1.39E+08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.25E+00	1.83E+06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.75E+00	8.15E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
5.50E+00	1.37E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	2.19E+12	5.47E+05	4.38E+05	3.51E+05	2.81E+05	2.25E+05	1.80E+05
mev/sec	2.11E+12	3.84E+05	3.07E+05	2.46E+05	1.97E+05	1.58E+05	1.26E+05

spectrum of energy release rates, mev/watt-sec
basis = single reactor assembly

emean (mev)	initial	time after discharge 304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	1.29E+06	1.42E-01	1.14E-01	9.09E-02	7.28E-02	5.83E-02	4.67E-02
3.00E-02	1.27E+06	1.35E-01	1.08E-01	8.68E-02	6.95E-02	5.57E-02	4.46E-02
5.50E-02	1.63E+06	1.68E-01	1.34E-01	1.07E-01	8.61E-02	6.89E-02	5.52E-02
8.50E-02	1.47E+06	1.46E-01	1.17E-01	9.35E-02	7.49E-02	6.00E-02	4.80E-02
1.20E-01	1.48E+06	1.41E-01	1.13E-01	9.02E-02	7.22E-02	5.79E-02	4.63E-02
1.70E-01	2.19E+06	1.96E-01	1.57E-01	1.25E-01	1.01E-01	8.05E-02	6.45E-02
3.00E-01	4.43E+06	3.44E-01	2.75E-01	2.20E-01	1.76E-01	1.41E-01	1.13E-01
6.50E-01	4.72E+06	3.98E+01	3.19E+01	2.55E+01	2.04E+01	1.64E+01	1.31E+01
1.13E+00	1.40E+06	5.49E+01	4.39E+01	3.52E+01	2.82E+01	2.26E+01	1.81E+01
1.58E+00	3.57E+08	1.92E-04	1.54E-04	1.23E-04	9.88E-05	7.92E-05	6.34E-05
2.00E+00	8.99E+04	2.17E-05	1.74E-05	1.39E-05	1.12E-05	8.94E-06	7.16E-06
2.40E+00	2.18E+04	5.84E-06	4.68E-06	3.75E-06	3.00E-06	2.40E-06	1.93E-06
2.80E+00	1.50E+08	1.07E-07	8.55E-08	6.85E-08	5.48E-08	4.39E-08	3.52E-08
3.25E+00	1.12E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
3.75E+00	1.31E+05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.25E+00	1.94E+03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.75E+00	9.68E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
5.50E+00	1.88E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	5.27E+08	9.59E+01	7.68E+01	6.15E+01	4.93E+01	3.95E+01	3.16E+01
gamma watts	3.38E-01	6.15E-08	4.92E-08	3.94E-08	3.16E-08	2.53E-08	2.03E-08

photon spectrum as a function of time for fission products

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 7305.mwd, flux= 2.77E+08 n**2-sec
spectrum of photon release rates, photons/sec
basis = single reactor assembly

emean (mev)	initial	time after discharge 304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d

	1.00E-02	2.58E+14	8.27E+12	6.61E+12	5.80E+12	5.35E+12	5.07E+12	4.88E+12
	3.00E-02	1.13E+14	3.63E+12	2.89E+12	2.52E+12	2.32E+12	2.19E+12	2.11E+12
	5.50E-02	6.01E+13	1.84E+12	1.45E+12	1.26E+12	1.15E+12	1.09E+12	1.05E+12
	8.50E-02	4.15E+13	1.07E+12	8.19E+11	6.96E+11	6.30E+11	5.91E+11	5.66E+11
	1.20E-01	3.40E+13	1.11E+12	7.57E+11	5.86E+11	4.99E+11	4.51E+11	4.23E+11
	1.70E-01	5.44E+13	6.84E+11	5.26E+11	4.50E+11	4.08E+11	3.84E+11	3.68E+11
	3.00E-01	1.10E+14	7.96E+11	6.15E+11	5.25E+11	4.76E+11	4.47E+11	4.27E+11
	6.50E-01	2.29E+14	8.41E+12	7.05E+12	6.78E+12	6.59E+12	6.43E+12	6.29E+12
	1.13E+00	7.71E+13	1.24E+11	1.01E+11	8.81E+10	8.02E+10	7.48E+10	7.08E+10
	1.58E+00	3.99E+13	4.76E+10	3.74E+10	3.17E+10	2.84E+10	2.62E+10	2.46E+10
	2.00E+00	1.21E+13	2.91E+10	1.40E+10	6.82E+09	3.36E+09	1.69E+09	8.92E+08
	2.40E+00	1.04E+13	7.82E+08	4.20E+08	2.27E+08	1.23E+08	6.72E+07	3.69E+07
	2.80E+00	4.16E+12	1.09E+08	5.97E+07	3.29E+07	1.82E+07	1.01E+07	5.64E+06
	3.25E+00	2.40E+12	1.50E+07	8.52E+06	4.83E+06	2.74E+06	1.55E+06	8.79E+05
	3.75E+00	1.22E+12	6.63E+03	3.76E+03	2.13E+03	1.21E+03	6.84E+02	3.88E+02
	4.25E+00	1.33E+12	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05
	4.75E+00	3.90E+11	5.03E-06	5.03E-06	5.03E-06	5.03E-06	5.03E-06	5.03E-06
	5.50E+00	2.91E+11	3.73E-06	3.73E-06	3.73E-06	3.73E-06	3.73E-06	3.73E-06
0	total	1.05E+15	2.60E+13	2.09E+13	1.87E+13	1.75E+13	1.68E+13	1.62E+13
0	mev/sec	4.40E+14	6.62E+12	5.45E+12	5.13E+12	4.94E+12	4.79E+12	4.67E+12

0 spectrum of energy release rates, mev/watt-sec
basis = single reactor assembly

0

	emean			time after discharge				
	(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	1.00E-02	6.45E+08	2.07E+07	1.65E+07	1.45E+07	1.34E+07	1.27E+07	1.22E+07
	3.00E-02	8.48E+08	2.72E+07	2.17E+07	1.89E+07	1.74E+07	1.65E+07	1.58E+07
	5.50E-02	8.26E+08	2.53E+07	1.99E+07	1.73E+07	1.59E+07	1.50E+07	1.44E+07
	8.50E-02	8.82E+08	2.27E+07	1.74E+07	1.48E+07	1.34E+07	1.26E+07	1.20E+07
	1.20E-01	1.02E+09	3.32E+07	2.27E+07	1.76E+07	1.50E+07	1.35E+07	1.27E+07
	1.70E-01	2.31E+09	2.91E+07	2.23E+07	1.91E+07	1.74E+07	1.63E+07	1.56E+07
	3.00E-01	8.25E+09	5.97E+07	4.61E+07	3.94E+07	3.57E+07	3.35E+07	3.20E+07
	6.50E-01	3.72E+10	1.37E+09	1.15E+09	1.10E+09	1.07E+09	1.04E+09	1.02E+09
	1.13E+00	2.17E+10	3.48E+07	2.84E+07	2.48E+07	2.26E+07	2.10E+07	1.99E+07
	1.58E+00	1.57E+10	1.87E+07	1.47E+07	1.25E+07	1.12E+07	1.03E+07	9.70E+06
	2.00E+00	6.04E+09	1.45E+07	7.01E+06	3.41E+06	1.68E+06	8.47E+05	4.46E+05
	2.40E+00	6.23E+09	4.69E+05	2.52E+05	1.36E+05	7.38E+04	4.03E+04	2.21E+04
	2.80E+00	2.91E+09	7.61E+04	4.18E+04	2.30E+04	1.28E+04	7.09E+03	3.95E+03
	3.25E+00	1.95E+09	1.22E+04	6.92E+03	3.92E+03	2.22E+03	1.26E+03	7.15E+02
	3.75E+00	1.14E+09	6.21E+00	3.52E+00	2.00E+00	1.13E+00	6.41E-01	3.63E-01
	4.25E+00	1.42E+09	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08
	4.75E+00	4.63E+08	5.97E-09	5.97E-09	5.97E-09	5.97E-09	5.97E-09	5.97E-09
	5.50E+00	4.01E+08	5.13E-09	5.13E-09	5.13E-09	5.13E-09	5.13E-09	5.13E-09
0	total	1.10E+11	1.65E+09	1.36E+09	1.28E+09	1.23E+09	1.20E+09	1.17E+09
0	gamma watts	7.05E+01	1.06E+00	8.74E-01	8.23E-01	7.91E-01	7.68E-01	7.48E-01

1 page 76

0 principal photon sources in group 1, photons/sec
mean energy = .0100 mev. nuclides exceeding 1.0E-03 of total group release rate (5.07E+12) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	4.51E+10	4.27E+10	4.05E+10	3.84E+10	3.63E+10	3.44E+10	3.26E+10
sr 90	7.68E+11	7.52E+11	7.37E+11	7.22E+11	7.08E+11	6.93E+11	6.79E+11
y 90	3.77E+12	3.70E+12	3.62E+12	3.55E+12	3.48E+12	3.41E+12	3.34E+12
tc 99	5.54E+09	5.54E+09	5.54E+09	5.54E+09	5.54E+09	5.54E+09	5.54E+09
rh106	7.06E+11	4.00E+11	2.27E+11	1.29E+11	7.29E+10	4.13E+10	2.34E+10
cs137	7.51E+11	7.36E+11	7.22E+11	7.09E+11	6.95E+11	6.82E+11	6.69E+11
ba137m	3.52E+10	3.45E+10	3.39E+10	3.32E+10	3.26E+10	3.20E+10	3.14E+10
ce144	3.47E+11	1.65E+11	7.89E+10	3.76E+10	1.79E+10	8.56E+09	4.08E+09
pr144	4.60E+12	2.19E+12	1.05E+12	4.99E+11	2.38E+11	1.13E+11	5.41E+10
pm147	8.82E+10	7.16E+10	5.75E+10	4.61E+10	3.70E+10	2.97E+10	2.38E+10

eu152	1.43E+10	1.36E+10	1.31E+10	1.25E+10	1.20E+10	1.15E+10	1.10E+10

0 principal photon sources in group 2, photons/sec
mean energy = .0300 mev. nuclides exceeding 1.0E-03 of total group release rate (2.19E+12) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	1.31E+10	1.24E+10	1.18E+10	1.12E+10	1.06E+10	1.00E+10	9.51E+09
sr 90	2.17E+11	2.13E+11	2.08E+11	2.04E+11	2.00E+11	1.96E+11	1.92E+11
y 90	1.23E+12	1.20E+12	1.18E+12	1.16E+12	1.13E+12	1.11E+12	1.09E+12
rh106	2.36E+11	1.34E+11	7.58E+10	4.30E+10	2.44E+10	1.38E+10	7.82E+09
sb125	2.17E+10	1.76E+10	1.43E+10	1.15E+10	9.34E+09	7.56E+09	6.12E+09
te125m	1.16E+10	1.00E+10	8.12E+09	6.57E+09	5.32E+09	4.30E+09	3.48E+09
cs137	2.09E+11	2.05E+11	2.01E+11	1.97E+11	1.94E+11	1.90E+11	1.86E+11
ba137m	6.05E+11	5.93E+11	5.82E+11	5.71E+11	5.60E+11	5.49E+11	5.39E+11
ce144	8.06E+11	3.84E+11	1.83E+11	8.74E+10	4.17E+10	1.99E+10	9.48E+09
pr144	1.52E+12	7.25E+11	3.46E+11	1.65E+11	7.87E+10	3.75E+10	1.79E+10
pm147	1.94E+10	1.57E+10	1.26E+10	1.01E+10	8.14E+09	6.53E+09	5.24E+09
eu152	5.66E+10	5.42E+10	5.19E+10	4.97E+10	4.76E+10	4.55E+10	4.36E+10

0 principal photon sources in group 3, photons/sec
mean energy = .0550 mev. nuclides exceeding 1.0E-03 of total group release rate (1.09E+12) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	8.06E+09	7.63E+09	7.23E+09	6.85E+09	6.49E+09	6.15E+09	5.83E+09
sr 90	1.28E+11	1.26E+11	1.23E+11	1.21E+11	1.18E+11	1.16E+11	1.13E+11
y 90	8.50E+11	8.33E+11	8.16E+11	7.99E+11	7.83E+11	7.67E+11	7.51E+11
rh106	1.67E+11	9.47E+10	5.37E+10	3.04E+10	1.72E+10	9.78E+09	5.54E+09
cs137	1.22E+11	1.19E+11	1.17E+11	1.15E+11	1.13E+11	1.11E+11	1.08E+11
ce144	1.17E+11	5.56E+10	2.65E+10	1.26E+10	6.03E+09	2.88E+09	1.37E+09
pr144	1.07E+12	5.09E+11	2.43E+11	1.16E+11	5.52E+10	2.63E+10	1.26E+10
pm147	8.15E+09	6.62E+09	5.31E+09	4.26E+09	3.42E+09	2.74E+09	2.20E+09
eu152	4.91E+10	4.71E+10	4.51E+10	4.32E+10	4.13E+10	3.96E+10	3.79E+10
eu154	1.66E+09	1.55E+09	1.45E+09	1.36E+09	1.27E+09	1.19E+09	1.11E+09
eu155	1.13E+10	9.96E+09	8.80E+09	7.78E+09	6.87E+09	6.08E+09	5.37E+09

1 page 77
0 principal photon sources in group 4, photons/sec
mean energy = .0850 mev. nuclides exceeding 1.0E-03 of total group release rate (5.91E+11) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	4.03E+09	3.82E+09	3.62E+09	3.43E+09	3.25E+09	3.08E+09	2.92E+09
sr 90	6.12E+10	5.99E+10	5.87E+10	5.75E+10	5.63E+10	5.52E+10	5.41E+10
y 90	4.92E+11	4.82E+11	4.72E+11	4.62E+11	4.53E+11	4.44E+11	4.35E+11
rh106	9.93E+10	5.63E+10	3.19E+10	1.81E+10	1.02E+10	5.81E+09	3.29E+09
sn126	1.00E+09	1.00E+09	1.00E+09	1.00E+09	1.00E+09	1.00E+09	1.00E+09
cs137	5.70E+10	5.59E+10	5.49E+10	5.38E+10	5.28E+10	5.18E+10	5.08E+10
ce144	1.65E+11	7.85E+10	3.74E+10	1.79E+10	8.51E+09	4.06E+09	1.94E+09
pr144	6.28E+11	3.00E+11	1.43E+11	6.82E+10	3.25E+10	1.55E+10	7.39E+09
pm147	2.32E+09	1.88E+09	1.51E+09	1.21E+09	9.73E+08	7.80E+08	6.26E+08
eu155	1.71E+10	1.51E+10	1.34E+10	1.18E+10	1.04E+10	9.23E+09	8.15E+09

0 principal photon sources in group 5, photons/sec
mean energy = .1200 mev. nuclides exceeding 1.0E-03 of total group release rate (4.51E+11) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	2.43E+09	2.30E+09	2.18E+09	2.07E+09	1.96E+09	1.86E+09	1.76E+09
sr 90	3.48E+10	3.41E+10	3.34E+10	3.27E+10	3.21E+10	3.14E+10	3.08E+10
y 90	3.46E+11	3.39E+11	3.32E+11	3.25E+11	3.19E+11	3.12E+11	3.06E+11
rh106	7.17E+10	4.06E+10	2.30E+10	1.31E+10	7.40E+09	4.20E+09	2.38E+09
cs137	3.20E+10	3.13E+10	3.07E+10	3.02E+10	2.96E+10	2.90E+10	2.85E+10
ce144	8.07E+11	3.85E+11	1.84E+11	8.75E+10	4.17E+10	1.99E+10	9.50E+09
pr144	4.50E+11	2.14E+11	1.02E+11	4.88E+10	2.33E+10	1.11E+10	5.29E+09
eu152	4.14E+10	3.96E+10	3.79E+10	3.63E+10	3.48E+10	3.33E+10	3.19E+10
eu154	3.09E+09	2.89E+09	2.70E+09	2.53E+09	2.36E+09	2.21E+09	2.07E+09

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
eu155	9.76E+09	8.63E+09	7.63E+09	6.74E+09	5.96E+09	5.27E+09	4.66E+09

0 principal photon sources in group 6, photons/sec
mean energy = .1700 mev. nuclides exceeding 1.0E-03 of total group release rate (3.84E+11) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	time after discharge						
kr 85	1.93E+09	1.83E+09	1.73E+09	1.64E+09	1.56E+09	1.48E+09	1.40E+09
sr 90	2.48E+10	2.43E+10	2.38E+10	2.33E+10	2.29E+10	2.24E+10	2.20E+10
y 90	3.57E+11	3.49E+11	3.42E+11	3.35E+11	3.29E+11	3.22E+11	3.15E+11
rh106	7.69E+10	4.36E+10	2.47E+10	1.40E+10	7.94E+09	4.50E+09	2.55E+09
sb125	3.27E+09	2.65E+09	2.15E+09	1.74E+09	1.41E+09	1.14E+09	9.21E+08
cs137	2.26E+10	2.21E+10	2.17E+10	2.13E+10	2.09E+10	2.05E+10	2.01E+10
pr144	4.75E+11	2.27E+11	1.08E+11	5.16E+10	2.46E+10	1.17E+10	5.60E+09

1 page 78

0 principal photon sources in group 7, photons/sec
mean energy = .3000 mev. nuclides exceeding 1.0E-03 of total group release rate (4.47E+11) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	time after discharge						
kr 85	1.17E+09	1.10E+09	1.05E+09	9.92E+08	9.40E+08	8.91E+08	8.44E+08
sr 90	1.13E+10	1.10E+10	1.08E+10	1.06E+10	1.04E+10	1.02E+10	9.95E+09
y 90	3.96E+11	3.88E+11	3.80E+11	3.72E+11	3.65E+11	3.57E+11	3.50E+11
rh106	9.28E+10	5.26E+10	2.98E+10	1.69E+10	9.58E+09	5.43E+09	3.08E+09
sb126m	1.53E+09	1.30E+09	1.30E+09	1.30E+09	1.30E+09	1.30E+09	1.30E+09
cs137	1.14E+10	1.12E+10	1.10E+10	1.08E+10	1.06E+10	1.04E+10	1.02E+10
pr144	5.57E+11	2.65E+11	1.27E+11	6.04E+10	2.88E+10	1.37E+10	6.55E+09
eu152	5.74E+10	5.49E+10	5.26E+10	5.04E+10	4.82E+10	4.62E+10	4.42E+10

0 principal photon sources in group 8, photons/sec
mean energy = .6500 mev. nuclides exceeding 1.0E-03 of total group release rate (6.43E+12) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	time after discharge						
y 90	1.67E+11	1.64E+11	1.61E+11	1.57E+11	1.54E+11	1.51E+11	1.48E+11
rh106	2.86E+11	1.62E+11	9.20E+10	5.22E+10	2.96E+10	1.68E+10	9.50E+09
sb125	2.66E+10	2.16E+10	1.74E+10	1.41E+10	1.14E+10	9.25E+09	7.48E+09
cs134	1.03E+11	7.77E+10	5.87E+10	4.44E+10	3.35E+10	2.54E+10	1.92E+10
ba137m	6.80E+12	6.67E+12	6.54E+12	6.42E+12	6.30E+12	6.18E+12	6.06E+12
pr144	3.80E+11	1.81E+11	8.64E+10	4.12E+10	1.97E+10	9.37E+09	4.47E+09
eu152	4.05E+10	3.88E+10	3.71E+10	3.56E+10	3.41E+10	3.26E+10	3.12E+10

0 principal photon sources in group 9, photons/sec
mean energy = 1.1250 mev. nuclides exceeding 1.0E-03 of total group release rate (7.48E+10) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	time after discharge						
y 90	2.18E+10	2.14E+10	2.10E+10	2.05E+10	2.01E+10	1.97E+10	1.93E+10
rh106	2.67E+10	1.51E+10	8.57E+09	4.86E+09	2.75E+09	1.56E+09	8.85E+08
cs134	1.26E+09	9.52E+08	7.19E+08	5.44E+08	4.11E+08	3.10E+08	2.35E+08
pr144	4.86E+10	2.32E+10	1.11E+10	5.27E+09	2.51E+09	1.20E+09	5.72E+08
eu152	6.01E+10	5.76E+10	5.51E+10	5.28E+10	5.06E+10	4.84E+10	4.64E+10
eu154	4.91E+09	4.59E+09	4.29E+09	4.01E+09	3.75E+09	3.51E+09	3.28E+09

0 principal photon sources in group 10, photons/sec
mean energy = 1.5750 mev. nuclides exceeding 1.0E-03 of total group release rate (2.62E+10) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	time after discharge						
y 90	2.79E+09	2.73E+09	2.68E+09	2.62E+09	2.57E+09	2.52E+09	2.46E+09
rh106	5.03E+09	2.85E+09	1.62E+09	9.16E+08	5.19E+08	2.94E+08	1.67E+08
cs134	1.19E+09	8.99E+08	6.79E+08	5.13E+08	3.88E+08	2.93E+08	2.21E+08
pr144	3.02E+10	1.44E+10	6.88E+09	3.28E+09	1.56E+09	7.46E+08	3.56E+08
eu152	2.76E+10	2.65E+10	2.53E+10	2.43E+10	2.32E+10	2.22E+10	2.13E+10
eu154	1.77E+08	1.66E+08	1.55E+08	1.45E+08	1.36E+08	1.27E+08	1.19E+08

1 page 79

0 principal photon sources in group 11, photons/sec
mean energy = 2.0000 mev. nuclides exceeding 1.0E-03 of total group release rate (1.69E+09) at 1521.9 d
nuclide time after discharge

```
             initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
   y 90   1.67E+08  1.63E+08  1.60E+08  1.57E+08  1.54E+08  1.50E+08  1.47E+08
  rh106   1.63E+09  9.27E+08  5.25E+08  2.98E+08  1.69E+08  9.57E+07  5.42E+07
  pr144   5.86E+10  2.80E+10  1.33E+10  6.36E+09  3.03E+09  1.45E+09  6.90E+08
0                  principal photon sources in group 12, photons/sec
    mean energy = 2.4000 mev.  nuclides exceeding  1.0E-03 of total group release rate (6.72E+07) at  1521.9 d
nuclide                                          time after discharge
             initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
   y 90   9.73E+04  9.53E+04  9.34E+04  9.15E+04  8.96E+04  8.78E+04  8.60E+04
  rh106   9.14E+08  5.18E+08  2.94E+08  1.66E+08  9.43E+07  5.35E+07  3.03E+07
  pr144   5.54E+08  2.64E+08  1.26E+08  6.01E+07  2.87E+07  1.37E+07  6.52E+06
0                  principal photon sources in group 13, photons/sec
    mean energy = 2.8000 mev.  nuclides exceeding  1.0E-03 of total group release rate (1.01E+07) at  1521.9 d
nuclide                                          time after discharge
             initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
  rh106   1.54E+08  8.74E+07  4.95E+07  2.81E+07  1.59E+07  9.02E+06  5.11E+06
  pr144   4.46E+07  2.13E+07  1.02E+07  4.84E+06  2.31E+06  1.10E+06  5.25E+05
0                  principal photon sources in group 14, photons/sec
    mean energy = 3.2500 mev.  nuclides exceeding  1.0E-03 of total group release rate (1.55E+06) at  1521.9 d
nuclide                                          time after discharge
             initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
  rh106   2.65E+07  1.50E+07  8.52E+06  4.83E+06  2.74E+06  1.55E+06  8.79E+05
0                  principal photon sources in group 15, photons/sec
    mean energy = 3.7500 mev.  nuclides exceeding  1.0E-03 of total group release rate (6.84E+02) at  1521.9 d
nuclide                                          time after discharge
             initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
  rh106   1.17E+04  6.63E+03  3.76E+03  2.13E+03  1.21E+03  6.84E+02  3.88E+02
0                  principal photon sources in group 16, photons/sec
    mean energy = 4.2500 mev.  nuclides exceeding  1.0E-03 of total group release rate (1.00E-05) at  1521.9 d
nuclide                                          time after discharge
             initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
  ce142   7.25E-06  7.25E-06  7.25E-06  7.25E-06  7.25E-06  7.25E-06  7.25E-06
  sm147   2.77E-06  2.77E-06  2.77E-06  2.77E-06  2.77E-06  2.77E-06  2.77E-06
1                                                                                 page  80
0                  principal photon sources in group 17, photons/sec
    mean energy = 4.7500 mev.  nuclides exceeding  1.0E-03 of total group release rate (5.03E-06) at  1521.9 d
nuclide                                          time after discharge
             initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
  ce142   3.64E-06  3.64E-06  3.64E-06  3.64E-06  3.64E-06  3.64E-06  3.64E-06
  sm147   1.39E-06  1.39E-06  1.39E-06  1.39E-06  1.39E-06  1.39E-06  1.39E-06
0                  principal photon sources in group 18, photons/sec
    mean energy = 5.5000 mev.  nuclides exceeding  1.0E-03 of total group release rate (3.73E-06) at  1521.9 d
nuclide                                          time after discharge
             initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
  ce142   2.70E-06  2.70E-06  2.70E-06  2.70E-06  2.70E-06  2.70E-06  2.70E-06
  sm147   1.03E-06  1.03E-06  1.03E-06  1.03E-06  1.03E-06  1.03E-06  1.03E-06
1                                                                                 page  81
          photon spectrum as a function of time for heavy metals and their daughters

0                  sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
                         power=     .00 mw, burnup=   7305.mwd, flux= 2.77E+08 n**2-sec
0                            actinide photon release rates, photons/sec
                           basis = single reactor assembly
0
          emean                                time after discharge
          (mev)     initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
        1.00E-02  1.34E+14  1.96E+12  1.95E+12  1.95E+12  1.95E+12  1.94E+12  1.94E+12
        3.00E-02  8.45E+12  5.36E+10  5.36E+10  5.36E+10  5.36E+10  5.36E+10  5.36E+10
        5.50E-02  1.10E+13  7.96E+10  7.96E+10  7.96E+10  7.96E+10  7.96E+10  7.96E+10
        8.50E-02  5.25E+13  1.56E+11  1.56E+11  1.56E+11  1.56E+11  1.56E+11  1.56E+11
```

	1.20E-01	5.42E+13	3.10E+10	3.10E+10	3.10E+10	3.10E+10	3.10E+10	3.10E+10
	1.70E-01	1.72E+12	2.01E+10	2.01E+10	2.01E+10	2.01E+10	2.01E+10	2.01E+10
	3.00E-01	2.87E+13	1.42E+11	1.42E+11	1.42E+11	1.42E+11	1.42E+11	1.42E+11
	6.50E-01	1.46E+12	1.50E+10	1.50E+10	1.50E+10	1.50E+10	1.50E+10	1.50E+10
	1.13E+00	1.83E+12	4.98E+09	4.98E+09	4.98E+09	4.98E+09	4.98E+09	4.98E+09
	1.58E+00	4.78E+09	4.78E+09	4.78E+09	4.78E+09	4.78E+09	4.78E+09	4.78E+09
	2.00E+00	1.01E+09	1.01E+09	1.01E+09	1.01E+09	1.01E+09	1.01E+09	1.01E+09
	2.40E+00	5.78E+08	5.78E+08	5.78E+08	5.78E+08	5.78E+08	5.78E+08	5.78E+08
	2.80E+00	9.41E+07	9.43E+07	9.40E+07	9.37E+07	9.33E+07	9.28E+07	9.23E+07
	3.25E+00	4.63E+06	4.63E+06	4.63E+06	4.63E+06	4.63E+06	4.64E+06	4.64E+06
	3.75E+00	1.24E+04	1.23E+04	1.23E+04	1.23E+04	1.23E+04	1.23E+04	1.23E+04
	4.25E+00	7.08E+03	7.08E+03	7.07E+03	7.07E+03	7.07E+03	7.06E+03	7.06E+03
	4.75E+00	4.07E+03	4.06E+03	4.06E+03	4.06E+03	4.06E+03	4.05E+03	4.05E+03
	5.50E+00	3.64E+03	3.63E+03	3.63E+03	3.63E+03	3.63E+03	3.63E+03	3.62E+03
0	total	2.94E+14	2.47E+12	2.46E+12	2.46E+12	2.45E+12	2.45E+12	2.45E+12
0	mev/sec	2.51E+13	1.15E+11	1.15E+11	1.15E+11	1.15E+11	1.15E+11	1.15E+11

0 actinide energy release rates, mev/watt-sec
basis = single reactor assembly

0

	emean (mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge				
	1.00E-02	3.36E+08	4.89E+06	4.88E+06	4.88E+06	4.87E+06	4.86E+06	4.85E+06
	3.00E-02	6.34E+07	4.02E+05	4.02E+05	4.02E+05	4.02E+05	4.02E+05	4.02E+05
	5.50E-02	1.51E+08	1.09E+06	1.09E+06	1.09E+06	1.09E+06	1.09E+06	1.09E+06
	8.50E-02	1.12E+09	3.31E+06	3.31E+06	3.31E+06	3.31E+06	3.31E+06	3.31E+06
	1.20E-01	1.63E+09	9.29E+05	9.29E+05	9.29E+05	9.29E+05	9.29E+05	9.29E+05
	1.70E-01	7.31E+07	8.56E+05	8.56E+05	8.56E+05	8.56E+05	8.56E+05	8.56E+05
	3.00E-01	2.15E+09	1.06E+07	1.06E+07	1.06E+07	1.06E+07	1.06E+07	1.06E+07
	6.50E-01	2.37E+08	2.43E+06	2.43E+06	2.43E+06	2.43E+06	2.43E+06	2.43E+06
	1.13E+00	5.15E+08	1.40E+06	1.40E+06	1.40E+06	1.40E+06	1.40E+06	1.40E+06
	1.58E+00	1.88E+06	1.88E+06	1.88E+06	1.88E+06	1.88E+06	1.88E+06	1.88E+06
	2.00E+00	5.06E+05	5.06E+05	5.06E+05	5.06E+05	5.06E+05	5.07E+05	5.07E+05
	2.40E+00	3.47E+05	3.47E+05	3.47E+05	3.47E+05	3.47E+05	3.47E+05	3.47E+05
	2.80E+00	6.59E+04	6.60E+04	6.58E+04	6.56E+04	6.53E+04	6.50E+04	6.46E+04
	3.25E+00	3.76E+03	3.76E+03	3.76E+03	3.76E+03	3.77E+03	3.77E+03	3.77E+03
	3.75E+00	1.16E+01	1.16E+01	1.16E+01	1.16E+01	1.16E+01	1.16E+01	1.15E+01
	4.25E+00	7.53E+00	7.52E+00	7.52E+00	7.51E+00	7.51E+00	7.50E+00	7.50E+00
	4.75E+00	4.83E+00	4.82E+00	4.82E+00	4.82E+00	4.82E+00	4.81E+00	4.81E+00
	5.50E+00	5.00E+00	5.00E+00	4.99E+00	4.99E+00	4.99E+00	4.99E+00	4.98E+00
0	total	6.27E+09	2.88E+07	2.87E+07	2.87E+07	2.87E+07	2.87E+07	2.87E+07
0	gamma watts	4.02E+00	1.84E-02	1.84E-02	1.84E-02	1.84E-02	1.84E-02	1.84E-02

1 page 82

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pb210	8.74E-07	8.74E-07	8.74E-07	8.74E-07	8.74E-07	8.74E-07	8.74E-07
bi210	2.23E-04	2.23E-04	2.23E-04	2.23E-04	2.23E-04	2.23E-04	2.23E-04
bi211	6.30E+01	6.31E+01	6.31E+01	6.31E+01	6.31E+01	6.31E+01	6.31E+01
bi212	2.70E+00	2.70E+00	2.69E+00	2.68E+00	2.67E+00	2.65E+00	2.63E+00
bi213	6.60E-01	6.60E-01	6.60E-01	6.60E-01	6.60E-01	6.61E-01	6.61E-01
bi214	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01
po210	2.75E+02	2.72E+02	2.71E+02	2.71E+02	2.71E+02	2.71E+02	2.71E+02
po211	2.49E-01	2.50E-01	2.50E-01	2.50E-01	2.50E-01	2.50E-01	2.50E-01
po212	1.38E+01	1.38E+01	1.38E+01	1.37E+01	1.36E+01	1.36E+01	1.35E+01
po213	8.71E+01	8.71E+01	8.71E+01	8.71E+01	8.72E+01	8.72E+01	8.72E+01

po214	9.01E+02	9.01E+02	9.02E+02	9.02E+02	9.02E+02	9.02E+02	9.03E+02
po215	8.91E+01	8.93E+01	8.93E+01	8.92E+01	8.92E+01	8.92E+01	8.92E+01
po216	1.08E+01	1.08E+01	1.08E+01	1.07E+01	1.06E+01	1.06E+01	1.05E+01
po218	4.29E+02	4.29E+02	4.29E+02	4.29E+02	4.29E+02	4.29E+02	4.29E+02
at217	5.64E+01	5.64E+01	5.65E+01	5.65E+01	5.65E+01	5.65E+01	5.65E+01
rn218	1.99E-10	7.84E-15	3.08E-19	1.21E-23	9.25E-28	.00E+00	.00E+00
rn219	7.08E+01	7.10E+01	7.10E+01	7.10E+01	7.10E+01	7.10E+01	7.10E+01
rn220	8.53E+00	8.55E+00	8.52E+00	8.48E+00	8.44E+00	8.38E+00	8.33E+00
rn222	3.13E+02	3.13E+02	3.13E+02	3.13E+02	3.13E+02	3.14E+02	3.14E+02
fr221	4.12E+01	4.12E+01	4.12E+01	4.12E+01	4.12E+01	4.12E+01	4.12E+01
fr223	2.68E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05
ra222	1.54E-10	6.06E-15	2.38E-19	9.37E-24	3.58E-28	.00E+00	.00E+00
ra223	4.10E+01	4.11E+01	4.11E+01	4.11E+01	4.11E+01	4.11E+01	4.11E+01
ra224	6.03E+00	6.04E+00	6.02E+00	6.00E+00	5.96E+00	5.93E+00	5.89E+00
ra226	1.83E+02	1.83E+02	1.83E+02	1.83E+02	1.83E+02	1.83E+02	1.83E+02
ac225	2.96E+01	2.96E+01	2.96E+01	2.96E+01	2.96E+01	2.96E+01	2.96E+01
ac227	3.02E-01	3.02E-01	3.02E-01	3.02E-01	3.02E-01	3.02E-01	3.02E-01
ac228	1.17E-11	1.17E-11	1.17E-11	1.17E-11	1.17E-11	1.17E-11	1.17E-11
th226	1.39E-10	5.47E-15	2.15E-19	8.46E-24	3.23E-28	.00E+00	.00E+00
th227	4.52E+01	4.53E+01	4.53E+01	4.53E+01	4.53E+01	4.53E+01	4.53E+01
th228	5.09E+00	5.08E+00	5.06E+00	5.04E+00	5.01E+00	4.98E+00	4.95E+00
th229	1.73E+01	1.73E+01	1.73E+01	1.73E+01	1.73E+01	1.73E+01	1.73E+01
th230	2.86E+02	2.86E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02
th232	1.48E-04	1.48E-04	1.49E-04	1.49E-04	1.49E-04	1.49E-04	1.49E-04
pa231	2.41E+01	2.41E+01	2.41E+01	2.41E+01	2.41E+01	2.41E+01	2.41E+01
u230	1.10E-10	4.31E-15	1.69E-19	6.66E-24	2.54E-28	.00E+00	.00E+00
u231	7.27E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	4.73E+00	4.70E+00	4.66E+00	4.62E+00	4.58E+00	4.54E+00	4.51E+00
u233	7.81E+01	7.81E+01	7.81E+01	7.81E+01	7.82E+01	7.82E+01	7.82E+01
u234	7.12E+03	7.12E+03	7.12E+03	7.12E+03	7.12E+03	7.12E+03	7.12E+03
u235	1.30E+02	1.30E+02	1.30E+02	1.30E+02	1.30E+02	1.30E+02	1.30E+02
u236	1.08E+03	1.08E+03	1.08E+03	1.08E+03	1.08E+03	1.08E+03	1.08E+03
u238	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02
np235	2.44E-08	1.43E-08	8.42E-09	4.94E-09	2.90E-09	1.70E-09	1.00E-09
np237	3.32E+03	3.32E+03	3.32E+03	3.32E+03	3.32E+03	3.32E+03	3.32E+03
pu236	1.43E-01	1.18E-01	9.63E-02	7.90E-02	6.48E-02	5.31E-02	4.36E-02
pu237	4.07E-08	3.81E-10	3.57E-12	3.35E-14	3.13E-16	2.94E-18	2.75E-20
pu238	8.15E+04	8.10E+04	8.04E+04	7.99E+04	7.94E+04	7.89E+04	7.84E+04

1 page 83

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pu239	2.19E+05	2.19E+05	2.19E+05	2.19E+05	2.19E+05	2.19E+05	2.19E+05
pu240	1.68E+04	1.68E+04	1.68E+04	1.68E+04	1.68E+04	1.68E+04	1.68E+04
pu241	6.12E-02	5.87E-02	5.64E-02	5.42E-02	5.21E-02	5.00E-02	4.80E-02
pu242	1.16E-02	1.16E-02	1.16E-02	1.16E-02	1.16E-02	1.16E-02	1.16E-02
pu244	1.15E-26	1.15E-26	1.15E-26	1.15E-26	1.15E-26	1.15E-26	1.16E-26
am239	3.32E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	5.23E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	3.12E+03	3.12E+03	3.12E+03	3.12E+03	3.12E+03	3.12E+03	3.12E+03
am242m	1.67E-02	1.66E-02	1.65E-02	1.65E-02	1.64E-02	1.63E-02	1.63E-02
am243	5.07E-03	5.07E-03	5.07E-03	5.07E-03	5.07E-03	5.07E-03	5.07E-03
cm241	4.65E-13	7.49E-16	1.20E-18	1.94E-21	3.12E-24	5.02E-27	8.19E-30
cm242	3.46E+01	1.32E+01	7.35E+00	5.72E+00	5.26E+00	5.11E+00	5.06E+00
cm243	3.61E-10	3.54E-10	3.46E-10	3.40E-10	3.33E-10	3.26E-10	3.19E-10

cm244	3.47E-04	3.36E-04	3.25E-04	3.15E-04	3.05E-04	2.96E-04	2.86E-04
cm245	6.07E-10	6.06E-10	6.06E-10	6.06E-10	6.06E-10	6.06E-10	6.06E-10
cm246	4.93E-12	4.92E-12	4.92E-12	4.92E-12	4.92E-12	4.92E-12	4.92E-12
cm247	8.85E-20	8.85E-20	8.85E-20	8.85E-20	8.85E-20	8.85E-20	8.85E-20
cm248	3.42E-21	3.42E-21	3.42E-21	3.42E-21	3.42E-21	3.42E-21	3.42E-21
bk249	5.86E-27	3.03E-27	1.57E-27	8.11E-28	4.19E-28	2.17E-28	1.12E-28
cf249	3.06E-22	3.06E-22	3.06E-22	3.06E-22	3.05E-22	3.05E-22	3.05E-22
cf250	1.14E-24	1.09E-24	1.04E-24	9.95E-25	9.52E-25	9.11E-25	8.71E-25
cf251	1.95E-28	1.95E-28	1.95E-28	1.95E-28	1.95E-28	1.95E-28	1.95E-28
0 total	3.36E+05	3.35E+05	3.35E+05	3.34E+05	3.34E+05	3.33E+05	3.33E+05

1 page 84

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
th230	7.35E-03	7.35E-03	7.35E-03	7.36E-03	7.36E-03	7.36E-03	7.36E-03
pa231	3.02E-03	3.02E-03	3.02E-03	3.02E-03	3.02E-03	3.02E-03	3.02E-03
u232	2.91E-04	2.88E-04	2.86E-04	2.84E-04	2.81E-04	2.79E-04	2.77E-04
u234	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.53E+01
u235	1.60E+00	1.60E+00	1.60E+00	1.60E+00	1.60E+00	1.60E+00	1.60E+00
u236	1.62E+02	1.62E+02	1.62E+02	1.62E+02	1.62E+02	1.62E+02	1.62E+02
u237	1.26E-09	2.15E-15	2.07E-15	1.98E-15	1.91E-15	1.83E-15	1.76E-15
u238	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05
u239	9.65E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	3.67E-08	3.67E-08	3.67E-08	3.67E-08	3.67E-08	3.67E-08	3.67E-08
np238	1.98E-08	4.87E-15	4.85E-15	4.83E-15	4.81E-15	4.79E-15	4.77E-15
np239	1.97E-05	5.25E-14	5.25E-14	5.25E-14	5.25E-14	5.25E-14	5.25E-14
pu236	9.69E-03	7.95E-03	6.52E-03	5.35E-03	4.38E-03	3.60E-03	2.95E-03
pu238	1.50E+04	1.50E+04	1.49E+04	1.48E+04	1.47E+04	1.46E+04	1.45E+04
pu239	1.17E+02	1.17E+02	1.17E+02	1.17E+02	1.17E+02	1.17E+02	1.17E+02
pu240	1.12E+05	1.12E+05	1.12E+05	1.12E+05	1.12E+05	1.12E+05	1.12E+05
pu241	2.20E-03	2.11E-03	2.03E-03	1.95E-03	1.87E-03	1.80E-03	1.73E-03
pu242	9.01E+00	9.01E+00	9.01E+00	9.01E+00	9.01E+00	9.02E+00	9.02E+00
pu243	7.32E-13	3.82E-30	3.82E-30	3.82E-30	3.82E-30	3.82E-30	3.82E-30
pu244	2.74E-21	2.75E-21	2.75E-21	2.75E-21	2.76E-21	2.76E-21	2.77E-21
am241	1.20E+00	1.20E+00	1.20E+00	1.20E+00	1.20E+00	1.20E+00	1.20E+00
am242m	7.92E-02	7.89E-02	7.86E-02	7.83E-02	7.79E-02	7.76E-02	7.73E-02
am242	5.76E-04	8.57E-05	8.53E-05	8.50E-05	8.46E-05	8.43E-05	8.39E-05
am243	2.33E-05	2.33E-05	2.33E-05	2.33E-05	2.33E-05	2.33E-05	2.33E-05
am244	4.70E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm242	1.73E+02	6.62E+01	3.67E+01	2.86E+01	2.62E+01	2.55E+01	2.53E+01
cm243	7.84E-12	7.68E-12	7.52E-12	7.37E-12	7.23E-12	7.08E-12	6.94E-12
cm244	4.52E-02	4.38E-02	4.24E-02	4.11E-02	3.98E-02	3.86E-02	3.74E-02
cm245	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10
cm246	1.78E-07	1.78E-07	1.78E-07	1.77E-07	1.77E-07	1.77E-07	1.77E-07
cm248	5.60E-14	5.60E-14	5.60E-14	5.60E-14	5.60E-14	5.60E-14	5.60E-14
cm250	6.19E-27	6.19E-27	6.19E-27	6.19E-27	6.19E-27	6.18E-27	6.18E-27
bk249	3.23E-23	1.67E-23	8.64E-24	4.47E-24	2.31E-24	1.20E-24	6.19E-25
cf249	1.86E-22	1.86E-22	1.86E-22	1.86E-22	1.86E-22	1.85E-22	1.85E-22
cf250	9.51E-20	9.10E-20	8.71E-20	8.33E-20	7.97E-20	7.63E-20	7.30E-20
0 total	2.45E+05	2.44E+05	2.44E+05	2.44E+05	2.44E+05	2.44E+05	2.44E+05
0 total	5.81E+05	5.80E+05	5.79E+05	5.78E+05	5.78E+05	5.77E+05	5.77E+05

1 page 85

alpha-n neutron source spectrum as a function of time
(using reaction spectra for uranium dioxide)

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
2	3.00E+00 - 6.43E+00	6.507E+04	6.494E+04	6.483E+04	6.473E+04	6.462E+04	6.452E+04	6.442E+04
3	1.85E+00 - 3.00E+00	1.842E+05	1.839E+05	1.836E+05	1.833E+05	1.830E+05	1.828E+05	1.825E+05
4	1.40E+00 - 1.85E+00	4.947E+04	4.940E+04	4.932E+04	4.924E+04	4.916E+04	4.909E+04	4.901E+04
5	9.00E-01 - 1.40E+00	2.783E+04	2.778E+04	2.774E+04	2.770E+04	2.765E+04	2.761E+04	2.757E+04
6	4.00E-01 - 9.00E-01	8.082E+03	8.071E+03	8.058E+03	8.045E+03	8.033E+03	8.020E+03	8.007E+03
7	1.00E-01 - 4.00E-01	1.263E+03	1.261E+03	1.259E+03	1.257E+03	1.255E+03	1.253E+03	1.251E+03
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		3.359E+05	3.354E+05	3.348E+05	3.343E+05	3.338E+05	3.332E+05	3.327E+05

1 page 86

spontaneous fission neutron source spectrum as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	4.671E+03	4.667E+03	4.665E+03	4.662E+03	4.660E+03	4.658E+03	4.656E+03
2	3.00E+00 - 6.43E+00	5.120E+04	5.116E+04	5.113E+04	5.110E+04	5.108E+04	5.106E+04	5.104E+04
3	1.85E+00 - 3.00E+00	5.580E+04	5.575E+04	5.572E+04	5.569E+04	5.566E+04	5.564E+04	5.562E+04
4	1.40E+00 - 1.85E+00	3.162E+04	3.159E+04	3.157E+04	3.156E+04	3.154E+04	3.153E+04	3.152E+04
5	9.00E-01 - 1.40E+00	4.340E+04	4.336E+04	4.334E+04	4.332E+04	4.330E+04	4.328E+04	4.326E+04
6	4.00E-01 - 9.00E-01	4.836E+04	4.831E+04	4.829E+04	4.826E+04	4.824E+04	4.822E+04	4.820E+04
7	1.00E-01 - 4.00E-01	9.547E+03	9.539E+03	9.534E+03	9.529E+03	9.525E+03	9.521E+03	9.516E+03
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00

17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		2.446E+05	2.444E+05	2.442E+05	2.441E+05	2.440E+05	2.439E+05	2.438E+05

1 page 87

total (alpha-n plus spon. fission) neutron source spectrum as a function of time
(using reaction spectra for uranium dioxide)

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
neutron spectra, neutrons/sec/basis
basis = single reactor assembly

boundaries, mev		initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	4.671E+03	4.667E+03	4.665E+03	4.662E+03	4.660E+03	4.658E+03	4.656E+03
2	3.00E+00 - 6.43E+00	1.163E+05	1.161E+05	1.160E+05	1.158E+05	1.157E+05	1.156E+05	1.155E+05
3	1.85E+00 - 3.00E+00	2.400E+05	2.397E+05	2.393E+05	2.390E+05	2.387E+05	2.384E+05	2.381E+05
4	1.40E+00 - 1.85E+00	8.109E+04	8.099E+04	8.089E+04	8.080E+04	8.071E+04	8.062E+04	8.052E+04
5	9.00E-01 - 1.40E+00	7.122E+04	7.114E+04	7.108E+04	7.101E+04	7.095E+04	7.089E+04	7.082E+04
6	4.00E-01 - 9.00E-01	5.644E+04	5.639E+04	5.635E+04	5.631E+04	5.628E+04	5.624E+04	5.621E+04
7	1.00E-01 - 4.00E-01	1.081E+04	1.080E+04	1.079E+04	1.079E+04	1.078E+04	1.077E+04	1.077E+04
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		5.805E+05	5.798E+05	5.791E+05	5.784E+05	5.778E+05	5.772E+05	5.765E+05

1
1 * gamma sources determined *
0case applies the following photon data base
master photon library
in binary mode
0 the sources include photons of nuclides for...

light elements
actinides
fission products

gamma source spectrum for gamma lines (sas2)
1826.25 day time of the requested nuclides

energy interval in mev			photons / second	mev / second
1.0000E-02	to	5.0000E-02	4.5456E+12	1.3637E+11
5.0000E-02	to	1.0000E-01	1.3084E+12	9.8128E+10
1.0000E-01	to	2.0000E-01	8.0297E+11	1.2045E+11
2.0000E-01	to	3.0000E-01	2.5946E+11	6.4865E+10
3.0000E-01	to	4.0000E-01	2.9989E+11	1.0496E+11
4.0000E-01	to	6.0000E-01	1.4630E+11	7.3149E+10
6.0000E-01	to	8.0000E-01	5.7216E+12	4.0051E+12
8.0000E-01	to	1.0000E+00	5.1356E+10	4.6221E+10
1.0000E+00	to	1.3300E+00	5.0368E+10	5.8679E+10
1.3300E+00	to	1.6600E+00	2.7444E+10	4.1029E+10
1.6600E+00	to	2.0000E+00	3.5763E+09	6.5447E+09
2.0000E+00	to	2.5000E+00	1.8088E+09	4.0697E+09
2.5000E+00	to	3.0000E+00	1.0130E+08	2.7858E+08
3.0000E+00	to	4.0000E+00	5.1254E+06	1.7939E+07
4.0000E+00	to	5.0000E+00	1.0944E+04	4.9249E+04
5.0000E+00	to	6.5000E+00	4.3054E+03	2.4756E+04
6.5000E+00	to	8.0000E+00	8.2934E+02	6.0127E+03
8.0000E+00	to	1.0000E+01	1.7387E+02	1.5648E+03
totals			1.3219E+13	4.7599E+12

total energy from nuclides with spectrum data = 4.7599E+12
total energy from nuclides with no spectrum data = 1.0212E+06

.results on logical unit no. 71, position 2, for time step 6, subcase 7. (run position 1, case position 2)
title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
.terminated logical unit no. 71 with zero flag record.
* normal termination of execution *

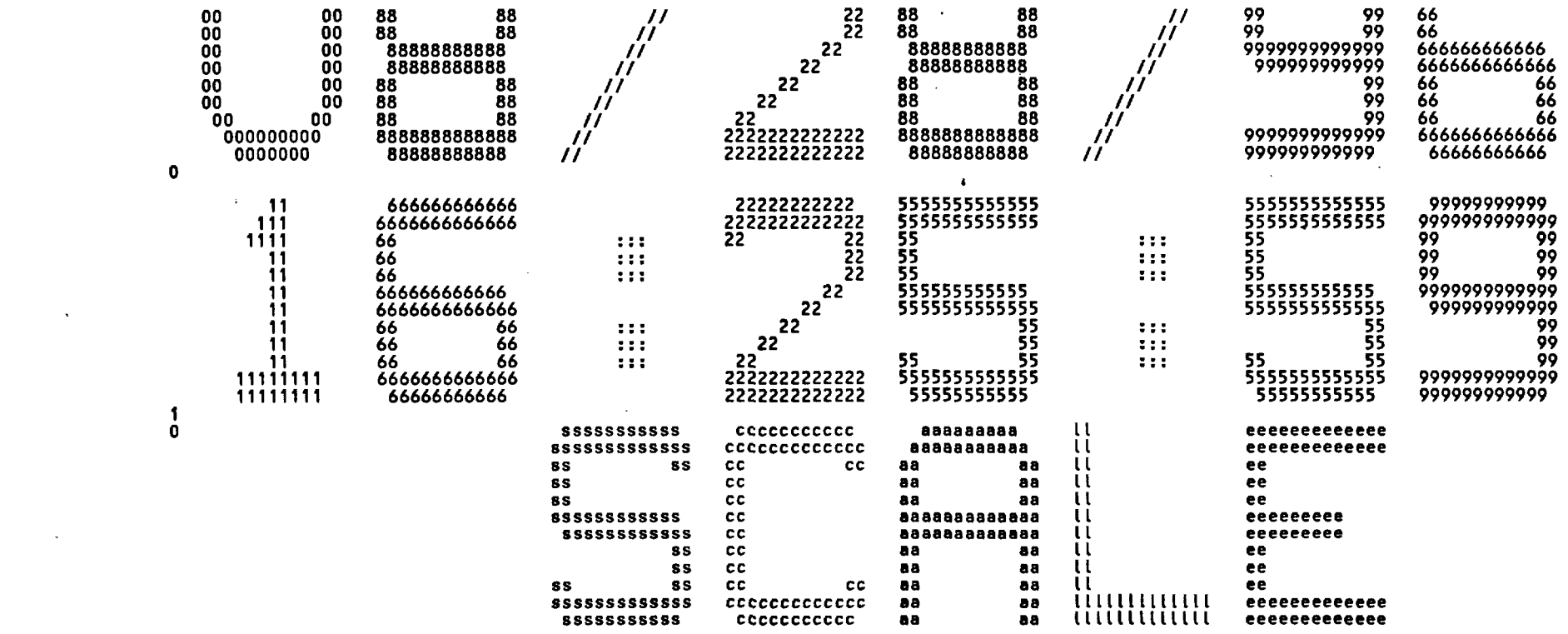
```
1          primary module access and input record ( scale driver - 95/03/29 - 09:06:37 )
-   module sas2h    will be called
      SAS2H: Far-Field Crit based on B&W 15x15, 3.00wt%, 20gwd/mtu 40% H2O/ 8% UO2
      44group    latticecell
      '
      '  mixtures of tuff infinite slabs:
      arbm-ftuff  2.6344 14 0 0 0 1001 1.055 8016 40.755 11023 0.570 12000 0.354
                             13027 4.434 14000 20.193 19000 1.370 20000 1.439
                             26000 0.494 92235 0.567 92234 0.007 92236 0.136
                             92238 28.593 93237 0.033 1 1.0 538   end

      kr-83      1 0 1-20 538 end
      kr-85      1 0 1-20 538 end
      sr-90      1 0 1-20 538 end
       y-89      1 0 1-20 538 end
      mo-95      1 0 1-20 538 end
      zr-93      1 0 1-20 538 end
      zr-94      1 0 1-20 538 end
      zr-95      1 0 1-20 538 end
      nb-94      1 0 1-20 538 end
      tc-99      1 0 1-20 538 end
      rh-103     1 0 1-20 538 end
      rh-105     1 0 1-20 538 end
      ru-101     1 0 1-20 538 end
      ru-106     1 0 1-20 538 end
      pd-105     1 0 1-20 538 end
      pd-108     1 0 1-20 538 end
      ag-109     1 0 1-20 538 end
      sb-124     1 0 1-20 538 end
      xe-131     1 0 1-20 538 end
      xe-132     1 0 1-20 538 end
      xe-135     1 0 1-20 538 end
      xe-136     1 0 1-20 538 end
      cs-134     1 0 1-20 538 end
      cs-135     1 0 1-20 538 end
      cs-137     1 0 1-20 538 end
      ba-136     1 0 1-20 538 end
      la-139     1 0 1-20 538 end
      pr-141     1 0 1-20 538 end
      pr-143     1 0 1-20 538 end
      ce-144     1 0 1-20 538 end
      nd-143     1 0 1-20 538 end
      nd-145     1 0 1-20 538 end
      pm-147     1 0 1-20 538 end
      pm-148     1 0 1-20 538 end
      nd-147     1 0 1-20 538 end
      sm-147     1 0 1-20 538 end
      sm-149     1 0 1-20 538 end
      sm-150     1 0 1-20 538 end
      sm-151     1 0 1-20 538 end
      sm-152     1 0 1-20 538 end
      gd-155     1 0 1-20 538 end
      eu-153     1 0 1-20 538 end
      eu-154     1 0 1-20 538 end
      eu-155     1 0 1-20 538 end
      arbm-tuff1  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                             13027 6.130 14000 27.919 19000 1.894 20000 1.989
                             26000 0.683 2 1.0 323.   end
      arbm-tuff2  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                             13027 6.130 14000 27.919 19000 1.894 20000 1.989
                             26000 0.683 3 1.0 323.   end
```

```
'
' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
end comp
'
' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
'
'  fuel-pin-cell geometry:
'
symmslabcell  340.  280. 1 3 281. 2 end
'
' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
'
'
'  assembly and cycle parameters:
'
npin/assm=1 fuelngth=280. ncycles=10 nlib/cyc=1 volfueltot=1.1494E7
printlevel=6 inplevel=0 end
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=1.82625e3
   end
```

```
1   ooooooooooo    rrrrrrrrrrr    iiiiiiiiiii     ggggggggggg    eeeeeeeeeeeee   nn          nn   sssssssssss
   ooooooooooooo   rrrrrrrrrrrr   iiiiiiiiiii    ggggggggggggg   eeeeeeeeeeeee   nnn         nn  sssssssssssss
   oo           oo  rr          rr      ii       gg          gg  ee              nnnn        nn  ss          ss
   oo           oo  rr          rr      ii       gg              ee              nn nn       nn  ss
   oo           oo  rr          rr      ii       gg              ee              nn  nn      nn  ss
   oo           oo  rrrrrrrrrrrr        ii       gg    ggggggg   eeeeeeeee       nn   nn     nn  sssssssssss
   oo           oo  rrrrrrrrrrr         ii       gg    ggggggg   eeeeeeeee       nn    nn    nn   sssssssssss
   oo           oo  rr       rr         ii       gg          gg  ee              nn     nn   nn             ss
   oo           oo  rr        rr        ii       gg          gg  ee              nn      nn nn             ss
   oo           oo  rr         rr       ii       gg          gg  ee              nn       nnnn  ss         ss
   ooooooooooooo   rr          rr  iiiiiiiiiii    ggggggggggggg  eeeeeeeeeeeee   nn         nnn  sssssssssssss
    ooooooooooo    rr          rr  iiiiiiiiiii     ggggggggggg   eeeeeeeeeeeee   nn          nn   sssssssssss
0
```

```
   ddddddddddd      aaaaaaaaa     vv           vv  iiiiiiiiiii     sssssssssss
   ddddddddddddd    aaaaaaaaaa    vv           vv  iiiiiiiiiii    sssssssssssss
   dd          dd   aa          aa  vv           vv      ii        ss          ss
   dd          dd   aa          aa  vv           vv      ii        ss
   dd          dd   aa          aa  vv           vv      ii        ss
   dd          dd   aaaaaaaaaaaaa   vv           vv      ii        sssssssssss
   dd          dd   aaaaaaaaaaaaa    vv         vv       ii         sssssssssss
   dd          dd   aa          aa     vv     vv        ii                  ss
   dd          dd   aa          aa      vv   vv         ii                  ss
   dd          dd   aa          aa       vv vv          ii        ss        ss
   ddddddddddddd    aa          aa        vvv       iiiiiiiiiii    sssssssssssss
   ddddddddddd      aa          aa         v        iiiiiiiiiii     sssssssssss
0
```

```
     0000000       88888888888              //   22222222222    88888888888              //   99999999999    666666666666
    000000000     8888888888888             //   2222222222222  8888888888888             //   9999999999999  6666666666666
   00       00    88          88           //    22          22  88          88           //   99          99  66
```



```
**********************************************************************************
**********************************************************************************
**********************************************************************************
*****                                                                        *****
*****                  program verification information                   *****
*****                                                                        *****
*****                 code system:    scale  version:    4.3              *****
*****                                                                        *****
**********************************************************************************
**********************************************************************************
*****                                                                        *****
*****                                                                        *****
*****                program:  o0o004                                    *****
*****                                                                        *****
*****          creation date:  03/13/96                                   *****
*****                                                                        *****
*****                library:  /usr1/ornl/Scale/bin                      *****
*****                                                                        *****
*****                                                                        *****
```

```
                    *****            test code:  origens                                    *****
                    *****                                                                   *****
                    *****              version:  3.0                                        *****
                    *****                                                                   *****
                    *****              jobname:  davis                                      *****
                    *****                                                                   *****
                    *****    date of execution:  08/28/96                                   *****
                    *****                                                                   *****
                    *****    time of execution:  16:25:59                                   *****
                    *****                                                                   *****
                    *****                                                                   *****
                    ******************************************************************************
                    ******************************************************************************
                    ******************************************************************************
1
0       -1q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0         dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0             short-lived split test fraction, qxn =    9.1188E-04
0             half-norm of matrix used, axn =    7.0000E+00
0             4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
0        1q array has     20 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        4q array has      1 entries.
0       54q array has     12 entries.
1library information...

         cross-section data taken from position number  1 of library on unit 33.

         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         ******************************************************************************
         *                                                                            *
         *            prelim lwr origen-s binary working library--id = 1143           *
         *         made from modified card-image origen-s libraries of scale 4.2      *
         *      data from the light element, actinide, and fission product libraries  *
         *        decay data, including gamma and total energy, are from endf/b-vi    *
         *                                                                            *
         *      neutron flux spectrum factors and cross sections were produced from   *
         *     the "presas2" case updating all nuclides on the scale "burnup" library *
         *                                                                            *
         *                  fission product yields are from endf/b-v                  *
```

```
         *                                                                          *
         *              photon libraries use an 18-energy-group structure           *
         *             the photon data are from the master photon data base,        *
         *              produced to include bremsstrahlung from uo2 matrix          *
         *                                                                          *
         *        see information above this box (if present) for later updates    *
         *                                                                          *
         ******************************************************************************
         *                                                                          *
0        ******************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/28/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ******************************************************************************
1
    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              light elements        page    1
0                                          nuclide concentrations, grams
                                           basis =single reactor assembly
              initial  1E-18 d
    na 23   1.73E+05  1.73E+05
    al 27   1.35E+06  1.35E+06
  total     1.52E+06  1.52E+06
1
    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                   actinides        page    2
0                                          nuclide concentrations, grams
                                           basis =single reactor assembly
              initial  1E-18 d
     u234   2.12E+03  2.12E+03
     u235   1.72E+05  1.72E+05
     u236   4.12E+04  4.12E+04
     u238   8.66E+06  8.66E+06
    np237   9.99E+03  9.99E+03
  total     8.88E+06  8.88E+06
1   sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                  page    3
        power=    .00mw, burnup=   1461.mwd, flux= 2.99E+08n/cm**2-sec
0                                         basis =
0   (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial       91313. d      182625. d      273938. d      365250. d      365250. d
    productions   1.022622E+06   1.024453E+06   1.026237E+06   1.027977E+06   1.029673E+06   1.029673E+06
    absorptions   8.468353E+05   8.494152E+05   8.515743E+05   8.534369E+05   8.550839E+05   8.550839E+05
    k infinity    1.207580E+00   1.206068E+00   1.205106E+00   1.204514E+00   1.204177E+00   1.204177E+00
0                   initial       91313. d      182625. d      273938. d      365250. d      365250. d
    actinide
    absorptions   8.430638E+05   8.441381E+05   8.451858E+05   8.462119E+05   8.472176E+05   8.472176E+05
    non-actinide
    abs. fracs.   4.453659E-03   6.212592E-03   7.502079E-03   8.465767E-03   9.199560E-03   9.199560E-03
1   sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              fission products        page    4
0                                  fraction of total absorption rate
        power=    .00mw, burnup=   1461.mwd, flux= 2.99E+08n/cm**2-sec
0              initial  91313. d 182625. d 273938. d 365250. d 365250. d

    sm149      .00E+00  1.54E-03  2.63E-03  3.40E-03  3.95E-03  3.95E-03
    eu151      .00E+00  3.10E-05  8.18E-05  1.34E-04  1.85E-04  1.85E-04
    nd143      .00E+00  3.63E-05  7.24E-05  1.08E-04  1.44E-04  1.44E-04
    gd155      .00E+00  2.23E-05  4.25E-05  6.03E-05  7.59E-05  7.59E-05
```

rh103	.00E+00	1.73E-05	3.45E-05	5.18E-05	6.90E-05	6.90E-05
xe131	.00E+00	1.18E-05	2.36E-05	3.53E-05	4.70E-05	4.70E-05
cd113	.00E+00	1.45E-05	2.66E-05	3.68E-05	4.53E-05	4.53E-05
sm151	.00E+00	3.37E-05	3.84E-05	3.91E-05	3.93E-05	3.93E-05
cs133	.00E+00	9.18E-06	1.83E-05	2.74E-05	3.64E-05	3.64E-05
gd157	.00E+00	1.48E-05	2.39E-05	2.98E-05	3.37E-05	3.37E-05
sm147	.00E+00	6.72E-06	1.35E-05	2.02E-05	2.70E-05	2.70E-05
tc 99	.00E+00	6.78E-06	1.35E-05	2.02E-05	2.69E-05	2.69E-05
nd145	.00E+00	5.19E-06	1.03E-05	1.55E-05	2.06E-05	2.06E-05
mo 95	.00E+00	3.61E-06	7.21E-06	1.08E-05	1.43E-05	1.43E-05
sm152	.00E+00	2.83E-06	5.73E-06	8.68E-06	1.17E-05	1.17E-05
kr 83	.00E+00	2.21E-06	4.41E-06	6.59E-06	8.76E-06	8.76E-06
cs135	.00E+00	2.06E-06	4.11E-06	6.15E-06	8.18E-06	8.18E-06
ru101	.00E+00	1.62E-06	3.24E-06	4.85E-06	6.45E-06	6.45E-06
pr141	.00E+00	1.51E-06	3.02E-06	4.52E-06	6.01E-06	6.01E-06
eu153	.00E+00	1.39E-06	2.79E-06	4.18E-06	5.58E-06	5.58E-06
sm150	.00E+00	4.29E-07	1.54E-06	3.13E-06	5.07E-06	5.07E-06
la139	.00E+00	1.24E-06	2.46E-06	3.69E-06	4.91E-06	4.91E-06
xe135	.00E+00	2.27E-06	2.27E-06	2.26E-06	2.26E-06	2.26E-06
ba137	.00E+00	4.86E-07	1.07E-06	1.65E-06	2.23E-06	2.23E-06
pd105	.00E+00	5.36E-07	1.08E-06	1.62E-06	2.17E-06	2.17E-06
zr 93	.00E+00	5.13E-07	1.02E-06	1.53E-06	2.03E-06	2.03E-06
i129	.00E+00	3.82E-07	7.63E-07	1.14E-06	1.53E-06	1.53E-06
nd144	.00E+00	3.68E-07	7.35E-07	1.10E-06	1.47E-06	1.47E-06
mo 97	.00E+00	2.81E-07	5.61E-07	8.39E-07	1.12E-06	1.12E-06
ag109	.00E+00	2.17E-07	4.64E-07	7.40E-07	1.05E-06	1.05E-06
zr 91	.00E+00	1.32E-07	2.63E-07	3.94E-07	5.23E-07	5.23E-07
y 89	.00E+00	1.26E-07	2.52E-07	3.76E-07	5.00E-07	5.00E-07
ru102	.00E+00	1.14E-07	2.28E-07	3.41E-07	4.54E-07	4.54E-07
ce142	.00E+00	1.02E-07	2.04E-07	3.05E-07	4.06E-07	4.06E-07
nd148	.00E+00	9.94E-08	1.98E-07	2.97E-07	3.95E-07	3.95E-07
nd146	.00E+00	8.27E-08	1.65E-07	2.47E-07	3.28E-07	3.28E-07
pd108	.00E+00	7.18E-08	1.49E-07	2.32E-07	3.21E-07	3.21E-07
ba138	.00E+00	7.04E-08	1.40E-07	2.10E-07	2.80E-07	2.80E-07
in115	.00E+00	6.92E-08	1.38E-07	2.08E-07	2.77E-07	2.77E-07
pm147	.00E+00	2.75E-07	2.74E-07	2.73E-07	2.72E-07	2.72E-07
ce140	.00E+00	6.59E-08	1.32E-07	1.97E-07	2.62E-07	2.62E-07
xe132	.00E+00	6.04E-08	1.20E-07	1.80E-07	2.40E-07	2.40E-07
pd107	.00E+00	4.10E-08	8.43E-08	1.30E-07	1.78E-07	1.78E-07
mo 98	.00E+00	4.22E-08	8.43E-08	1.26E-07	1.68E-07	1.68E-07
eu155	.00E+00	1.61E-07	1.63E-07	1.64E-07	1.66E-07	1.66E-07
mo100	.00E+00	4.04E-08	8.05E-08	1.21E-07	1.60E-07	1.60E-07
xe134	.00E+00	3.91E-08	7.79E-08	1.17E-07	1.55E-07	1.55E-07
zr 92	.00E+00	3.18E-08	6.33E-08	9.46E-08	1.26E-07	1.26E-07
i127	.00E+00	2.63E-08	5.27E-08	7.92E-08	1.06E-07	1.06E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 5
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.99E+08n/cm**2-sec
0 initial 91313. d 182625. d 273938. d 365250. d 365250. d

zr 96	.00E+00	2.60E-08	5.19E-08	7.77E-08	1.03E-07	1.03E-07
ru104	.00E+00	2.48E-08	4.97E-08	7.47E-08	9.98E-08	9.98E-08
gd152	.00E+00	3.29E-09	1.91E-08	4.98E-08	9.52E-08	9.52E-08
nd150	.00E+00	2.22E-08	4.42E-08	6.63E-08	8.82E-08	8.82E-08
xe136	.00E+00	2.11E-08	4.22E-08	6.31E-08	8.40E-08	8.40E-08
br 81	.00E+00	1.61E-08	3.21E-08	4.80E-08	6.39E-08	6.39E-08
rb 85	.00E+00	1.55E-08	3.10E-08	4.65E-08	6.19E-08	6.19E-08
zr 94	.00E+00	1.37E-08	2.74E-08	4.10E-08	5.45E-08	5.45E-08
eu152	.00E+00	8.12E-09	2.14E-08	3.50E-08	4.84E-08	4.84E-08
zr 90	.00E+00	1.05E-08	2.29E-08	3.52E-08	4.75E-08	4.75E-08

cd111	.00E+00	1.05E-08	2.13E-08	3.26E-08	4.43E-08	4.43E-08
te130	.00E+00	9.57E-09	1.91E-08	2.86E-08	3.81E-08	3.81E-08
sm154	.00E+00	9.39E-09	1.88E-08	2.83E-08	3.78E-08	3.78E-08
rb 87	.00E+00	9.08E-09	1.81E-08	2.71E-08	3.60E-08	3.60E-08
se 77	.00E+00	6.33E-09	1.26E-08	1.89E-08	2.51E-08	2.51E-08
pd106	.00E+00	4.68E-09	9.50E-09	1.44E-08	1.95E-08	1.95E-08
kr 84	.00E+00	4.34E-09	8.65E-09	1.29E-08	1.72E-08	1.72E-08
sr 90	.00E+00	1.68E-08	1.68E-08	1.67E-08	1.66E-08	1.66E-08
se 79	.00E+00	3.24E-09	6.47E-09	9.68E-09	1.29E-08	1.29E-08
sb121	.00E+00	3.17E-09	6.35E-09	9.54E-09	1.27E-08	1.27E-08
gd156	.00E+00	1.94E-09	4.39E-09	7.30E-09	1.06E-08	1.06E-08
sb123	.00E+00	2.58E-09	5.16E-09	7.75E-09	1.03E-08	1.03E-08
kr 86	.00E+00	2.35E-09	4.69E-09	7.01E-09	9.32E-09	9.32E-09
rh105	.00E+00	8.37E-09	8.47E-09	8.56E-09	8.66E-09	8.66E-09
te128	.00E+00	2.13E-09	4.26E-09	6.38E-09	8.51E-09	8.51E-09
ru 99	.00E+00	4.68E-10	1.80E-09	3.98E-09	7.02E-09	7.02E-09
dy161	.00E+00	1.41E-09	2.99E-09	4.73E-09	6.64E-09	6.64E-09
se 80	.00E+00	1.52E-09	3.02E-09	4.53E-09	6.02E-09	6.02E-09
te125	.00E+00	1.33E-09	2.68E-09	4.05E-09	5.42E-09	5.42E-09
tb159	.00E+00	9.36E-10	1.92E-09	2.95E-09	4.02E-09	4.02E-09
cs137	.00E+00	3.77E-09	3.77E-09	3.76E-09	3.75E-09	3.75E-09
gd154	.00E+00	2.28E-10	9.26E-10	2.09E-09	3.73E-09	3.73E-09
cd112	.00E+00	8.77E-10	1.77E-09	2.68E-09	3.60E-09	3.60E-09
li 6	.00E+00	8.59E-10	1.71E-09	2.56E-09	3.39E-09	3.39E-09
eu154	.00E+00	7.20E-10	1.43E-09	2.14E-09	2.85E-09	2.85E-09
sn117	.00E+00	6.92E-10	1.39E-09	2.09E-09	2.80E-09	2.80E-09
gd158	.00E+00	4.26E-10	1.06E-09	1.83E-09	2.69E-09	2.69E-09
pr143	.00E+00	2.65E-09	2.64E-09	2.63E-09	2.62E-09	2.62E-09
sn119	.00E+00	5.64E-10	1.13E-09	1.69E-09	2.26E-09	2.26E-09
sn115	.00E+00	5.15E-10	1.03E-09	1.55E-09	2.07E-09	2.07E-09
xe133	.00E+00	1.98E-09	1.98E-09	1.97E-09	1.97E-09	1.97E-09
sr 88	.00E+00	4.34E-10	8.64E-10	1.29E-09	1.72E-09	1.72E-09
cd114	.00E+00	3.41E-10	7.39E-10	1.19E-09	1.67E-09	1.67E-09
ce141	.00E+00	1.57E-09	1.56E-09	1.56E-09	1.56E-09	1.56E-09
pd110	.00E+00	3.25E-10	6.67E-10	1.03E-09	1.40E-09	1.40E-09
ru100	.00E+00	7.91E-11	3.09E-10	6.87E-10	1.21E-09	1.21E-09
se 82	.00E+00	2.94E-10	5.86E-10	8.76E-10	1.16E-09	1.16E-09
dy164	.00E+00	1.83E-10	4.20E-10	7.08E-10	1.05E-09	1.05E-09
dy162	.00E+00	1.96E-10	4.35E-10	7.16E-10	1.04E-09	1.04E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 6
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.99E+08n/cm**2-sec
0 initial 91313. d 182625. d 273938. d 365250. d 365250. d

sn126	.00E+00	2.36E-10	4.74E-10	7.15E-10	9.58E-10	9.58E-10
pm149	.00E+00	9.59E-10	9.57E-10	9.55E-10	9.53E-10	9.53E-10
nd147	.00E+00	9.43E-10	9.40E-10	9.38E-10	9.35E-10	9.35E-10
se 78	.00E+00	2.25E-10	4.49E-10	6.73E-10	8.96E-10	8.96E-10
nd142	.00E+00	5.19E-11	2.07E-10	4.64E-10	8.22E-10	8.22E-10
ba134	.00E+00	5.17E-11	2.06E-10	4.62E-10	8.19E-10	8.19E-10
sm148	.00E+00	5.04E-11	1.95E-10	4.33E-10	7.63E-10	7.63E-10
sn124	.00E+00	1.85E-10	3.70E-10	5.56E-10	7.43E-10	7.43E-10
ba135	.00E+00	4.14E-11	1.65E-10	3.70E-10	6.56E-10	6.56E-10
ce144	.00E+00	5.97E-10	5.95E-10	5.93E-10	5.91E-10	5.91E-10
pd104	.00E+00	3.57E-11	1.43E-10	3.20E-10	5.69E-10	5.69E-10
kr 85	.00E+00	5.66E-10	5.63E-10	5.61E-10	5.59E-10	5.59E-10
as 75	.00E+00	1.34E-10	2.68E-10	4.01E-10	5.34E-10	5.34E-10
in113	.00E+00	9.33E-11	1.95E-10	2.98E-10	4.01E-10	4.01E-10
ru103	.00E+00	3.57E-10	3.57E-10	3.58E-10	3.59E-10	3.59E-10
ba136	.00E+00	7.64E-11	1.62E-10	2.56E-10	3.59E-10	3.59E-10

sn118	.00E+00	7.59E-11	1.52E-10	2.28E-10	3.05E-10	3.05E-10
cs134	.00E+00	6.91E-11	1.37E-10	2.05E-10	2.72E-10	2.72E-10
cd116	.00E+00	6.39E-11	1.28E-10	1.92E-10	2.56E-10	2.56E-10
mo 96	.00E+00	2.87E-11	8.07E-11	1.56E-10	2.53E-10	2.53E-10
sn122	.00E+00	6.22E-11	1.25E-10	1.87E-10	2.50E-10	2.50E-10
dy163	.00E+00	4.42E-11	9.98E-11	1.67E-10	2.45E-10	2.45E-10
kr 82	.00E+00	4.37E-11	9.68E-11	1.59E-10	2.31E-10	2.31E-10
sn120	.00E+00	4.69E-11	9.39E-11	1.41E-10	1.88E-10	1.88E-10
xe130	.00E+00	2.91E-11	6.90E-11	1.20E-10	1.81E-10	1.81E-10
zr 95	.00E+00	1.68E-10	1.67E-10	1.66E-10	1.66E-10	1.66E-10
nb 95	.00E+00	1.53E-10	1.52E-10	1.52E-10	1.51E-10	1.51E-10
ge 73	.00E+00	3.63E-11	7.26E-11	1.09E-10	1.45E-10	1.45E-10
y 91	.00E+00	1.41E-10	1.40E-10	1.40E-10	1.39E-10	1.39E-10
pm151	.00E+00	1.09E-10	1.09E-10	1.09E-10	1.09E-10	1.09E-10
nb 93	.00E+00	6.03E-12	2.53E-11	5.77E-11	1.03E-10	1.03E-10
cd110	.00E+00	4.89E-12	2.03E-11	4.76E-11	8.80E-11	8.80E-11
br 79	.00E+00	3.36E-12	1.34E-11	3.00E-11	5.33E-11	5.33E-11
ge 76	.00E+00	1.33E-11	2.64E-11	3.95E-11	5.26E-11	5.26E-11
ba140	.00E+00	4.70E-11	4.68E-11	4.67E-11	4.66E-11	4.66E-11
te126	.00E+00	7.59E-12	1.75E-11	2.96E-11	4.41E-11	4.41E-11
gd160	.00E+00	8.77E-12	1.82E-11	2.82E-11	3.89E-11	3.89E-11
sm153	.00E+00	3.81E-11	3.83E-11	3.85E-11	3.87E-11	3.87E-11
eu156	.00E+00	3.46E-11	3.53E-11	3.60E-11	3.68E-11	3.68E-11
ag107	.00E+00	1.80E-12	7.33E-12	1.68E-11	3.04E-11	3.04E-11
xe129	.00E+00	1.90E-12	7.59E-12	1.71E-11	3.03E-11	3.03E-11
sr 89	.00E+00	3.02E-11	3.00E-11	2.99E-11	2.98E-11	2.98E-11
ru106	.00E+00	2.66E-11	2.72E-11	2.79E-11	2.86E-11	2.86E-11
kr 87	.00E+00	2.25E-11	2.24E-11	2.23E-11	2.22E-11	2.22E-11
ho165	.00E+00	3.06E-12	6.96E-12	1.17E-11	1.73E-11	1.73E-11
ce143	.00E+00	1.73E-11	1.73E-11	1.72E-11	1.72E-11	1.72E-11
y 90	.00E+00	1.60E-11	1.59E-11	1.59E-11	1.58E-11	1.58E-11
sb125	.00E+00	1.51E-11	1.52E-11	1.53E-11	1.54E-11	1.54E-11
la140	.00E+00	1.54E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 7

0 fraction of total absorption rate

power= .00mw, burnup= 1461.mwd, flux= 2.99E+08n/cm**2-sec

0 initial 91313. d 182625. d 273938. d 365250. d 365250. d

mo 99	.00E+00	1.31E-11	1.31E-11	1.31E-11	1.30E-11	1.30E-11
pm148m	.00E+00	9.64E-12	9.63E-12	9.62E-12	9.62E-12	9.62E-12
te127m	.00E+00	7.41E-12	7.47E-12	7.52E-12	7.58E-12	7.58E-12
te124	.00E+00	1.57E-12	3.24E-12	5.00E-12	6.84E-12	6.84E-12
i131	.00E+00	6.76E-12	6.75E-12	6.74E-12	6.73E-12	6.73E-12
sr 87	.00E+00	1.52E-12	3.04E-12	4.56E-12	6.09E-12	6.09E-12
dy160	.00E+00	3.06E-13	1.12E-12	2.47E-12	4.36E-12	4.36E-12
nb 94	.00E+00	8.78E-13	1.76E-12	2.64E-12	3.54E-12	3.54E-12
xe128	.00E+00	2.54E-13	8.79E-13	1.87E-12	3.24E-12	3.24E-12
sr 86	.00E+00	5.17E-13	1.21E-12	2.09E-12	3.14E-12	3.14E-12
ge 74	.00E+00	7.30E-13	1.46E-12	2.19E-12	2.91E-12	2.91E-12
ge 72	.00E+00	4.92E-13	9.85E-13	1.48E-12	1.98E-12	1.98E-12
te129m	.00E+00	1.78E-12	1.78E-12	1.79E-12	1.79E-12	1.79E-12
se 76	.00E+00	3.05E-13	6.53E-13	1.04E-12	1.48E-12	1.48E-12
sn116	.00E+00	7.63E-14	3.03E-13	6.80E-13	1.21E-12	1.21E-12
er166	.00E+00	9.78E-14	2.54E-13	4.69E-13	7.40E-13	7.40E-13
te122	.00E+00	3.37E-14	1.30E-13	2.87E-13	5.07E-13	5.07E-13
pm148	.00E+00	3.86E-13	3.85E-13	3.84E-13	3.83E-13	3.83E-13
ag111	.00E+00	3.35E-13	3.48E-13	3.62E-13	3.75E-13	3.75E-13
eu157	.00E+00	3.04E-13	3.13E-13	3.22E-13	3.31E-13	3.31E-13
cd115m	.00E+00	2.37E-13	2.38E-13	2.39E-13	2.40E-13	2.40E-13
kr 80	.00E+00	2.13E-14	4.44E-14	6.95E-14	9.71E-14	9.71E-14

cs136	.00E+00	6.30E-14	7.00E-14	7.70E-14	8.39E-14	8.39E-14
ru105	.00E+00	3.04E-14	3.08E-14	3.11E-14	3.15E-14	3.15E-14
sn125	.00E+00	2.95E-14	2.96E-14	2.98E-14	2.99E-14	2.99E-14
rb 88	.00E+00	1.26E-14	1.26E-14	1.25E-14	1.25E-14	1.25E-14
tb160	.00E+00	2.92E-15	5.64E-15	8.45E-15	1.13E-14	1.13E-14
er167	.00E+00	7.36E-16	2.59E-15	5.83E-15	1.07E-14	1.07E-14
sn123	.00E+00	1.04E-14	1.04E-14	1.04E-14	1.04E-14	1.04E-14
i135	.00E+00	9.97E-15	9.95E-15	9.92E-15	9.90E-15	9.90E-15
te123	.00E+00	1.65E-15	3.73E-15	6.38E-15	9.73E-15	9.73E-15
te132	.00E+00	9.47E-15	9.45E-15	9.43E-15	9.42E-15	9.42E-15
pr142	.00E+00	1.73E-15	3.44E-15	5.14E-15	6.83E-15	6.83E-15
be 9	.00E+00	1.71E-15	3.41E-15	5.10E-15	6.79E-15	6.79E-15
te134	.00E+00	5.74E-15	5.72E-15	5.70E-15	5.68E-15	5.68E-15
sb126	.00E+00	3.41E-15	3.85E-15	4.28E-15	4.71E-15	4.71E-15
li 7	.00E+00	6.63E-16	1.32E-15	1.98E-15	2.63E-15	2.63E-15
sb124	.00E+00	2.23E-15	2.36E-15	2.49E-15	2.62E-15	2.62E-15
in117m	.00E+00	2.09E-15	2.11E-15	2.13E-15	2.15E-15	2.15E-15
i130	.00E+00	1.03E-15	1.34E-15	1.66E-15	1.97E-15	1.97E-15
rb 86	.00E+00	3.41E-16	4.42E-16	5.43E-16	6.43E-16	6.43E-16
in117	.00E+00	6.13E-16	6.20E-16	6.27E-16	6.34E-16	6.34E-16
dy165	.00E+00	2.76E-16	3.44E-16	4.12E-16	4.80E-16	4.80E-16
cd108	.00E+00	2.48E-17	8.36E-17	1.94E-16	3.74E-16	3.74E-16
sn114	.00E+00	1.67E-17	6.95E-17	1.58E-16	2.83E-16	2.83E-16
cd118	.00E+00	1.19E-16	1.20E-16	1.20E-16	1.21E-16	1.21E-16
ge 75	.00E+00	8.47E-17	8.45E-17	8.43E-17	8.42E-17	8.42E-17
cs134m	.00E+00	1.28E-17	2.55E-17	3.81E-17	5.06E-17	5.06E-17
in119m	.00E+00	2.98E-17	2.99E-17	3.00E-17	3.01E-17	3.01E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 8
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.99E+08n/cm**2-sec
0 initial 91313. d 182625. d 273938. d 365250. d 365250. d

in119	.00E+00	2.33E-18	2.35E-18	2.36E-18	2.38E-18	2.38E-18
cd109	.00E+00	6.19E-19	1.05E-18	1.47E-18	1.89E-18	1.89E-18
ag110	.00E+00	2.83E-19	6.08E-19	9.67E-19	1.36E-18	1.36E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 9
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.99E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	91313. d	182625. d	273938. d	365250. d	365250. d
h 1	.00E+00	2.22E-05	4.43E-05	6.64E-05	8.84E-05	8.84E-05
h 2	.00E+00	6.57E-08	1.31E-07	1.97E-07	2.62E-07	2.62E-07
h 3	.00E+00	3.50E-11	3.56E-11	3.63E-11	3.69E-11	3.69E-11
h 4	.00E+00	1.41E-34	1.44E-34	1.46E-34	1.49E-34	1.49E-34
he 3	.00E+00	4.77E-10	9.79E-10	1.47E-09	1.95E-09	1.95E-09
he 4	.00E+00	3.66E-06	7.32E-06	1.10E-05	1.46E-05	1.46E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	.00E+00	4.40E-07	8.79E-07	1.32E-06	1.76E-06	1.76E-06
ne 21	.00E+00	3.97E-12	1.59E-11	3.57E-11	6.33E-11	6.33E-11
ne 22	.00E+00	2.87E-09	5.77E-09	8.68E-09	1.16E-08	1.16E-08
ne 23	.00E+00	7.33E-15	7.32E-15	7.31E-15	7.30E-15	7.30E-15
na 22	.00E+00	4.31E-11	4.30E-11	4.29E-11	4.29E-11	4.29E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	.00E+00	3.65E-08	3.64E-08	3.64E-08	3.64E-08	3.64E-08
na 24m	.00E+00	6.00E-15	5.99E-15	5.98E-15	5.97E-15	5.97E-15
na 25	.00E+00	2.60E-26	7.47E-26	1.46E-25	2.40E-25	2.40E-25
mg 24	.00E+00	3.78E-03	7.56E-03	1.13E-02	1.51E-02	1.51E-02
mg 25	.00E+00	8.61E-10	2.48E-09	4.84E-09	7.96E-09	7.96E-09
mg 26	.00E+00	6.57E-08	1.31E-07	1.97E-07	2.62E-07	2.62E-07

mg 27	.00E+00	2.19E-12	2.18E-12	2.18E-12	2.18E-12	2.18E-12
mg 28	.00E+00	4.43E-24	4.42E-24	4.41E-24	4.40E-24	4.40E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	.00E+00	2.71E-10	2.70E-10	2.70E-10	2.70E-10	2.70E-10
al 29	.00E+00	9.55E-25	3.81E-24	8.55E-24	1.52E-23	1.52E-23
al 30	.00E+00	4.38E-36	3.49E-35	1.18E-34	2.78E-34	2.78E-34
si 28	.00E+00	1.10E-02	2.20E-02	3.30E-02	4.40E-02	4.40E-02
si 29	.00E+00	3.53E-09	1.41E-08	3.17E-08	5.62E-08	5.62E-08
si 30	.00E+00	1.21E-15	9.68E-15	3.26E-14	7.71E-14	7.71E-14
si 31	.00E+00	8.67E-28	6.91E-27	2.33E-26	5.50E-26	5.50E-26
si 32	.00E+00	3.17E-34	4.28E-33	1.86E-32	5.14E-32	5.14E-32
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		3.00E+08	3.00E+08	2.99E+08	2.99E+08	2.99E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 10
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.99E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	91313. d	182625. d	273938. d	365250. d	365250. d
he 4	.00E+00	4.39E-02	1.15E-01	1.97E-01	2.89E-01	2.89E-01
pb206	.00E+00	2.25E-07	1.86E-06	6.26E-06	1.47E-05	1.47E-05
pb207	.00E+00	4.16E-07	1.78E-06	4.11E-06	7.38E-06	7.38E-06
pb208	.00E+00	8.05E-08	3.16E-07	7.02E-07	1.24E-06	1.24E-06
pb209	.00E+00	8.67E-14	3.44E-13	7.67E-13	1.35E-12	1.35E-12
pb210	.00E+00	9.86E-08	3.81E-07	8.28E-07	1.42E-06	1.42E-06
pb211	.00E+00	3.77E-13	7.55E-13	1.13E-12	1.51E-12	1.51E-12
pb212	.00E+00	1.11E-12	2.16E-12	3.21E-12	4.25E-12	4.25E-12
pb214	.00E+00	2.25E-13	8.70E-13	1.89E-12	3.25E-12	3.25E-12
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	1.35E-08	1.07E-07	3.60E-07	8.49E-07	8.49E-07
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	.00E+00	6.07E-11	2.34E-10	5.10E-10	8.76E-10	8.76E-10
bi211	.00E+00	2.23E-14	4.47E-14	6.72E-14	8.96E-14	8.96E-14
bi212	.00E+00	1.05E-13	2.05E-13	3.04E-13	4.03E-13	4.03E-13
bi213	.00E+00	2.02E-14	8.03E-14	1.79E-13	3.16E-13	3.16E-13
bi214	.00E+00	1.67E-13	6.46E-13	1.41E-12	2.42E-12	2.42E-12
po210	.00E+00	1.68E-09	6.47E-09	1.41E-08	2.42E-08	2.42E-08
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	.00E+00	2.47E-19	4.94E-19	7.42E-19	9.90E-19	9.90E-19
po212	.00E+00	5.52E-24	1.08E-23	1.60E-23	2.12E-23	2.12E-23
po213	.00E+00	3.04E-23	1.21E-22	2.69E-22	4.75E-22	4.75E-22
po214	.00E+00	2.30E-20	8.89E-20	1.93E-19	3.32E-19	3.32E-19
po215	.00E+00	3.10E-19	6.20E-19	9.31E-19	1.24E-18	1.24E-18
po216	.00E+00	4.19E-18	8.18E-18	1.21E-17	1.61E-17	1.61E-17
po218	.00E+00	2.61E-14	1.01E-13	2.19E-13	3.76E-13	3.76E-13
rn218	.00E+00	1.70E-29	3.31E-29	4.90E-29	6.49E-29	6.49E-29
rn219	.00E+00	6.89E-16	1.38E-15	2.07E-15	2.76E-15	2.76E-15
rn220	.00E+00	1.61E-15	3.14E-15	4.65E-15	6.17E-15	6.17E-15
rn222	.00E+00	4.63E-11	1.79E-10	3.89E-10	6.69E-10	6.69E-10
ra222	.00E+00	1.84E-26	3.59E-26	5.32E-26	7.04E-26	7.04E-26
ra223	.00E+00	1.72E-10	3.44E-10	5.17E-10	6.90E-10	6.90E-10
ra224	.00E+00	9.14E-12	1.78E-11	2.65E-11	3.51E-11	3.51E-11
ra225	.00E+00	9.47E-12	3.76E-11	8.38E-11	1.48E-10	1.48E-10
ra226	.00E+00	7.08E-06	2.73E-05	5.94E-05	1.02E-04	1.02E-04
ra228	.00E+00	5.28E-13	1.06E-12	1.59E-12	2.12E-12	2.12E-12
ac225	.00E+00	6.40E-12	2.54E-11	5.66E-11	9.98E-11	9.98E-11
ac227	.00E+00	1.20E-07	2.39E-07	3.59E-07	4.80E-07	4.80E-07
ac228	.00E+00	6.45E-17	1.29E-16	1.94E-16	2.59E-16	2.59E-16
th226	.00E+00	9.00E-25	1.75E-24	2.60E-24	3.44E-24	3.44E-24
th227	.00E+00	2.78E-10	5.56E-10	8.34E-10	1.11E-09	1.11E-09

th228	.00E+00	1.75E-09	3.41E-09	5.05E-09	6.70E-09	6.70E-09
th229	.00E+00	1.84E-06	7.30E-06	1.63E-05	2.87E-05	2.87E-05
th230	.00E+00	6.38E-03	1.28E-02	1.92E-02	2.56E-02	2.56E-02
th231	.00E+00	3.04E-09	3.07E-09	3.09E-09	3.11E-09	3.11E-09
th232	.00E+00	1.29E-03	2.59E-03	3.88E-03	5.18E-03	5.18E-03
th233	.00E+00	1.20E-14	2.39E-14	3.59E-14	4.78E-14	4.78E-14
th234	.00E+00	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	.00E+00	1.80E-04	3.60E-04	5.41E-04	7.21E-04	7.21E-04
pa232	.00E+00	3.09E-12	6.18E-12	9.26E-12	1.23E-11	1.23E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 11
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.99E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	91313. d	182625. d	273938. d	365250. d	365250. d
pa233	.00E+00	1.46E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	.00E+00	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	.00E+00	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	8.72E-22	1.70E-21	2.52E-21	3.33E-21	3.33E-21
u231	.00E+00	2.74E-18	5.45E-18	8.16E-18	1.08E-17	1.08E-17
u232	.00E+00	6.37E-08	1.24E-07	1.84E-07	2.44E-07	2.44E-07
u233	.00E+00	3.41E-03	6.80E-03	1.02E-02	1.35E-02	1.35E-02
u234	9.06E+00	9.07E+00	9.10E+00	9.14E+00	9.18E+00	9.18E+00
u235	7.30E+02	7.29E+02	7.27E+02	7.25E+02	7.23E+02	7.23E+02
u236	1.74E+02	1.75E+02	1.75E+02	1.75E+02	1.76E+02	1.76E+02
u237	.00E+00	3.25E-06	3.25E-06	3.25E-06	3.26E-06	3.26E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	.00E+00	3.29E-07	3.29E-07	3.29E-07	3.28E-07	3.28E-07
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	9.13E-12	9.11E-12	9.10E-12	9.08E-12	9.08E-12
np236m	.00E+00	2.17E-12	2.17E-12	2.16E-12	2.16E-12	2.16E-12
np236	.00E+00	5.15E-08	1.03E-07	1.54E-07	2.05E-07	2.05E-07
np237	4.22E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	.00E+00	1.58E-06	1.58E-06	1.57E-06	1.57E-06	1.57E-06
np239	.00E+00	4.76E-05	4.76E-05	4.75E-05	4.74E-05	4.74E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	.00E+00	9.77E-15	9.74E-15	9.72E-15	9.69E-15	9.69E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	.00E+00	1.18E-09	1.18E-09	1.17E-09	1.17E-09	1.17E-09
pu237	.00E+00	2.22E-13	2.61E-13	2.76E-13	2.87E-13	2.87E-13
pu238	.00E+00	2.06E-02	2.34E-02	2.37E-02	2.38E-02	2.38E-02
pu239	.00E+00	1.27E+00	2.52E+00	3.75E+00	4.97E+00	4.97E+00
pu240	.00E+00	1.55E-03	6.10E-03	1.35E-02	2.36E-02	2.36E-02
pu241	.00E+00	6.62E-07	2.60E-06	5.76E-06	1.01E-05	1.01E-05
pu242	.00E+00	7.37E-10	8.71E-09	3.72E-08	1.04E-07	1.04E-07
pu243	.00E+00	1.62E-18	1.92E-17	8.18E-17	2.28E-16	2.28E-16
pu244	.00E+00	4.00E-39	3.81E-36	1.89E-34	2.93E-33	2.93E-33
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	6.45E-22	4.76E-21	1.47E-20	3.18E-20	3.18E-20
am240	.00E+00	2.95E-19	2.18E-18	6.73E-18	1.46E-17	1.46E-17
am241	.00E+00	2.23E-06	1.65E-05	5.09E-05	1.10E-04	1.10E-04
am242m	.00E+00	2.89E-10	3.64E-09	1.43E-08	3.57E-08	3.57E-08
am242	.00E+00	8.20E-14	6.25E-13	1.97E-12	4.32E-12	4.32E-12
am243	.00E+00	5.26E-13	1.38E-11	8.38E-11	2.90E-10	2.90E-10
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	4.15E-21	1.08E-19	6.60E-19	2.28E-18	2.28E-18
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

```
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241    .00E+00  5.04E-24  3.83E-23  1.21E-22  2.65E-22  2.65E-22
     cm242    .00E+00  1.65E-11  1.26E-10  3.98E-10  8.73E-10  8.73E-10
     cm243    .00E+00   .00E+00  1.40E-20  1.07E-19  3.36E-19  3.36E-19
     cm244    .00E+00  6.52E-17  1.70E-15  1.04E-14  3.58E-14  3.58E-14
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page   12
       power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.99E+08n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
            charge  91313. d 182625. d 273938. d 365250. d 365250. d
     cm245    .00E+00  2.85E-21  1.54E-19  1.46E-18  6.91E-18  6.91E-18
     cm246    .00E+00  6.11E-25  6.80E-23  9.96E-22  6.36E-21  6.36E-21
     cm247    .00E+00  2.25E-30  5.17E-28  1.15E-26  9.86E-26  9.86E-26
     cm248    .00E+00  8.27E-35  3.89E-32  1.29E-30  1.49E-29  1.49E-29
     cm249    .00E+00   .00E+00   .00E+00  3.89E-41  4.82E-40  4.82E-40
     cm250    .00E+00   .00E+00   .00E+00   .00E+00  1.40E-45  1.40E-45
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               3.00E+08  3.00E+08  2.99E+08  2.99E+08  2.99E-07
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

         cross-section data taken from position number  2 of library on unit 33.

         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densities
           pass n applies mid time densities of nth library interval
         first library updated was...
         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densities
           pass n applies mid time densities of nth library interval
         first library updated was...
         ********************************************************************************
         *                                                                              *
         *            prelim lwr origen-s binary working library--id = 1143             *
         *          made from modified card-image origen-s libraries of scale 4.2       *
         *       data from the light element, actinide, and fission product libraries   *
         *         decay data, including gamma and total energy, are from endf/b-vi     *
         *                                                                              *
         *       neutron flux spectrum factors and cross sections were produced from    *
         *      the "presas2" case updating all nuclides on the scale "burnup" library  *
         *                                                                              *
         *                  fission product yields are from endf/b-v                    *
         *                                                                              *
         *              photon libraries use an 18-energy-group structure               *
         *             the photon data are from the master photon data base,            *
         *              produced to include bremsstrahlung from uo2 matrix              *
         *                                                                              *
```

```
         *        see information above this box (if present) for later updates        *
         *                                                                              *
         ********************************************************************************
         *                                                                              *
0        ********************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/28/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   13
        power=    .00mw, burnup=   2922.mwd, flux= 2.80E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      456563. d      547875. d      639188. d      730500. d      730500. d
     productions   1.096527E+06   1.098196E+06   1.099821E+06   1.101403E+06   1.102943E+06   1.102943E+06
     absorptions   9.037413E+05   9.052724E+05   9.066773E+05   9.079868E+05   9.092220E+05   9.092220E+05
     k infinity    1.213320E+00   1.213111E+00   1.213024E+00   1.213017E+00   1.213062E+00   1.213062E+00
0                   initial      456563. d      547875. d      639188. d      730500. d      730500. d
     actinide
     absorptions   8.959688E+05   8.969688E+05   8.979482E+05   8.989073E+05   8.998463E+05   8.998463E+05
     non-actinide
     abs. fracs.   8.600354E-03   9.172499E-03   9.627581E-03   9.999692E-03   1.031184E-02   1.031184E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products        page   14
0                                 fraction of total absorption rate
        power=    .00mw, burnup=   2922.mwd, flux= 2.80E+08n/cm**2-sec
0               initial 456563. d 547875. d 639188. d 730500. d 730500. d

     sm149     3.99E-03  4.38E-03  4.66E-03  4.85E-03  4.99E-03  4.99E-03
     eu151     1.87E-04  2.38E-04  2.87E-04  3.35E-04  3.82E-04  3.82E-04
     nd143     1.45E-04  1.81E-04  2.17E-04  2.52E-04  2.87E-04  2.87E-04
     rh103     6.89E-05  8.61E-05  1.03E-04  1.20E-04  1.38E-04  1.38E-04
     gd155     7.68E-05  9.08E-05  1.03E-04  1.14E-04  1.24E-04  1.24E-04
     xe131     4.67E-05  5.83E-05  6.98E-05  8.14E-05  9.29E-05  9.29E-05
     cs133     3.62E-05  4.52E-05  5.41E-05  6.31E-05  7.20E-05  7.20E-05
     cd113     4.58E-05  5.30E-05  5.91E-05  6.43E-05  6.87E-05  6.87E-05
     sm147     2.68E-05  3.34E-05  4.01E-05  4.67E-05  5.32E-05  5.32E-05
     tc 99     2.67E-05  3.33E-05  3.98E-05  4.64E-05  5.29E-05  5.29E-05
     gd157     3.41E-05  3.68E-05  3.88E-05  4.04E-05  4.18E-05  4.18E-05
     nd145     2.06E-05  2.56E-05  3.07E-05  3.57E-05  4.08E-05  4.08E-05
     sm151     3.97E-05  3.97E-05  3.98E-05  3.99E-05  4.00E-05  4.00E-05
     mo 95     1.43E-05  1.78E-05  2.13E-05  2.48E-05  2.83E-05  2.83E-05
     sm152     1.16E-05  1.47E-05  1.78E-05  2.09E-05  2.41E-05  2.41E-05
     kr 83     8.83E-06  1.10E-05  1.32E-05  1.53E-05  1.75E-05  1.75E-05
     cs135     8.15E-06  1.02E-05  1.22E-05  1.42E-05  1.62E-05  1.62E-05
     sm150     5.08E-06  7.26E-06  9.60E-06  1.21E-05  1.46E-05  1.46E-05
     ru101     6.37E-06  7.96E-06  9.53E-06  1.11E-05  1.27E-05  1.27E-05
     pr141     6.04E-06  7.54E-06  9.03E-06  1.05E-05  1.20E-05  1.20E-05
     eu153     5.58E-06  6.98E-06  8.39E-06  9.80E-06  1.12E-05  1.12E-05
     la139     4.94E-06  6.16E-06  7.38E-06  8.59E-06  9.80E-06  9.80E-06
     ba137     2.25E-06  2.84E-06  3.42E-06  4.00E-06  4.58E-06  4.58E-06
     pd105     2.17E-06  2.72E-06  3.28E-06  3.85E-06  4.42E-06  4.42E-06
     zr 93     2.02E-06  2.52E-06  3.01E-06  3.51E-06  4.00E-06  4.00E-06
      i129     1.54E-06  1.92E-06  2.31E-06  2.69E-06  3.08E-06  3.08E-06
     nd144     1.48E-06  1.85E-06  2.21E-06  2.58E-06  2.94E-06  2.94E-06
     ag109     1.04E-06  1.37E-06  1.72E-06  2.11E-06  2.52E-06  2.52E-06
```

xe135	2.28E-06	2.28E-06	2.28E-06	2.28E-06	2.28E-06	2.28E-06
mo 97	1.12E-06	1.40E-06	1.68E-06	1.95E-06	2.23E-06	2.23E-06
zr 91	5.26E-07	6.56E-07	7.85E-07	9.14E-07	1.04E-06	1.04E-06
y 89	5.04E-07	6.28E-07	7.51E-07	8.74E-07	9.97E-07	9.97E-07
ru102	4.57E-07	5.71E-07	6.85E-07	7.98E-07	9.11E-07	9.11E-07
ce142	4.09E-07	5.11E-07	6.12E-07	7.12E-07	8.13E-07	8.13E-07
nd148	3.96E-07	4.94E-07	5.92E-07	6.89E-07	7.87E-07	7.87E-07
pd108	3.18E-07	4.11E-07	5.09E-07	6.12E-07	7.20E-07	7.20E-07
nd146	3.31E-07	4.13E-07	4.95E-07	5.76E-07	6.57E-07	6.57E-07
ba138	2.82E-07	3.52E-07	4.22E-07	4.91E-07	5.61E-07	5.61E-07
in115	2.78E-07	3.47E-07	4.17E-07	4.88E-07	5.58E-07	5.58E-07
ce140	2.64E-07	3.30E-07	3.95E-07	4.60E-07	5.25E-07	5.25E-07
xe132	2.40E-07	3.00E-07	3.59E-07	4.19E-07	4.78E-07	4.78E-07
gd152	9.62E-08	1.57E-07	2.31E-07	3.20E-07	4.21E-07	4.21E-07
pd107	1.79E-07	2.29E-07	2.81E-07	3.36E-07	3.92E-07	3.92E-07
mo 98	1.66E-07	2.07E-07	2.49E-07	2.90E-07	3.30E-07	3.30E-07
mo100	1.60E-07	2.00E-07	2.39E-07	2.79E-07	3.18E-07	3.18E-07
xe134	1.56E-07	1.95E-07	2.34E-07	2.72E-07	3.11E-07	3.11E-07
pm147	2.71E-07	2.70E-07	2.70E-07	2.69E-07	2.69E-07	2.69E-07
zr 92	1.27E-07	1.58E-07	1.89E-07	2.20E-07	2.51E-07	2.51E-07
i127	1.06E-07	1.32E-07	1.59E-07	1.87E-07	2.14E-07	2.14E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 15
0 fraction of total absorption rate
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec
0 initial 456563. d 547875. d 639188. d 730500. d 730500. d

zr 96	1.02E-07	1.27E-07	1.52E-07	1.77E-07	2.02E-07	2.02E-07
ru104	9.97E-08	1.25E-07	1.50E-07	1.75E-07	2.01E-07	2.01E-07
nd150	8.82E-08	1.10E-07	1.32E-07	1.54E-07	1.76E-07	1.76E-07
eu155	1.66E-07	1.67E-07	1.69E-07	1.70E-07	1.72E-07	1.72E-07
xe136	8.46E-08	1.06E-07	1.26E-07	1.47E-07	1.68E-07	1.68E-07
br 81	6.38E-08	7.96E-08	9.53E-08	1.11E-07	1.27E-07	1.27E-07
rb 85	6.19E-08	7.72E-08	9.25E-08	1.08E-07	1.23E-07	1.23E-07
zr 94	5.42E-08	6.76E-08	8.09E-08	9.42E-08	1.07E-07	1.07E-07
eu152	4.88E-08	6.21E-08	7.48E-08	8.73E-08	9.94E-08	9.94E-08
zr 90	4.77E-08	6.00E-08	7.22E-08	8.44E-08	9.65E-08	9.65E-08
cd111	4.47E-08	5.69E-08	6.95E-08	8.25E-08	9.58E-08	9.58E-08
sm154	3.80E-08	4.76E-08	5.72E-08	6.69E-08	7.67E-08	7.67E-08
te130	3.84E-08	4.80E-08	5.75E-08	6.70E-08	7.66E-08	7.66E-08
rb 87	3.59E-08	4.48E-08	5.36E-08	6.24E-08	7.11E-08	7.11E-08
se 77	2.54E-08	3.16E-08	3.79E-08	4.42E-08	5.04E-08	5.04E-08
pd106	1.94E-08	2.45E-08	2.97E-08	3.50E-08	4.05E-08	4.05E-08
kr 84	1.71E-08	2.13E-08	2.55E-08	2.96E-08	3.38E-08	3.38E-08
ru 99	7.00E-09	1.09E-08	1.56E-08	2.11E-08	2.75E-08	2.75E-08
gd156	1.05E-08	1.41E-08	1.81E-08	2.23E-08	2.68E-08	2.68E-08
se 79	1.30E-08	1.62E-08	1.94E-08	2.26E-08	2.58E-08	2.58E-08
sb121	1.27E-08	1.59E-08	1.91E-08	2.23E-08	2.55E-08	2.55E-08
sb123	1.03E-08	1.29E-08	1.55E-08	1.81E-08	2.07E-08	2.07E-08
kr 86	9.39E-09	1.17E-08	1.40E-08	1.63E-08	1.86E-08	1.86E-08
te128	8.51E-09	1.06E-08	1.28E-08	1.49E-08	1.70E-08	1.70E-08
sr 90	1.68E-08	1.67E-08	1.67E-08	1.66E-08	1.65E-08	1.65E-08
dy161	6.70E-09	8.77E-09	1.10E-08	1.34E-08	1.59E-08	1.59E-08
gd154	3.76E-09	5.86E-09	8.43E-09	1.15E-08	1.50E-08	1.50E-08
se 80	6.07E-09	7.57E-09	9.07E-09	1.06E-08	1.21E-08	1.21E-08
te125	5.42E-09	6.79E-09	8.18E-09	9.57E-09	1.10E-08	1.10E-08
rh105	8.72E-09	8.80E-09	8.89E-09	8.99E-09	9.08E-09	9.08E-09
tb159	4.02E-09	5.13E-09	6.29E-09	7.49E-09	8.73E-09	8.73E-09
cd112	3.62E-09	4.56E-09	5.53E-09	6.50E-09	7.49E-09	7.49E-09
li 6	3.43E-09	4.27E-09	5.11E-09	5.94E-09	6.77E-09	6.77E-09
gd158	2.68E-09	3.60E-09	4.57E-09	5.58E-09	6.61E-09	6.61E-09

sn117	2.82E-09	3.53E-09	4.26E-09	4.99E-09	5.73E-09	5.73E-09
eu154	2.87E-09	3.56E-09	4.27E-09	4.99E-09	5.70E-09	5.70E-09
ru100	1.22E-09	1.89E-09	2.71E-09	3.66E-09	4.76E-09	4.76E-09
sn119	2.28E-09	2.86E-09	3.43E-09	4.01E-09	4.60E-09	4.60E-09
sn115	2.09E-09	2.61E-09	3.14E-09	3.67E-09	4.20E-09	4.20E-09
cd114	1.66E-09	2.17E-09	2.72E-09	3.29E-09	3.88E-09	3.88E-09
cs137	3.75E-09	3.74E-09	3.74E-09	3.73E-09	3.73E-09	3.73E-09
sr 88	1.73E-09	2.15E-09	2.58E-09	3.00E-09	3.42E-09	3.42E-09
nd142	8.30E-10	1.29E-09	1.86E-09	2.52E-09	3.28E-09	3.28E-09
ba134	8.20E-10	1.27E-09	1.82E-09	2.47E-09	3.22E-09	3.22E-09
pd110	1.39E-09	1.78E-09	2.19E-09	2.61E-09	3.04E-09	3.04E-09
sm148	7.64E-10	1.18E-09	1.69E-09	2.28E-09	2.97E-09	2.97E-09
dy164	1.06E-09	1.45E-09	1.89E-09	2.37E-09	2.90E-09	2.90E-09
dy162	1.04E-09	1.40E-09	1.80E-09	2.24E-09	2.72E-09	2.72E-09
ba135	6.56E-10	1.02E-09	1.47E-09	2.00E-09	2.61E-09	2.61E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 16
0 fraction of total absorption rate
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec
0 initial 456563. d 547875. d 639188. d 730500. d 730500. d

pr143	2.63E-09	2.63E-09	2.62E-09	2.61E-09	2.61E-09	2.61E-09
se 82	1.17E-09	1.46E-09	1.75E-09	2.04E-09	2.33E-09	2.33E-09
pd104	5.64E-10	8.77E-10	1.26E-09	1.71E-09	2.23E-09	2.23E-09
sn126	9.68E-10	1.22E-09	1.47E-09	1.72E-09	1.98E-09	1.98E-09
xe133	1.99E-09	1.98E-09	1.98E-09	1.98E-09	1.98E-09	1.98E-09
se 78	8.97E-10	1.12E-09	1.34E-09	1.57E-09	1.79E-09	1.79E-09
ce141	1.57E-09	1.57E-09	1.57E-09	1.56E-09	1.56E-09	1.56E-09
sn124	7.36E-10	9.22E-10	1.11E-09	1.30E-09	1.49E-09	1.49E-09
as 75	5.34E-10	6.66E-10	7.99E-10	9.30E-10	1.06E-09	1.06E-09
pm149	9.63E-10	9.62E-10	9.60E-10	9.59E-10	9.58E-10	9.58E-10
nd147	9.29E-10	9.27E-10	9.25E-10	9.23E-10	9.22E-10	9.22E-10
mo 96	2.53E-10	3.72E-10	5.13E-10	6.77E-10	8.62E-10	8.62E-10
ba136	3.58E-10	4.69E-10	5.88E-10	7.16E-10	8.53E-10	8.53E-10
in113	4.01E-10	5.04E-10	6.09E-10	7.14E-10	8.19E-10	8.19E-10
dy163	2.45E-10	3.34E-10	4.32E-10	5.42E-10	6.61E-10	6.61E-10
sn118	3.01E-10	3.77E-10	4.54E-10	5.30E-10	6.07E-10	6.07E-10
kr 82	2.32E-10	3.13E-10	4.02E-10	5.00E-10	6.06E-10	6.06E-10
ce144	5.93E-10	5.92E-10	5.90E-10	5.88E-10	5.87E-10	5.87E-10
kr 85	5.62E-10	5.61E-10	5.59E-10	5.57E-10	5.55E-10	5.55E-10
xe130	1.83E-10	2.55E-10	3.38E-10	4.32E-10	5.36E-10	5.36E-10
cs134	2.74E-10	3.36E-10	4.02E-10	4.68E-10	5.34E-10	5.34E-10
cd116	2.54E-10	3.18E-10	3.82E-10	4.47E-10	5.11E-10	5.11E-10
sn122	2.52E-10	3.15E-10	3.79E-10	4.43E-10	5.07E-10	5.07E-10
nb 93	1.03E-10	1.62E-10	2.34E-10	3.18E-10	4.15E-10	4.15E-10
cd110	8.86E-11	1.43E-10	2.13E-10	2.99E-10	4.03E-10	4.03E-10
sn120	1.88E-10	2.36E-10	2.83E-10	3.31E-10	3.79E-10	3.79E-10
ru103	3.60E-10	3.60E-10	3.61E-10	3.62E-10	3.63E-10	3.63E-10
ge 73	1.46E-10	1.82E-10	2.19E-10	2.55E-10	2.92E-10	2.92E-10
br 79	5.34E-11	8.33E-11	1.20E-10	1.63E-10	2.12E-10	2.12E-10
zr 95	1.65E-10	1.64E-10	1.64E-10	1.63E-10	1.63E-10	1.63E-10
nb 95	1.51E-10	1.51E-10	1.51E-10	1.50E-10	1.50E-10	1.50E-10
y 91	1.40E-10	1.40E-10	1.39E-10	1.39E-10	1.38E-10	1.38E-10
ag107	3.06E-11	4.87E-11	7.13E-11	9.86E-11	1.31E-10	1.31E-10
te126	4.42E-11	6.10E-11	8.01E-11	1.02E-10	1.26E-10	1.26E-10
xe129	3.04E-11	4.74E-11	6.82E-11	9.28E-11	1.21E-10	1.21E-10
pm151	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10
ge 76	5.27E-11	6.57E-11	7.87E-11	9.17E-11	1.05E-10	1.05E-10
gd160	3.89E-11	5.01E-11	6.19E-11	7.43E-11	8.73E-11	8.73E-11
ho165	1.74E-11	2.38E-11	3.11E-11	3.92E-11	4.82E-11	4.82E-11
ba140	4.68E-11	4.67E-11	4.66E-11	4.65E-11	4.64E-11	4.64E-11

eu156	3.71E-11	3.77E-11	3.84E-11	3.91E-11	3.97E-11	3.97E-11
sm153	3.89E-11	3.91E-11	3.93E-11	3.95E-11	3.97E-11	3.97E-11
ru106	2.83E-11	2.88E-11	2.95E-11	3.01E-11	3.07E-11	3.07E-11
sr 89	3.00E-11	2.99E-11	2.98E-11	2.97E-11	2.96E-11	2.96E-11
kr 87	2.24E-11	2.23E-11	2.23E-11	2.22E-11	2.21E-11	2.21E-11
dy160	4.34E-12	6.76E-12	9.75E-12	1.33E-11	1.75E-11	1.75E-11
ce143	1.72E-11	1.72E-11	1.72E-11	1.71E-11	1.71E-11	1.71E-11
sb125	1.54E-11	1.55E-11	1.56E-11	1.57E-11	1.58E-11	1.58E-11
y 90	1.59E-11	1.59E-11	1.58E-11	1.58E-11	1.57E-11	1.57E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 17
0 fraction of total absorption rate
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec
0 initial 456563. d 547875. d 639188. d 730500. d 730500. d

te124	6.90E-12	8.86E-12	1.09E-11	1.30E-11	1.53E-11	1.53E-11
la140	1.52E-11	1.52E-11	1.52E-11	1.51E-11	1.51E-11	1.51E-11
mo 99	1.30E-11	1.30E-11	1.30E-11	1.30E-11	1.30E-11	1.30E-11
xe128	3.27E-12	5.00E-12	7.11E-12	9.59E-12	1.24E-11	1.24E-11
sr 87	6.13E-12	7.67E-12	9.23E-12	1.08E-11	1.23E-11	1.23E-11
pm148m	9.70E-12	9.57E-12	9.57E-12	9.57E-12	9.57E-12	9.57E-12
sr 86	3.17E-12	4.41E-12	5.81E-12	7.40E-12	9.15E-12	9.15E-12
te127m	7.63E-12	7.69E-12	7.74E-12	7.80E-12	7.85E-12	7.85E-12
nb 94	3.52E-12	4.42E-12	5.32E-12	6.24E-12	7.17E-12	7.17E-12
i131	6.74E-12	6.73E-12	6.73E-12	6.73E-12	6.72E-12	6.72E-12
ge 74	2.94E-12	3.67E-12	4.40E-12	5.13E-12	5.86E-12	5.86E-12
sn116	1.19E-12	1.86E-12	2.67E-12	3.63E-12	4.73E-12	4.73E-12
ge 72	2.00E-12	2.50E-12	3.01E-12	3.53E-12	4.04E-12	4.04E-12
se 76	1.49E-12	1.97E-12	2.49E-12	3.06E-12	3.66E-12	3.66E-12
er166	7.45E-13	1.07E-12	1.45E-12	1.89E-12	2.38E-12	2.38E-12
te122	5.05E-13	7.82E-13	1.12E-12	1.52E-12	1.98E-12	1.98E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.81E-12	1.81E-12	1.81E-12
ag111	3.73E-13	3.85E-13	3.97E-13	4.09E-13	4.22E-13	4.22E-13
pm148	3.79E-13	3.74E-13	3.73E-13	3.72E-13	3.72E-13	3.72E-13
eu157	3.33E-13	3.40E-13	3.48E-13	3.57E-13	3.65E-13	3.65E-13
cd115m	2.42E-13	2.43E-13	2.44E-13	2.45E-13	2.46E-13	2.46E-13
kr 80	9.78E-14	1.28E-13	1.62E-13	1.99E-13	2.40E-13	2.40E-13
cs136	8.34E-14	9.00E-14	9.66E-14	1.03E-13	1.10E-13	1.10E-13
er167	1.08E-14	1.76E-14	2.65E-14	3.78E-14	5.17E-14	5.17E-14
te123	9.74E-15	1.39E-14	1.90E-14	2.52E-14	3.26E-14	3.26E-14
ru105	3.12E-14	3.15E-14	3.19E-14	3.22E-14	3.25E-14	3.25E-14
sn125	2.97E-14	2.98E-14	3.00E-14	3.01E-14	3.02E-14	3.02E-14
tb160	1.14E-14	1.43E-14	1.74E-14	2.06E-14	2.38E-14	2.38E-14
pr142	6.86E-15	8.53E-15	1.02E-14	1.19E-14	1.35E-14	1.35E-14
be 9	6.70E-15	8.36E-15	1.00E-14	1.17E-14	1.33E-14	1.33E-14
rb 88	1.26E-14	1.26E-14	1.25E-14	1.25E-14	1.24E-14	1.24E-14
sn123	1.02E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14
i135	1.00E-14	9.98E-15	9.97E-15	9.95E-15	9.94E-15	9.94E-15
te132	9.47E-15	9.46E-15	9.45E-15	9.44E-15	9.44E-15	9.44E-15
sb126	4.73E-15	5.16E-15	5.59E-15	6.02E-15	6.45E-15	6.45E-15
te134	5.74E-15	5.72E-15	5.71E-15	5.69E-15	5.68E-15	5.68E-15
li 7	2.66E-15	3.32E-15	3.98E-15	4.63E-15	5.29E-15	5.29E-15
i130	1.97E-15	2.29E-15	2.59E-15	2.90E-15	3.21E-15	3.21E-15
sb124	2.62E-15	2.75E-15	2.88E-15	3.00E-15	3.13E-15	3.13E-15
in117m	2.17E-15	2.19E-15	2.21E-15	2.23E-15	2.25E-15	2.25E-15
cd108	3.76E-16	6.46E-16	1.03E-15	1.54E-15	2.20E-15	2.20E-15
sn114	2.86E-16	4.48E-16	6.46E-16	8.81E-16	1.15E-15	1.15E-15
rb 86	6.47E-16	7.44E-16	8.42E-16	9.40E-16	1.04E-15	1.04E-15
dy165	4.85E-16	5.51E-16	6.19E-16	6.87E-16	7.54E-16	7.54E-16
in117	6.41E-16	6.47E-16	6.54E-16	6.60E-16	6.67E-16	6.67E-16
cd118	1.22E-16	1.23E-16	1.23E-16	1.24E-16	1.25E-16	1.25E-16

	cs134m	5.11E-17	6.29E-17	7.52E-17	8.76E-17	9.98E-17	9.98E-17
	ge 75	8.51E-17	8.50E-17	8.49E-17	8.48E-17	8.47E-17	8.47E-17
	in119m	3.04E-17	3.05E-17	3.06E-17	3.08E-17	3.09E-17	3.09E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 18
0 fraction of total absorption rate
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec
0 initial 456563. d 547875. d 639188. d 730500. d 730500. d

cd109	1.91E-18	2.31E-18	2.72E-18	3.12E-18	3.52E-18	3.52E-18
ag110	1.38E-18	1.79E-18	2.25E-18	2.75E-18	3.27E-18	3.27E-18
in119	2.40E-18	2.41E-18	2.43E-18	2.44E-18	2.46E-18	2.46E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 19
power= 4.000E-03mw, burnup=2.9220E+03mwd, flux= 2.80E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	456563. d	547875. d	639188. d	730500. d	730500. d
h	1	8.84E-05	1.10E-04	1.32E-04	1.53E-04	1.75E-04	1.75E-04
h	2	2.62E-07	3.27E-07	3.91E-07	4.56E-07	5.20E-07	5.20E-07
h	3	3.69E-11	3.71E-11	3.77E-11	3.83E-11	3.89E-11	3.89E-11
h	4	1.49E-34	1.49E-34	1.52E-34	1.54E-34	1.56E-34	1.56E-34
he	3	1.95E-09	2.42E-09	2.87E-09	3.32E-09	3.76E-09	3.76E-09
he	4	1.46E-05	1.82E-05	2.18E-05	2.54E-05	2.90E-05	2.90E-05
he	6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne	20	1.76E-06	2.19E-06	2.62E-06	3.05E-06	3.48E-06	3.48E-06
ne	21	6.33E-11	9.74E-11	1.38E-10	1.85E-10	2.38E-10	2.38E-10
ne	22	1.16E-08	1.44E-08	1.73E-08	2.01E-08	2.30E-08	2.30E-08
ne	23	7.30E-15	7.17E-15	7.17E-15	7.16E-15	7.15E-15	7.15E-15
na	22	4.29E-11	4.22E-11	4.22E-11	4.21E-11	4.21E-11	4.21E-11
na	23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na	24	3.64E-08	3.08E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08
na	24m	5.97E-15	5.05E-15	5.05E-15	5.04E-15	5.04E-15	5.04E-15
na	25	2.40E-25	3.45E-25	4.74E-25	6.22E-25	7.88E-25	7.88E-25
mg	24	1.51E-02	1.83E-02	2.15E-02	2.47E-02	2.78E-02	2.78E-02
mg	25	7.96E-09	1.18E-08	1.62E-08	2.13E-08	2.70E-08	2.70E-08
mg	26	2.62E-07	3.27E-07	3.91E-07	4.56E-07	5.20E-07	5.20E-07
mg	27	2.18E-12	2.14E-12	2.14E-12	2.14E-12	2.13E-12	2.13E-12
mg	28	4.40E-24	4.33E-24	4.32E-24	4.31E-24	4.31E-24	4.31E-24
al	27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al	28	2.70E-10	2.28E-10	2.28E-10	2.28E-10	2.27E-10	2.27E-10
al	29	1.52E-23	2.29E-23	3.26E-23	4.38E-23	5.65E-23	5.65E-23
al	30	2.78E-34	5.28E-34	9.06E-34	1.43E-33	2.11E-33	2.11E-33
si	28	4.40E-02	5.32E-02	6.25E-02	7.18E-02	8.10E-02	8.10E-02
si	29	5.62E-08	8.73E-08	1.24E-07	1.67E-07	2.16E-07	2.16E-07
si	30	7.71E-14	1.50E-13	2.59E-13	4.08E-13	6.04E-13	6.04E-13
si	31	5.50E-26	1.07E-25	1.84E-25	2.90E-25	4.29E-25	4.29E-25
si	32	5.14E-32	1.12E-31	2.07E-31	3.46E-31	5.34E-31	5.34E-31
totals		5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux			2.80E+08	2.80E+08	2.80E+08	2.80E+08	2.79E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 20
power= 4.000E-03mw, burnup=2.9220E+03mwd, flux= 2.80E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	456563. d	547875. d	639188. d	730500. d	730500. d
he	4	2.89E-01	3.89E-01	4.98E-01	6.16E-01	7.42E-01	7.42E-01
pb206		1.47E-05	2.82E-05	4.78E-05	7.45E-05	1.09E-04	1.09E-04
pb207		7.38E-06	1.16E-05	1.68E-05	2.30E-05	3.01E-05	3.01E-05
pb208		1.24E-06	1.92E-06	2.76E-06	3.74E-06	4.87E-06	4.87E-06
pb209		1.35E-12	2.09E-12	2.99E-12	4.04E-12	5.23E-12	5.23E-12

pb210	1.42E-06	2.15E-06	3.00E-06	3.96E-06	5.01E-06	5.01E-06
pb211	1.51E-12	1.89E-12	2.27E-12	2.65E-12	3.03E-12	3.03E-12
pb212	4.25E-12	5.28E-12	6.32E-12	7.36E-12	8.40E-12	8.40E-12
pb214	3.25E-12	4.92E-12	6.86E-12	9.04E-12	1.15E-11	1.15E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	8.49E-07	1.65E-06	2.83E-06	4.46E-06	6.62E-06	6.62E-06
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	8.76E-10	1.32E-09	1.85E-09	2.44E-09	3.08E-09	3.08E-09
bi211	8.96E-14	1.12E-13	1.35E-13	1.57E-13	1.80E-13	1.80E-13
bi212	4.03E-13	5.01E-13	6.00E-13	6.99E-13	7.97E-13	7.97E-13
bi213	3.16E-13	4.89E-13	6.99E-13	9.43E-13	1.22E-12	1.22E-12
bi214	2.42E-12	3.65E-12	5.09E-12	6.72E-12	8.50E-12	8.50E-12
po210	2.42E-08	3.66E-08	5.10E-08	6.73E-08	8.52E-08	8.52E-08
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.90E-19	1.24E-18	1.49E-18	1.74E-18	1.99E-18	1.99E-18
po212	2.12E-23	2.63E-23	3.15E-23	3.67E-23	4.19E-23	4.19E-23
po213	4.75E-22	7.35E-22	1.05E-21	1.42E-21	1.84E-21	1.84E-21
po214	3.32E-19	5.02E-19	7.01E-19	9.24E-19	1.17E-18	1.17E-18
po215	1.24E-18	1.55E-18	1.87E-18	2.18E-18	2.49E-18	2.49E-18
po216	1.61E-17	2.00E-17	2.39E-17	2.79E-17	3.18E-17	3.18E-17
po218	3.76E-13	5.69E-13	7.93E-13	1.05E-12	1.32E-12	1.32E-12
rn218	6.49E-29	7.85E-29	9.39E-29	1.09E-28	1.24E-28	1.24E-28
rn219	2.76E-15	3.46E-15	4.15E-15	4.84E-15	5.54E-15	5.54E-15
rn220	6.17E-15	7.67E-15	9.18E-15	1.07E-14	1.22E-14	1.22E-14
rn222	6.69E-10	1.01E-09	1.41E-09	1.86E-09	2.35E-09	2.35E-09
ra222	7.04E-26	8.52E-26	1.02E-25	1.19E-25	1.35E-25	1.35E-25
ra223	6.90E-10	8.62E-10	1.04E-09	1.21E-09	1.38E-09	1.38E-09
ra224	3.51E-11	4.36E-11	5.22E-11	6.08E-11	6.94E-11	6.94E-11
ra225	1.48E-10	2.29E-10	3.27E-10	4.41E-10	5.71E-10	5.71E-10
ra226	1.02E-04	1.54E-04	2.15E-04	2.84E-04	3.60E-04	3.60E-04
ra228	2.12E-12	2.65E-12	3.18E-12	3.72E-12	4.25E-12	4.25E-12
ac225	9.98E-11	1.55E-10	2.21E-10	2.98E-10	3.86E-10	3.86E-10
ac227	4.80E-07	6.00E-07	7.20E-07	8.41E-07	9.61E-07	9.61E-07
ac228	2.59E-16	3.23E-16	3.88E-16	4.54E-16	5.19E-16	5.19E-16
th226	3.44E-24	4.16E-24	4.97E-24	5.78E-24	6.59E-24	6.59E-24
th227	1.11E-09	1.39E-09	1.67E-09	1.95E-09	2.23E-09	2.23E-09
th228	6.70E-09	8.33E-09	9.97E-09	1.16E-08	1.32E-08	1.32E-08
th229	2.87E-05	4.45E-05	6.35E-05	8.57E-05	1.11E-04	1.11E-04
th230	2.56E-02	3.20E-02	3.84E-02	4.48E-02	5.13E-02	5.13E-02
th231	3.11E-09	3.13E-09	3.15E-09	3.17E-09	3.20E-09	3.20E-09
th232	5.18E-03	6.48E-03	7.78E-03	9.08E-03	1.04E-02	1.04E-02
th233	4.78E-14	5.94E-14	7.13E-14	8.32E-14	9.50E-14	9.50E-14
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	7.21E-04	9.02E-04	1.08E-03	1.26E-03	1.45E-03	1.45E-03
pa232	1.23E-11	1.54E-11	1.85E-11	2.16E-11	2.46E-11	2.46E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 21
power= 4.000E-03mw, burnup=2.9220E+03mwd, flux= 2.80E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 456563. d	547875. d	639188. d	730500. d	730500. d	
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	3.33E-21	4.03E-21	4.82E-21	5.61E-21	6.39E-21	6.39E-21
u231	1.08E-17	1.32E-17	1.58E-17	1.83E-17	2.09E-17	2.09E-17
u232	2.44E-07	3.03E-07	3.63E-07	4.23E-07	4.82E-07	4.82E-07
u233	1.35E-02	1.69E-02	2.02E-02	2.36E-02	2.69E-02	2.69E-02
u234	9.18E+00	9.21E+00	9.25E+00	9.28E+00	9.32E+00	9.32E+00

u235	7.23E+02	7.21E+02	7.19E+02	7.18E+02	7.16E+02	7.16E+02
u236	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.77E+02	1.77E+02
u237	3.26E-06	3.19E-06	3.19E-06	3.19E-06	3.19E-06	3.19E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	3.28E-07	3.22E-07	3.22E-07	3.22E-07	3.21E-07	3.21E-07
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	9.08E-12	8.87E-12	8.86E-12	8.84E-12	8.83E-12	8.83E-12
np236m	2.16E-12	2.11E-12	2.11E-12	2.10E-12	2.10E-12	2.10E-12
np236	2.05E-07	2.55E-07	3.04E-07	3.53E-07	4.03E-07	4.03E-07
np237	4.21E+01	4.20E+01	4.20E+01	4.20E+01	4.20E+01	4.20E+01
np238	1.57E-06	1.56E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06
np239	4.74E-05	4.66E-05	4.65E-05	4.65E-05	4.64E-05	4.64E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	9.69E-15	9.47E-15	9.45E-15	9.43E-15	9.41E-15	9.41E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.17E-09	1.14E-09	1.14E-09	1.14E-09	1.14E-09	1.14E-09
pu237	2.87E-13	2.89E-13	2.98E-13	3.07E-13	3.16E-13	3.16E-13
pu238	2.38E-02	2.36E-02	2.35E-02	2.35E-02	2.34E-02	2.34E-02
pu239	4.97E+00	6.14E+00	7.29E+00	8.43E+00	9.55E+00	9.55E+00
pu240	2.36E-02	3.62E-02	5.12E-02	6.85E-02	8.79E-02	8.79E-02
pu241	1.01E-05	1.51E-05	2.14E-05	2.86E-05	3.67E-05	3.67E-05
pu242	1.04E-07	2.27E-07	4.27E-07	7.25E-07	1.14E-06	1.14E-06
pu243	2.28E-16	4.88E-16	9.17E-16	1.56E-15	2.45E-15	2.45E-15
pu244	2.93E-33	2.38E-32	1.29E-31	5.32E-31	1.80E-30	1.80E-30
pu245	.00E+00	.00E+00	.00E+00	.00E+00	7.64E-41	7.64E-41
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	3.18E-20	5.50E-20	8.68E-20	1.26E-19	1.74E-19	1.74E-19
am240	1.46E-17	2.52E-17	3.97E-17	5.78E-17	7.95E-17	7.95E-17
am241	1.10E-04	1.95E-04	3.08E-04	4.49E-04	6.18E-04	6.18E-04
am242m	3.57E-08	6.90E-08	1.16E-07	1.76E-07	2.51E-07	2.51E-07
am242	4.32E-12	7.68E-12	1.22E-11	1.79E-11	2.47E-11	2.47E-11
am243	2.90E-10	7.36E-10	1.54E-09	2.86E-09	4.82E-09	4.82E-09
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	2.28E-18	5.68E-18	1.19E-17	2.20E-17	3.71E-17	3.71E-17
am245	.00E+00	.00E+00	.00E+00	.00E+00	1.49E-41	1.49E-41
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	2.65E-22	4.59E-22	7.28E-22	1.07E-21	1.47E-21	1.47E-21
cm242	8.73E-10	1.55E-09	2.46E-09	3.61E-09	4.98E-09	4.98E-09
cm243	3.36E-19	7.28E-19	1.29E-18	2.05E-18	3.00E-18	3.00E-18
cm244	3.58E-14	8.92E-14	1.87E-13	3.45E-13	5.83E-13	5.83E-13

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 22
power= 4.000E-03mw, burnup=2.9220E+03mwd, flux= 2.80E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 456563. d	547875. d	639188. d	730500. d	730500. d	
cm245	6.91E-18	2.19E-17	5.57E-17	1.22E-16	2.36E-16	2.36E-16
cm246	6.36E-21	2.57E-20	7.88E-20	2.00E-19	4.46E-19	4.46E-19
cm247	9.86E-26	4.97E-25	1.84E-24	5.48E-24	1.40E-23	1.40E-23
cm248	1.49E-29	9.49E-29	4.24E-28	1.49E-27	4.38E-27	4.38E-27
cm249	4.82E-40	3.03E-39	1.35E-38	4.74E-38	1.39E-37	1.39E-37
cm250	1.40E-45	1.54E-44	8.83E-44	3.69E-43	1.25E-42	1.25E-42
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.80E+08	2.80E+08	2.80E+08	2.80E+08	2.79E-07

0 1q array has 20 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.

```
0       4q array has      1 entries.
0      54q array has     12 entries.
1library information...

          cross-section data taken from position number  3 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *          made from modified card-image origen-s libraries of scale 4.2       *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *        see information above this box (if present) for later updates         *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                 8/28/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
                        879    number of fission product nuclides
0                      7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
0
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                                    page   23
         power=    .00mw, burnup=   4383.mwd, flux= 2.71E+08n/cm**2-sec
0                                        basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial     821813. d     913125. d     ******* d     ******* d     ******* d
     productions   1.133886E+06  1.135393E+06  1.136859E+06  1.138285E+06  1.139671E+06  1.139671E+06
     absorptions   9.323096E+05  9.334989E+05  9.346394E+05  9.357402E+05  9.368058E+05  9.368058E+05
     k infinity    1.216212E+00  1.216277E+00  1.216361E+00  1.216455E+00  1.216550E+00  1.216550E+00
0                    initial     821813. d     913125. d     ******* d     ******* d     ******* d
     actinide
```

	absorptions	9.229046E+05	9.238316E+05	9.247386E+05	9.256261E+05	9.264941E+05	9.264941E+05
	non-actinide abs. fracs.	1.008779E-02	1.035595E-02	1.059318E-02	1.080871E-02	1.100731E-02	1.100731E-02

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 24
0 fraction of total absorption rate
power= .00mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 821813. d 913125. d ******* d ******* d ******* d

sm149	5.01E-03	5.11E-03	5.18E-03	5.23E-03	5.27E-03	5.27E-03
eu151	3.83E-04	4.29E-04	4.74E-04	5.17E-04	5.60E-04	5.60E-04
nd143	2.88E-04	3.24E-04	3.59E-04	3.94E-04	4.29E-04	4.29E-04
rh103	1.38E-04	1.55E-04	1.72E-04	1.89E-04	2.06E-04	2.06E-04
gd155	1.24E-04	1.33E-04	1.41E-04	1.48E-04	1.54E-04	1.54E-04
xe131	9.27E-05	1.04E-04	1.16E-04	1.27E-04	1.38E-04	1.38E-04
cs133	7.18E-05	8.07E-05	8.95E-05	9.83E-05	1.07E-04	1.07E-04
cd113	6.89E-05	7.27E-05	7.59E-05	7.87E-05	8.11E-05	8.11E-05
sm147	5.31E-05	5.96E-05	6.62E-05	7.27E-05	7.92E-05	7.92E-05
tc 99	5.27E-05	5.92E-05	6.57E-05	7.21E-05	7.85E-05	7.85E-05
nd145	4.08E-05	4.58E-05	5.08E-05	5.57E-05	6.07E-05	6.07E-05
gd157	4.20E-05	4.32E-05	4.43E-05	4.53E-05	4.64E-05	4.64E-05
mo 95	2.83E-05	3.18E-05	3.52E-05	3.87E-05	4.22E-05	4.22E-05
sm151	4.02E-05	4.02E-05	4.03E-05	4.04E-05	4.05E-05	4.05E-05
sm152	2.40E-05	2.73E-05	3.06E-05	3.39E-05	3.73E-05	3.73E-05
kr 83	1.75E-05	1.97E-05	2.18E-05	2.39E-05	2.60E-05	2.60E-05
sm150	1.46E-05	1.72E-05	1.99E-05	2.25E-05	2.52E-05	2.52E-05
cs135	1.62E-05	1.82E-05	2.02E-05	2.22E-05	2.42E-05	2.42E-05
ru101	1.26E-05	1.42E-05	1.57E-05	1.73E-05	1.89E-05	1.89E-05
pr141	1.20E-05	1.35E-05	1.50E-05	1.65E-05	1.79E-05	1.79E-05
eu153	1.12E-05	1.26E-05	1.41E-05	1.55E-05	1.69E-05	1.69E-05
la139	9.82E-06	1.10E-05	1.22E-05	1.34E-05	1.46E-05	1.46E-05
ba137	4.60E-06	5.18E-06	5.76E-06	6.34E-06	6.92E-06	6.92E-06
pd105	4.41E-06	4.99E-06	5.57E-06	6.15E-06	6.74E-06	6.74E-06
zr 93	3.99E-06	4.48E-06	4.97E-06	5.46E-06	5.94E-06	5.94E-06
i129	3.09E-06	3.47E-06	3.86E-06	4.25E-06	4.63E-06	4.63E-06
nd144	2.95E-06	3.32E-06	3.68E-06	4.05E-06	4.41E-06	4.41E-06
ag109	2.51E-06	2.94E-06	3.40E-06	3.88E-06	4.39E-06	4.39E-06
mo 97	2.23E-06	2.51E-06	2.78E-06	3.05E-06	3.33E-06	3.33E-06
xe135	2.28E-06	2.28E-06	2.28E-06	2.28E-06	2.28E-06	2.28E-06
zr 91	1.04E-06	1.17E-06	1.30E-06	1.43E-06	1.55E-06	1.55E-06
y 89	9.99E-07	1.12E-06	1.24E-06	1.36E-06	1.49E-06	1.49E-06
ru102	9.13E-07	1.03E-06	1.14E-06	1.25E-06	1.37E-06	1.37E-06
ce142	8.16E-07	9.16E-07	1.02E-06	1.12E-06	1.22E-06	1.22E-06
pd108	7.18E-07	8.30E-07	9.48E-07	1.07E-06	1.20E-06	1.20E-06
nd148	7.88E-07	8.85E-07	9.82E-07	1.08E-06	1.18E-06	1.18E-06
nd146	6.59E-07	7.40E-07	8.21E-07	9.02E-07	9.83E-07	9.83E-07
gd152	4.23E-07	5.38E-07	6.66E-07	8.06E-07	9.58E-07	9.58E-07
in115	5.58E-07	6.29E-07	7.00E-07	7.71E-07	8.42E-07	8.42E-07
ba138	5.62E-07	6.32E-07	7.01E-07	7.70E-07	8.39E-07	8.39E-07
ce140	5.27E-07	5.92E-07	6.56E-07	7.21E-07	7.86E-07	7.86E-07
xe132	4.78E-07	5.37E-07	5.97E-07	6.56E-07	7.15E-07	7.15E-07
pd107	3.93E-07	4.52E-07	5.12E-07	5.75E-07	6.40E-07	6.40E-07
mo 98	3.29E-07	3.70E-07	4.11E-07	4.51E-07	4.92E-07	4.92E-07
mo100	3.18E-07	3.57E-07	3.96E-07	4.36E-07	4.75E-07	4.75E-07
xe134	3.11E-07	3.50E-07	3.88E-07	4.26E-07	4.65E-07	4.65E-07
zr 92	2.51E-07	2.82E-07	3.13E-07	3.44E-07	3.74E-07	3.74E-07
i127	2.14E-07	2.41E-07	2.69E-07	2.97E-07	3.25E-07	3.25E-07
ru104	2.01E-07	2.26E-07	2.52E-07	2.78E-07	3.03E-07	3.03E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 25
0 fraction of total absorption rate
power= .00mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec

0 initial 821813. d 913125. d ******* d ******* d *******.d

zr 96	2.01E-07	2.25E-07	2.50E-07	2.74E-07	2.99E-07	2.99E-07
pm147	2.68E-07	2.68E-07	2.67E-07	2.67E-07	2.66E-07	2.66E-07
nd150	1.76E-07	1.98E-07	2.20E-07	2.41E-07	2.63E-07	2.63E-07
xe136	1.69E-07	1.89E-07	2.10E-07	2.31E-07	2.52E-07	2.52E-07
br 81	1.27E-07	1.42E-07	1.58E-07	1.73E-07	1.89E-07	1.89E-07
rb 85	1.23E-07	1.38E-07	1.53E-07	1.68E-07	1.83E-07	1.83E-07
eu155	1.72E-07	1.73E-07	1.75E-07	1.76E-07	1.78E-07	1.78E-07
zr 94	1.07E-07	1.20E-07	1.34E-07	1.47E-07	1.60E-07	1.60E-07
cd111	9.61E-08	1.10E-07	1.24E-07	1.38E-07	1.53E-07	1.53E-07
eu152	9.97E-08	1.12E-07	1.23E-07	1.34E-07	1.45E-07	1.45E-07
zr 90	9.66E-08	1.09E-07	1.21E-07	1.33E-07	1.45E-07	1.45E-07
sm154	7.68E-08	8.66E-08	9.65E-08	1.06E-07	1.16E-07	1.16E-07
te130	7.68E-08	8.63E-08	9.58E-08	1.05E-07	1.15E-07	1.15E-07
rb 87	7.11E-08	7.98E-08	8.84E-08	9.71E-08	1.06E-07	1.06E-07
se 77	5.05E-08	5.68E-08	6.30E-08	6.92E-08	7.54E-08	7.54E-08
pd106	4.04E-08	4.59E-08	5.15E-08	5.73E-08	6.31E-08	6.31E-08
ru 99	2.75E-08	3.47E-08	4.27E-08	5.15E-08	6.12E-08	6.12E-08
kr 84	3.37E-08	3.79E-08	4.20E-08	4.61E-08	5.02E-08	5.02E-08
gd156	2.67E-08	3.14E-08	3.63E-08	4.14E-08	4.66E-08	4.66E-08
se 79	2.59E-08	2.91E-08	3.23E-08	3.55E-08	3.87E-08	3.87E-08
sb121	2.55E-08	2.87E-08	3.19E-08	3.52E-08	3.84E-08	3.84E-08
gd154	1.50E-08	1.90E-08	2.34E-08	2.83E-08	3.37E-08	3.37E-08
sb123	2.06E-08	2.33E-08	2.59E-08	2.85E-08	3.11E-08	3.11E-08
kr 86	1.86E-08	2.09E-08	2.32E-08	2.55E-08	2.77E-08	2.77E-08
dy161	1.59E-08	1.86E-08	2.14E-08	2.44E-08	2.75E-08	2.75E-08
te128	1.70E-08	1.92E-08	2.13E-08	2.35E-08	2.56E-08	2.56E-08
se 80	1.21E-08	1.36E-08	1.51E-08	1.66E-08	1.80E-08	1.80E-08
te125	1.10E-08	1.24E-08	1.38E-08	1.52E-08	1.67E-08	1.67E-08
sr 90	1.66E-08	1.65E-08	1.65E-08	1.64E-08	1.64E-08	1.64E-08
tb159	8.73E-09	1.00E-08	1.13E-08	1.27E-08	1.41E-08	1.41E-08
cd112	7.51E-09	8.52E-09	9.54E-09	1.06E-08	1.16E-08	1.16E-08
gd158	6.61E-09	7.67E-09	8.77E-09	9.89E-09	1.10E-08	1.10E-08
ru100	4.78E-09	6.02E-09	7.40E-09	8.92E-09	1.06E-08	1.06E-08
li 6	6.79E-09	7.62E-09	8.44E-09	9.26E-09	1.01E-08	1.01E-08
rh105	9.10E-09	9.19E-09	9.27E-09	9.36E-09	9.45E-09	9.45E-09
sn117	5.74E-09	6.49E-09	7.24E-09	8.00E-09	8.77E-09	8.77E-09
eu154	5.71E-09	6.41E-09	7.13E-09	7.85E-09	8.57E-09	8.57E-09
nd142	3.29E-09	4.16E-09	5.12E-09	6.19E-09	7.35E-09	7.35E-09
ba134	3.22E-09	4.06E-09	4.99E-09	6.02E-09	7.15E-09	7.15E-09
sn119	4.61E-09	5.20E-09	5.78E-09	6.37E-09	6.97E-09	6.97E-09
sm148	2.97E-09	3.74E-09	4.60E-09	5.55E-09	6.58E-09	6.58E-09
cd114	3.87E-09	4.48E-09	5.10E-09	5.74E-09	6.39E-09	6.39E-09
sn115	4.22E-09	4.75E-09	5.29E-09	5.83E-09	6.38E-09	6.38E-09
ba135	2.61E-09	3.29E-09	4.06E-09	4.91E-09	5.84E-09	5.84E-09
dy164	2.91E-09	3.48E-09	4.10E-09	4.75E-09	5.45E-09	5.45E-09
sr 88	3.43E-09	3.85E-09	4.26E-09	4.68E-09	5.09E-09	5.09E-09
dy162	2.72E-09	3.24E-09	3.79E-09	4.37E-09	5.00E-09	5.00E-09
pd104	2.22E-09	2.80E-09	3.46E-09	4.18E-09	4.96E-09	4.96E-09
pd110	3.04E-09	3.49E-09	3.95E-09	4.43E-09	4.92E-09	4.92E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 26

0 fraction of total absorption rate

power= 100mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec

0 initial 821813. d 913125. d ******* d ******* d *******.d

cs137	3.73E-09	3.72E-09	3.72E-09	3.71E-09	3.71E-09	3.71E-09
se 82	2.33E-09	2.62E-09	2.90E-09	3.19E-09	3.47E-09	3.47E-09
sn126	1.98E-09	2.24E-09	2.50E-09	2.77E-09	3.03E-09	3.03E-09
se 78	1.79E-09	2.01E-09	2.23E-09	2.45E-09	2.68E-09	2.68E-09

pr143	2.61E-09	2.60E-09	2.60E-09	2.59E-09	2.59E-09	2.59E-09
sn124	1.48E-09	1.67E-09	1.86E-09	2.05E-09	2.24E-09	2.24E-09
xe133	1.98E-09	1.98E-09	1.98E-09	1.97E-09	1.97E-09	1.97E-09
mo 96	8.61E-10	1.07E-09	1.30E-09	1.54E-09	1.82E-09	1.82E-09
as 75	1.06E-09	1.19E-09	1.32E-09	1.46E-09	1.59E-09	1.59E-09
ce141	1.56E-09	1.56E-09	1.56E-09	1.56E-09	1.55E-09	1.55E-09
ba136	8.52E-10	9.96E-10	1.15E-09	1.31E-09	1.48E-09	1.48E-09
in113	8.19E-10	9.25E-10	1.03E-09	1.14E-09	1.25E-09	1.25E-09
dy163	6.61E-10	7.90E-10	9.29E-10	1.08E-09	1.23E-09	1.23E-09
kr 82	6.07E-10	7.22E-10	8.45E-10	9.76E-10	1.11E-09	1.11E-09
xe130	5.38E-10	6.53E-10	7.78E-10	9.14E-10	1.06E-09	1.06E-09
cd110	4.04E-10	5.27E-10	6.69E-10	8.33E-10	1.02E-09	1.02E-09
pm149	9.62E-10	9.61E-10	9.60E-10	9.59E-10	9.58E-10	9.58E-10
nb 93	4.16E-10	5.26E-10	6.49E-10	7.85E-10	9.33E-10	9.33E-10
nd147	9.19E-10	9.18E-10	9.16E-10	9.15E-10	9.14E-10	9.14E-10
sn118	6.04E-10	6.81E-10	7.58E-10	8.36E-10	9.14E-10	9.14E-10
cs134	5.35E-10	5.97E-10	6.62E-10	7.27E-10	7.91E-10	7.91E-10
cd116	5.10E-10	5.75E-10	6.39E-10	7.04E-10	7.70E-10	7.70E-10
sn122	5.08E-10	5.72E-10	6.37E-10	7.02E-10	7.68E-10	7.68E-10
ce144	5.88E-10	5.86E-10	5.85E-10	5.84E-10	5.82E-10	5.82E-10
sn120	3.79E-10	4.27E-10	4.75E-10	5.24E-10	5.72E-10	5.72E-10
kr 85	5.56E-10	5.55E-10	5.53E-10	5.52E-10	5.50E-10	5.50E-10
br 79	2.12E-10	2.68E-10	3.31E-10	4.00E-10	4.75E-10	4.75E-10
ge 73	2.93E-10	3.29E-10	3.66E-10	4.03E-10	4.39E-10	4.39E-10
ru103	3.63E-10	3.64E-10	3.65E-10	3.66E-10	3.66E-10	3.66E-10
ag107	1.31E-10	1.69E-10	2.11E-10	2.59E-10	3.13E-10	3.13E-10
xe129	1.21E-10	1.53E-10	1.89E-10	2.29E-10	2.73E-10	2.73E-10
te126	1.26E-10	1.52E-10	1.81E-10	2.12E-10	2.45E-10	2.45E-10
zr 95	1.63E-10	1.62E-10	1.62E-10	1.62E-10	1.61E-10	1.61E-10
ge 76	1.05E-10	1.18E-10	1.30E-10	1.43E-10	1.56E-10	1.56E-10
nb 95	1.50E-10	1.50E-10	1.49E-10	1.49E-10	1.49E-10	1.49E-10
gd160	8.73E-11	1.01E-10	1.15E-10	1.29E-10	1.45E-10	1.45E-10
y 91	1.39E-10	1.38E-10	1.38E-10	1.38E-10	1.37E-10	1.37E-10
pm151	1.10E-10	1.10E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10
ho165	4.82E-11	5.80E-11	6.86E-11	8.01E-11	9.24E-11	9.24E-11
ba140	4.65E-11	4.64E-11	4.63E-11	4.62E-11	4.62E-11	4.62E-11
eu156	3.98E-11	4.05E-11	4.11E-11	4.18E-11	4.24E-11	4.24E-11
sm153	3.98E-11	4.00E-11	4.02E-11	4.04E-11	4.07E-11	4.07E-11
dy160	1.75E-11	2.22E-11	2.76E-11	3.37E-11	4.03E-11	4.03E-11
ru106	3.06E-11	3.11E-11	3.17E-11	3.23E-11	3.28E-11	3.28E-11
sr 89	2.97E-11	2.96E-11	2.95E-11	2.94E-11	2.93E-11	2.93E-11
xe128	1.25E-11	1.57E-11	1.93E-11	2.33E-11	2.77E-11	2.77E-11
te124	1.53E-11	1.76E-11	2.00E-11	2.25E-11	2.51E-11	2.51E-11
kr 87	2.22E-11	2.21E-11	2.20E-11	2.20E-11	2.19E-11	2.19E-11
sr 87	1.24E-11	1.39E-11	1.55E-11	1.71E-11	1.87E-11	1.87E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 27
0 fraction of total absorption rate
power= .00mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 821813. d 913125. d ******* d ******* d ******* d

sr 86	9.18E-12	1.11E-11	1.32E-11	1.55E-11	1.79E-11	1.79E-11
ce143	1.71E-11	1.71E-11	1.70E-11	1.70E-11	1.70E-11	1.70E-11
sb125	1.58E-11	1.59E-11	1.60E-11	1.61E-11	1.62E-11	1.62E-11
y 90	1.58E-11	1.57E-11	1.56E-11	1.56E-11	1.55E-11	1.55E-11
la140	1.51E-11	1.51E-11	1.50E-11	1.50E-11	1.50E-11	1.50E-11
mo 99	1.30E-11	1.29E-11	1.29E-11	1.29E-11	1.29E-11	1.29E-11
nb 94	7.16E-12	8.09E-12	9.05E-12	1.00E-11	1.10E-11	1.10E-11
sn116	4.71E-12	5.96E-12	7.35E-12	8.89E-12	1.06E-11	1.06E-11
pm148m	9.60E-12	9.56E-12	9.56E-12	9.56E-12	9.57E-12	9.57E-12
ge 74	5.88E-12	6.61E-12	7.35E-12	8.08E-12	8.82E-12	8.82E-12

te127m	7.87E-12	7.93E-12	7.98E-12	8.03E-12	8.08E-12	8.08E-12
i131	6.73E-12	6.72E-12	6.72E-12	6.72E-12	6.72E-12	6.72E-12
se 76	3.68E-12	4.33E-12	5.02E-12	5.75E-12	6.52E-12	6.52E-12
ge 72	4.05E-12	4.57E-12	5.09E-12	5.62E-12	6.15E-12	6.15E-12
er166	2.38E-12	2.92E-12	3.51E-12	4.15E-12	4.84E-12	4.84E-12
te122	1.98E-12	2.49E-12	3.07E-12	3.71E-12	4.41E-12	4.41E-12
te129m	1.81E-12	1.82E-12	1.82E-12	1.82E-12	1.83E-12	1.83E-12
ag111	4.21E-13	4.32E-13	4.44E-13	4.55E-13	4.66E-13	4.66E-13
kr 80	2.40E-13	2.85E-13	3.35E-13	3.89E-13	4.48E-13	4.48E-13
eu157	3.65E-13	3.73E-13	3.80E-13	3.88E-13	3.96E-13	3.96E-13
pm148	3.71E-13	3.68E-13	3.68E-13	3.67E-13	3.67E-13	3.67E-13
cd115m	2.47E-13	2.48E-13	2.49E-13	2.51E-13	2.52E-13	2.52E-13
er167	5.18E-14	6.86E-14	8.84E-14	1.11E-13	1.38E-13	1.38E-13
cs136	1.09E-13	1.16E-13	1.22E-13	1.28E-13	1.35E-13	1.35E-13
te123	3.26E-14	4.13E-14	5.14E-14	6.32E-14	7.66E-14	7.66E-14
tb160	2.39E-14	2.71E-14	3.05E-14	3.39E-14	3.75E-14	3.75E-14
ru105	3.24E-14	3.27E-14	3.31E-14	3.34E-14	3.37E-14	3.37E-14
sn125	3.01E-14	3.02E-14	3.04E-14	3.05E-14	3.06E-14	3.06E-14
pr142	1.36E-14	1.52E-14	1.69E-14	1.85E-14	2.01E-14	2.01E-14
be 9	1.33E-14	1.49E-14	1.65E-14	1.82E-14	1.98E-14	1.98E-14
rb 88	1.25E-14	1.24E-14	1.24E-14	1.24E-14	1.23E-14	1.23E-14
sn123	1.02E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14
i135	9.97E-15	9.96E-15	9.95E-15	9.93E-15	9.92E-15	9.92E-15
te132	9.45E-15	9.45E-15	9.44E-15	9.43E-15	9.43E-15	9.43E-15
sb126	6.46E-15	6.89E-15	7.33E-15	7.76E-15	8.19E-15	8.19E-15
li 7	5.30E-15	5.96E-15	6.61E-15	7.27E-15	7.92E-15	7.92E-15
cd108	2.20E-15	3.04E-15	4.07E-15	5.33E-15	6.83E-15	6.83E-15
te134	5.70E-15	5.69E-15	5.67E-15	5.66E-15	5.65E-15	5.65E-15
i130	3.21E-15	3.52E-15	3.82E-15	4.12E-15	4.42E-15	4.42E-15
sb124	3.13E-15	3.25E-15	3.38E-15	3.50E-15	3.63E-15	3.63E-15
sn114	1.16E-15	1.46E-15	1.81E-15	2.19E-15	2.61E-15	2.61E-15
in117m	2.26E-15	2.28E-15	2.30E-15	2.32E-15	2.34E-15	2.34E-15
rb 86	1.04E-15	1.13E-15	1.23E-15	1.33E-15	1.42E-15	1.42E-15
dy165	7.57E-16	8.24E-16	8.92E-16	9.60E-16	1.03E-15	1.03E-15
in117	6.69E-16	6.75E-16	6.82E-16	6.88E-16	6.94E-16	6.94E-16
cs134m	1.00E-16	1.12E-16	1.24E-16	1.36E-16	1.48E-16	1.48E-16
cd118	1.25E-16	1.26E-16	1.26E-16	1.27E-16	1.27E-16	1.27E-16
ge 75	8.50E-17	8.49E-17	8.48E-17	8.47E-17	8.46E-17	8.46E-17
in119m	3.10E-17	3.11E-17	3.12E-17	3.13E-17	3.14E-17	3.14E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 28

0 fraction of total absorption rate

power= .00mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec

0 initial 821813. d 913125. d ******* d ******* d ******* d

ag110	3.29E-18	3.83E-18	4.42E-18	5.04E-18	5.70E-18	5.70E-18
cd109	3.53E-18	3.92E-18	4.32E-18	4.72E-18	5.12E-18	5.12E-18
in119	2.47E-18	2.48E-18	2.49E-18	2.51E-18	2.52E-18	2.52E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 29

power= 4.000E-03mw, burnup=4.3830E+03mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

charge 821813. d 913125. d ******* d ******* d ******* d

h 1	1.75E-04	1.97E-04	2.18E-04	2.40E-04	2.61E-04	2.61E-04
h 2	5.20E-07	5.84E-07	6.48E-07	7.13E-07	7.77E-07	7.77E-07
h 3	3.89E-11	3.95E-11	4.00E-11	4.06E-11	4.11E-11	4.11E-11
h 4	1.56E-34	1.59E-34	1.61E-34	1.63E-34	1.65E-34	1.65E-34
he 3	3.76E-09	4.19E-09	4.61E-09	5.02E-09	5.43E-09	5.43E-09
he 4	2.90E-05	3.25E-05	3.61E-05	3.97E-05	4.32E-05	4.32E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ne 20	3.48E-06	3.91E-06	4.34E-06	4.76E-06	5.19E-06	5.19E-06
ne 21	2.38E-10	2.97E-10	3.62E-10	4.33E-10	5.10E-10	5.10E-10
ne 22	2.30E-08	2.58E-08	2.87E-08	3.15E-08	3.43E-08	3.43E-08
ne 23	7.15E-15	7.14E-15	7.13E-15	7.13E-15	7.12E-15	7.12E-15
na 22	4.21E-11	4.21E-11	4.20E-11	4.20E-11	4.20E-11	4.20E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.07E-08	2.86E-08	2.85E-08	2.85E-08	2.85E-08	2.85E-08
na 24m	5.04E-15	4.69E-15	4.69E-15	4.68E-15	4.68E-15	4.68E-15
na 25	7.88E-25	9.63E-25	1.16E-24	1.38E-24	1.61E-24	1.61E-24
mg 24	2.78E-02	3.08E-02	3.37E-02	3.67E-02	3.97E-02	3.97E-02
mg 25	2.70E-08	3.33E-08	4.02E-08	4.76E-08	5.57E-08	5.57E-08
mg 26	5.20E-07	5.84E-07	6.48E-07	7.12E-07	7.76E-07	7.76E-07
mg 27	2.13E-12	2.13E-12	2.13E-12	2.13E-12	2.13E-12	2.13E-12
mg 28	4.31E-24	4.30E-24	4.29E-24	4.28E-24	4.28E-24	4.28E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.27E-10	2.12E-10	2.11E-10	2.11E-10	2.11E-10	2.11E-10
al 29	5.65E-23	7.00E-23	8.55E-23	1.02E-22	1.20E-22	1.20E-22
al 30	2.11E-33	2.95E-33	4.01E-33	5.29E-33	6.81E-33	6.81E-33
si 28	8.10E-02	8.96E-02	9.82E-02	1.07E-01	1.15E-01	1.15E-01
si 29	2.16E-07	2.70E-07	3.30E-07	3.95E-07	4.66E-07	4.66E-07
si 30	6.04E-13	8.52E-13	1.16E-12	1.53E-12	1.97E-12	1.97E-12
si 31	4.29E-25	6.06E-25	8.23E-25	1.09E-24	1.40E-24	1.40E-24
si 32	5.34E-31	7.81E-31	1.09E-30	1.47E-30	1.93E-30	1.93E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.72E+08	2.71E+08	2.71E+08	2.71E+08	2.71E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 30
power= 4.000E-03mw, burnup=4.3830E+03mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 821813. d	913125. d *******	d *******	d *******	d *******	d
he 4	7.42E-01	8.77E-01	1.02E+00	1.17E+00	1.33E+00	1.33E+00
pb206	1.09E-04	1.52E-04	2.04E-04	2.66E-04	3.38E-04	3.38E-04
pb207	3.01E-05	3.81E-05	4.72E-05	5.71E-05	6.81E-05	6.81E-05
pb208	4.87E-06	6.16E-06	7.59E-06	9.17E-06	1.09E-05	1.09E-05
pb209	5.23E-12	6.56E-12	8.03E-12	9.64E-12	1.14E-11	1.14E-11
pb210	5.01E-06	6.15E-06	7.37E-06	8.66E-06	1.00E-05	1.00E-05
pb211	3.03E-12	3.41E-12	3.79E-12	4.17E-12	4.55E-12	4.55E-12
pb212	8.40E-12	9.44E-12	1.05E-11	1.15E-11	1.26E-11	1.26E-11
pb214	1.15E-11	1.41E-11	1.68E-11	1.98E-11	2.29E-11	2.29E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	6.62E-06	9.37E-06	1.28E-05	1.69E-05	2.18E-05	2.18E-05
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	3.08E-09	3.79E-09	4.54E-09	5.33E-09	6.17E-09	6.17E-09
bi211	1.80E-13	2.02E-13	2.25E-13	2.47E-13	2.70E-13	2.70E-13
bi212	7.97E-13	8.96E-13	9.94E-13	1.09E-12	1.19E-12	1.19E-12
bi213	1.22E-12	1.53E-12	1.88E-12	2.25E-12	2.66E-12	2.66E-12
bi214	8.50E-12	1.04E-11	1.25E-11	1.47E-11	1.70E-11	1.70E-11
po210	8.52E-08	1.05E-07	1.25E-07	1.47E-07	1.70E-07	1.70E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	1.99E-18	2.23E-18	2.48E-18	2.73E-18	2.98E-18	2.98E-18
po212	4.19E-23	4.71E-23	5.22E-23	5.74E-23	6.26E-23	6.26E-23
po213	1.84E-21	2.30E-21	2.82E-21	3.38E-21	3.99E-21	3.99E-21
po214	1.17E-18	1.44E-18	1.72E-18	2.02E-18	2.34E-18	2.34E-18
po215	2.49E-18	2.80E-18	3.12E-18	3.43E-18	3.74E-18	3.74E-18
po216	3.18E-17	3.57E-17	3.97E-17	4.36E-17	4.75E-17	4.75E-17
po218	1.32E-12	1.63E-12	1.95E-12	2.29E-12	2.65E-12	2.65E-12
rn218	1.24E-28	1.39E-28	1.54E-28	1.69E-28	1.84E-28	1.84E-28
rn219	5.54E-15	6.24E-15	6.93E-15	7.63E-15	8.33E-15	8.33E-15
rn220	1.22E-14	1.37E-14	1.52E-14	1.67E-14	1.82E-14	1.82E-14

rn222	2.35E-09	2.89E-09	3.46E-09	4.07E-09	4.70E-09	4.70E-09
ra222	1.35E-25	1.50E-25	1.67E-25	1.83E-25	2.00E-25	2.00E-25
ra223	1.38E-09	1.56E-09	1.73E-09	1.90E-09	2.08E-09	2.08E-09
ra224	6.94E-11	7.79E-11	8.65E-11	9.51E-11	1.04E-10	1.04E-10
ra225	5.71E-10	7.17E-10	8.77E-10	1.05E-09	1.24E-09	1.24E-09
ra226	3.60E-04	4.42E-04	5.29E-04	6.22E-04	7.19E-04	7.19E-04
ra228	4.25E-12	4.79E-12	5.32E-12	5.86E-12	6.40E-12	6.40E-12
ac225	3.86E-10	4.84E-10	5.93E-10	7.11E-10	8.39E-10	8.39E-10
ac227	9.61E-07	1.08E-06	1.20E-06	1.32E-06	1.44E-06	1.44E-06
ac228	5.19E-16	5.84E-16	6.49E-16	7.15E-16	7.81E-16	7.81E-16
th226	6.59E-24	7.34E-24	8.14E-24	8.94E-24	9.73E-24	9.73E-24
th227	2.23E-09	2.51E-09	2.79E-09	3.07E-09	3.35E-09	3.35E-09
th228	1.32E-08	1.49E-08	1.65E-08	1.82E-08	1.98E-08	1.98E-08
th229	1.11E-04	1.39E-04	1.71E-04	2.05E-04	2.42E-04	2.42E-04
th230	5.13E-02	5.77E-02	6.41E-02	7.06E-02	7.71E-02	7.71E-02
th231	3.20E-09	3.22E-09	3.24E-09	3.26E-09	3.28E-09	3.28E-09
th232	1.04E-02	1.17E-02	1.30E-02	1.43E-02	1.56E-02	1.56E-02
th233	9.50E-14	1.07E-13	1.19E-13	1.30E-13	1.42E-13	1.42E-13
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	1.45E-03	1.63E-03	1.81E-03	1.99E-03	2.17E-03	2.17E-03
pa232	2.46E-11	2.77E-11	3.08E-11	3.38E-11	3.69E-11	3.69E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 31
power= 4.000E-03mw, burnup=4.3830E+03mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 821813. d	913125. d	******* d	******* d	******* d	
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	6.39E-21	7.11E-21	7.89E-21	8.66E-21	9.43E-21	9.43E-21
u231	2.09E-17	2.32E-17	2.57E-17	2.82E-17	3.07E-17	3.07E-17
u232	4.82E-07	5.42E-07	6.01E-07	6.61E-07	7.21E-07	7.21E-07
u233	2.69E-02	3.02E-02	3.35E-02	3.68E-02	4.00E-02	4.00E-02
u234	9.32E+00	9.35E+00	9.39E+00	9.42E+00	9.46E+00	9.46E+00
u235	7.16E+02	7.14E+02	7.12E+02	7.11E+02	7.09E+02	7.09E+02
u236	1.77E+02	1.77E+02	1.77E+02	1.77E+02	1.78E+02	1.78E+02
u237	3.19E-06	3.17E-06	3.17E-06	3.17E-06	3.17E-06	3.17E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	3.21E-07	3.19E-07	3.19E-07	3.19E-07	3.18E-07	3.18E-07
u240	.00E+00	1.03E-40	3.08E-40	6.16E-40	1.33E-39	1.33E-39
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.83E-12	8.77E-12	8.76E-12	8.75E-12	8.73E-12	8.73E-12
np236m	2.10E-12	2.08E-12	2.08E-12	2.08E-12	2.08E-12	2.08E-12
np236	4.03E-07	4.52E-07	5.00E-07	5.49E-07	5.97E-07	5.97E-07
np237	4.20E+01	4.20E+01	4.19E+01	4.19E+01	4.19E+01	4.19E+01
np238	1.55E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06
np239	4.64E-05	4.61E-05	4.61E-05	4.61E-05	4.60E-05	4.60E-05
np240m	.00E+00	8.76E-43	2.63E-42	5.25E-42	1.14E-41	1.14E-41
np240	9.41E-15	9.32E-15	9.31E-15	9.29E-15	9.27E-15	9.27E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.14E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09
pu237	3.16E-13	3.23E-13	3.32E-13	3.41E-13	3.49E-13	3.49E-13
pu238	2.34E-02	2.34E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02
pu239	9.55E+00	1.06E+01	1.17E+01	1.28E+01	1.38E+01	1.38E+01
pu240	8.79E-02	1.09E-01	1.33E-01	1.58E-01	1.85E-01	1.85E-01
pu241	3.67E-05	4.52E-05	5.48E-05	6.52E-05	7.62E-05	7.62E-05
pu242	1.14E-06	1.69E-06	2.40E-06	3.28E-06	4.36E-06	4.36E-06
pu243	2.45E-15	3.60E-15	5.10E-15	6.97E-15	9.24E-15	9.24E-15

```
      pu244    1.80E-30  5.23E-30  1.35E-29  3.17E-29  6.88E-29  6.88E-29
      pu245    7.64E-41  2.29E-40  5.35E-40  1.30E-39  2.75E-39  2.75E-39
      pu246     .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am239    1.74E-19  2.26E-19  2.87E-19  3.55E-19  4.29E-19  4.29E-19
      am240    7.95E-17  1.04E-16  1.31E-16  1.62E-16  1.96E-16  1.96E-16
      am241    6.18E-04  8.11E-04  1.03E-03  1.27E-03  1.54E-03  1.54E-03
      am242m   2.51E-07  3.38E-07  4.39E-07  5.52E-07  6.77E-07  6.77E-07
      am242    2.47E-11  3.24E-11  4.12E-11  5.10E-11  6.18E-11  6.18E-11
      am243    4.82E-09  7.58E-09  1.13E-08  1.62E-08  2.23E-08  2.23E-08
      am244m    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am244    3.71E-17  5.80E-17  8.64E-17  1.23E-16  1.70E-16  1.70E-16
      am245    1.49E-41  5.97E-41  1.34E-40  2.98E-40  6.27E-40  6.27E-40
      am246     .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      cm241    1.47E-21  1.92E-21  2.44E-21  3.02E-21  3.65E-21  3.65E-21
      cm242    4.98E-09  6.54E-09  8.32E-09  1.03E-08  1.25E-08  1.25E-08
      cm243    3.00E-18  4.12E-18  5.40E-18  6.87E-18  8.50E-18  8.50E-18
      cm244    5.83E-13  9.11E-13  1.36E-12  1.94E-12  2.67E-12  2.67E-12
1
      sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                actinides          page   32
        power= 4.000E-03mw, burnup=4.3830E+03mwd, flux= 2.71E+08n/cm**2-sec
0                                          nuclide concentrations, gram atoms
                                           basis = single reactor assembly
             charge 821813. d 913125. d ******* d ******* d ******* d
      cm245    2.36E-16  4.20E-16  6.98E-16  1.10E-15  1.66E-15  1.66E-15
      cm246    4.46E-19  8.95E-19  1.66E-18  2.87E-18  4.73E-18  4.73E-18
      cm247    1.40E-23  3.18E-23  6.57E-23  1.26E-22  2.28E-22  2.28E-22
      cm248    4.38E-27  1.12E-26  2.59E-26  5.51E-26  1.09E-25  1.09E-25
      cm249    1.39E-37  3.55E-37  8.19E-37  1.74E-36  3.43E-36  3.43E-36
      cm250    1.25E-42  3.60E-42  9.27E-42  2.17E-41  4.70E-41  4.70E-41
      cm251     .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
    totals     3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0     flux               2.72E+08  2.71E+08  2.71E+08  2.71E+08  2.71E-07
0         1q array has       20 entries.
0         3q array has        1 entries.
0         3q array has        1 entries.
0         3q array has        1 entries.
0         4q array has        1 entries.
0        54q array has       12 entries.
1library information...

          cross-section data taken from position number  4 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *          made from modified card-image origen-s libraries of scale 4.2       *
```

```
         *      data from the light element, actinide, and fission product libraries    *
         *        decay data, including gamma and total energy, are from endf/b-vi      *
         *                                                                              *
         *      neutron flux spectrum factors and cross sections were produced from     *
         *     the "presas2" case updating all nuclides on the scale "burnup" library   *
         *                                                                              *
         *                  fission product yields are from endf/b-v                    *
         *                                                                              *
         *              photon libraries use an 18-energy-group structure               *
         *             the photon data are from the master photon data base,            *
         *              produced to include bremsstrahlung from uo2 matrix              *
         *                                                                              *
         *        see information above this box (if present) for later updates         *
         *                                                                              *
         ********************************************************************************
         *                                                                              *
0        ********************************************************************************
0                 .other identification and sizes of library.
0                  data set name:  ft33f001
0               8/28/1996    date library was produced
0                    1697    total number of nuclides in library
                      689    number of light-element nuclides
                      129    number of actinide nuclides
                      879    number of fission product nuclides
0                    7993    number of nonzero off-diagonal matrix elements
0        ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   33
        power=    .00mw, burnup=   5844.mwd, flux= 2.68E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.150297E+06   1.151651E+06   1.152966E+06   1.154243E+06   1.155483E+06   1.155483E+06
     absorptions   9.452068E+05   9.462478E+05   9.472621E+05   9.482513E+05   9.492169E+05   9.492169E+05
     k infinity    1.216979E+00   1.217071E+00   1.217156E+00   1.217234E+00   1.217302E+00   1.217302E+00
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   9.348808E+05   9.357344E+05   9.365691E+05   9.373851E+05   9.381828E+05   9.381828E+05
     non-actinide
     abs. fracs.   1.092452E-02   1.111060E-02   1.128829E-02   1.145917E-02   1.162446E-02   1.162446E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products    page   34
0                                 fraction of total absorption rate
        power=    .00mw, burnup=   5844.mwd, flux= 2.68E+08n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.27E-03  5.29E-03  5.31E-03  5.32E-03  5.33E-03  5.33E-03
     eu151     5.60E-04  6.02E-04  6.43E-04  6.82E-04  7.21E-04  7.21E-04
     nd143     4.29E-04  4.64E-04  4.98E-04  5.33E-04  5.67E-04  5.67E-04
     rh103     2.06E-04  2.24E-04  2.41E-04  2.58E-04  2.75E-04  2.75E-04
     xe131     1.38E-04  1.50E-04  1.61E-04  1.72E-04  1.84E-04  1.84E-04
     gd155     1.54E-04  1.60E-04  1.65E-04  1.70E-04  1.74E-04  1.74E-04
     cs133     1.07E-04  1.16E-04  1.25E-04  1.33E-04  1.42E-04  1.42E-04
     sm147     7.91E-05  8.56E-05  9.21E-05  9.85E-05  1.05E-04  1.05E-04
     tc 99     7.85E-05  8.49E-05  9.13E-05  9.76E-05  1.04E-04  1.04E-04
     cd113     8.12E-05  8.33E-05  8.52E-05  8.68E-05  8.83E-05  8.83E-05
     nd145     6.07E-05  6.57E-05  7.06E-05  7.55E-05  8.04E-05  8.04E-05
     mo 95     4.21E-05  4.56E-05  4.90E-05  5.24E-05  5.59E-05  5.59E-05
     sm152     3.73E-05  4.07E-05  4.42E-05  4.77E-05  5.12E-05  5.12E-05
     gd157     4.64E-05  4.74E-05  4.83E-05  4.93E-05  5.02E-05  5.02E-05
     sm151     4.05E-05  4.06E-05  4.07E-05  4.08E-05  4.09E-05  4.09E-05
     sm150     2.52E-05  2.79E-05  3.06E-05  3.33E-05  3.60E-05  3.60E-05
```

kr 83	2.60E-05	2.81E-05	3.02E-05	3.23E-05	3.44E-05	3.44E-05
cs135	2.42E-05	2.62E-05	2.82E-05	3.02E-05	3.21E-05	3.21E-05
ru101	1.89E-05	2.04E-05	2.20E-05	2.35E-05	2.50E-05	2.50E-05
pr141	1.79E-05	1.94E-05	2.09E-05	2.23E-05	2.38E-05	2.38E-05
eu153	1.69E-05	1.84E-05	1.98E-05	2.13E-05	2.27E-05	2.27E-05
la139	1.47E-05	1.59E-05	1.70E-05	1.82E-05	1.94E-05	1.94E-05
ba137	6.92E-06	7.50E-06	8.07E-06	8.65E-06	9.22E-06	9.22E-06
pd105	6.74E-06	7.34E-06	7.94E-06	8.54E-06	9.15E-06	9.15E-06
zr 93	5.94E-06	6.42E-06	6.91E-06	7.39E-06	7.86E-06	7.86E-06
ag109	4.39E-06	4.92E-06	5.47E-06	6.04E-06	6.63E-06	6.63E-06
i129	4.64E-06	5.02E-06	5.41E-06	5.80E-06	6.19E-06	6.19E-06
nd144	4.41E-06	4.77E-06	5.14E-06	5.50E-06	5.86E-06	5.86E-06
mo 97	3.33E-06	3.60E-06	3.87E-06	4.15E-06	4.42E-06	4.42E-06
xe135	2.28E-06	2.28E-06	2.27E-06	2.27E-06	2.27E-06	2.27E-06
zr 91	1.55E-06	1.68E-06	1.80E-06	1.93E-06	2.05E-06	2.05E-06
y 89	1.49E-06	1.61E-06	1.73E-06	1.85E-06	1.96E-06	1.96E-06
ru102	1.37E-06	1.48E-06	1.59E-06	1.71E-06	1.82E-06	1.82E-06
pd108	1.20E-06	1.33E-06	1.46E-06	1.60E-06	1.75E-06	1.75E-06
gd152	9.59E-07	1.12E-06	1.30E-06	1.48E-06	1.68E-06	1.68E-06
ce142	1.22E-06	1.32E-06	1.42E-06	1.51E-06	1.61E-06	1.61E-06
nd148	1.18E-06	1.27E-06	1.37E-06	1.46E-06	1.56E-06	1.56E-06
nd146	9.84E-07	1.06E-06	1.14E-06	1.22E-06	1.31E-06	1.31E-06
in115	8.42E-07	9.13E-07	9.85E-07	1.06E-06	1.13E-06	1.13E-06
ba138	8.39E-07	9.08E-07	9.77E-07	1.05E-06	1.11E-06	1.11E-06
ce140	7.86E-07	8.50E-07	9.15E-07	9.79E-07	1.04E-06	1.04E-06
xe132	7.15E-07	7.74E-07	8.34E-07	8.93E-07	9.52E-07	9.52E-07
pd107	6.40E-07	7.06E-07	7.75E-07	8.45E-07	9.17E-07	9.17E-07
mo 98	4.91E-07	5.32E-07	5.72E-07	6.12E-07	6.52E-07	6.52E-07
mo100	4.75E-07	5.14E-07	5.53E-07	5.92E-07	6.30E-07	6.30E-07
xe134	4.65E-07	5.03E-07	5.41E-07	5.79E-07	6.17E-07	6.17E-07
zr 92	3.74E-07	4.05E-07	4.35E-07	4.65E-07	4.95E-07	4.95E-07
i127	3.25E-07	3.53E-07	3.81E-07	4.10E-07	4.38E-07	4.38E-07
ru104	3.03E-07	3.29E-07	3.55E-07	3.81E-07	4.08E-07	4.08E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 35
0 fraction of total absorption rate
power= .00mw, burnup= 5844.mwd, flux= 2.68E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	2.99E-07	3.23E-07	3.48E-07	3.72E-07	3.96E-07	3.96E-07
nd150	2.63E-07	2.85E-07	3.07E-07	3.29E-07	3.50E-07	3.50E-07
xe136	2.52E-07	2.72E-07	2.93E-07	3.14E-07	3.34E-07	3.34E-07
pm147	2.66E-07	2.66E-07	2.66E-07	2.65E-07	2.65E-07	2.65E-07
br 81	1.89E-07	2.04E-07	2.20E-07	2.35E-07	2.51E-07	2.51E-07
rb 85	1.83E-07	1.98E-07	2.12E-07	2.27E-07	2.42E-07	2.42E-07
cd111	1.53E-07	1.69E-07	1.84E-07	2.00E-07	2.16E-07	2.16E-07
zr 94	1.60E-07	1.73E-07	1.86E-07	1.99E-07	2.12E-07	2.12E-07
zr 90	1.45E-07	1.57E-07	1.68E-07	1.80E-07	1.92E-07	1.92E-07
eu152	1.45E-07	1.56E-07	1.67E-07	1.77E-07	1.87E-07	1.87E-07
eu155	1.78E-07	1.79E-07	1.81E-07	1.82E-07	1.83E-07	1.83E-07
sm154	1.16E-07	1.26E-07	1.36E-07	1.47E-07	1.57E-07	1.57E-07
te130	1.15E-07	1.24E-07	1.34E-07	1.43E-07	1.53E-07	1.53E-07
rb 87	1.06E-07	1.14E-07	1.23E-07	1.31E-07	1.40E-07	1.40E-07
ru 99	6.12E-08	7.17E-08	8.30E-08	9.51E-08	1.08E-07	1.08E-07
se 77	7.54E-08	8.16E-08	8.77E-08	9.39E-08	1.00E-07	1.00E-07
pd106	6.31E-08	6.90E-08	7.50E-08	8.11E-08	8.73E-08	8.73E-08
gd156	4.66E-08	5.20E-08	5.76E-08	6.32E-08	6.90E-08	6.90E-08
kr 84	5.02E-08	5.43E-08	5.83E-08	6.24E-08	6.64E-08	6.64E-08
gd154	3.37E-08	3.96E-08	4.59E-08	5.27E-08	5.99E-08	5.99E-08
sb121	3.84E-08	4.17E-08	4.49E-08	4.82E-08	5.15E-08	5.15E-08
se 79	3.87E-08	4.19E-08	4.50E-08	4.82E-08	5.13E-08	5.13E-08

sb123	3.11E-08	3.38E-08	3.64E-08	3.90E-08	4.17E-08	4.17E-08
dy161	2.75E-08	3.07E-08	3.40E-08	3.75E-08	4.11E-08	4.11E-08
kr 86	2.77E-08	3.00E-08	3.22E-08	3.44E-08	3.67E-08	3.67E-08
te128	2.56E-08	2.78E-08	2.99E-08	3.21E-08	3.42E-08	3.42E-08
se 80	1.80E-08	1.95E-08	2.10E-08	2.25E-08	2.39E-08	2.39E-08
te125	1.67E-08	1.81E-08	1.95E-08	2.10E-08	2.25E-08	2.25E-08
tb159	1.41E-08	1.55E-08	1.70E-08	1.85E-08	2.01E-08	2.01E-08
ru100	1.06E-08	1.24E-08	1.43E-08	1.64E-08	1.86E-08	1.86E-08
sr 90	1.64E-08	1.63E-08	1.63E-08	1.62E-08	1.62E-08	1.62E-08
cd112	1.16E-08	1.27E-08	1.38E-08	1.49E-08	1.60E-08	1.60E-08
gd158	1.10E-08	1.22E-08	1.34E-08	1.46E-08	1.58E-08	1.58E-08
li 6	1.01E-08	1.09E-08	1.17E-08	1.25E-08	1.33E-08	1.33E-08
nd142	7.35E-09	8.61E-09	9.97E-09	1.14E-08	1.30E-08	1.30E-08
ba134	7.15E-09	8.37E-09	9.69E-09	1.11E-08	1.26E-08	1.26E-08
sn117	8.77E-09	9.54E-09	1.03E-08	1.11E-08	1.19E-08	1.19E-08
sm148	6.58E-09	7.70E-09	8.91E-09	1.02E-08	1.16E-08	1.16E-08
eu154	8.57E-09	9.29E-09	1.00E-08	1.07E-08	1.15E-08	1.15E-08
ba135	5.84E-09	6.84E-09	7.93E-09	9.09E-09	1.03E-08	1.03E-08
rh105	9.45E-09	9.53E-09	9.62E-09	9.70E-09	9.78E-09	9.78E-09
sn119	6.97E-09	7.56E-09	8.16E-09	8.76E-09	9.36E-09	9.36E-09
cd114	6.39E-09	7.05E-09	7.72E-09	8.40E-09	9.09E-09	9.09E-09
pd104	4.96E-09	5.82E-09	6.74E-09	7.73E-09	8.78E-09	8.78E-09
dy164	5.45E-09	6.18E-09	6.96E-09	7.76E-09	8.61E-09	8.61E-09
sn115	6.38E-09	6.92E-09	7.47E-09	8.02E-09	8.57E-09	8.57E-09
dy162	5.00E-09	5.66E-09	6.35E-09	7.07E-09	7.83E-09	7.83E-09
pd110	4.92E-09	5.43E-09	5.95E-09	6.48E-09	7.03E-09	7.03E-09
sr 88	5.10E-09	5.51E-09	5.92E-09	6.33E-09	6.74E-09	6.74E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 36
0 fraction of total absorption rate
power= .00mw, burnup= 5844.mwd, flux= 2.68E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

se 82	3.47E-09	3.76E-09	4.04E-09	4.32E-09	4.60E-09	4.60E-09
sn126	3.04E-09	3.30E-09	3.57E-09	3.85E-09	4.12E-09	4.12E-09
cs137	3.71E-09	3.71E-09	3.70E-09	3.70E-09	3.70E-09	3.70E-09
se 78	2.68E-09	2.90E-09	3.12E-09	3.34E-09	3.56E-09	3.56E-09
mo 96	1.82E-09	2.11E-09	2.42E-09	2.75E-09	3.11E-09	3.11E-09
sn124	2.24E-09	2.43E-09	2.63E-09	2.82E-09	3.02E-09	3.02E-09
pr143	2.59E-09	2.58E-09	2.58E-09	2.57E-09	2.57E-09	2.57E-09
ba136	1.48E-09	1.65E-09	1.84E-09	2.03E-09	2.23E-09	2.23E-09
as 75	1.59E-09	1.72E-09	1.85E-09	1.98E-09	2.11E-09	2.11E-09
cd110	1.02E-09	1.23E-09	1.46E-09	1.72E-09	2.00E-09	2.00E-09
xe133	1.97E-09	1.97E-09	1.97E-09	1.97E-09	1.96E-09	1.96E-09
dy163	1.23E-09	1.40E-09	1.58E-09	1.76E-09	1.96E-09	1.96E-09
xe130	1.06E-09	1.22E-09	1.38E-09	1.56E-09	1.75E-09	1.75E-09
kr 82	1.11E-09	1.26E-09	1.41E-09	1.58E-09	1.74E-09	1.74E-09
in113	1.25E-09	1.36E-09	1.46E-09	1.57E-09	1.68E-09	1.68E-09
nb 93	9.33E-10	1.09E-09	1.27E-09	1.45E-09	1.65E-09	1.65E-09
ce141	1.56E-09	1.55E-09	1.55E-09	1.55E-09	1.55E-09	1.55E-09
sn118	9.13E-10	9.91E-10	1.07E-09	1.15E-09	1.23E-09	1.23E-09
cs134	7.91E-10	8.55E-10	9.19E-10	9.82E-10	1.05E-09	1.05E-09
cd116	7.69E-10	8.35E-10	9.00E-10	9.66E-10	1.03E-09	1.03E-09
sn122	7.68E-10	8.34E-10	8.99E-10	9.66E-10	1.03E-09	1.03E-09
pm149	9.59E-10	9.58E-10	9.57E-10	9.57E-10	9.56E-10	9.56E-10
nd147	9.13E-10	9.12E-10	9.11E-10	9.09E-10	9.08E-10	9.08E-10
br 79	4.75E-10	5.57E-10	6.45E-10	7.39E-10	8.40E-10	8.40E-10
sn120	5.72E-10	6.21E-10	6.70E-10	7.19E-10	7.68E-10	7.68E-10
ag107	3.13E-10	3.73E-10	4.38E-10	5.10E-10	5.88E-10	5.88E-10
ge 73	4.39E-10	4.76E-10	5.13E-10	5.50E-10	5.87E-10	5.87E-10
ce144	5.82E-10	5.81E-10	5.80E-10	5.79E-10	5.78E-10	5.78E-10

kr 85	5.50E-10	5.49E-10	5.47E-10	5.46E-10	5.44E-10	5.44E-10
xe129	2.73E-10	3.20E-10	3.71E-10	4.26E-10	4.84E-10	4.84E-10
te126	2.45E-10	2.81E-10	3.19E-10	3.60E-10	4.03E-10	4.03E-10
ru103	3.67E-10	3.67E-10	3.68E-10	3.69E-10	3.70E-10	3.70E-10
gd160	1.45E-10	1.60E-10	1.76E-10	1.93E-10	2.10E-10	2.10E-10
ge 76	1.56E-10	1.69E-10	1.81E-10	1.94E-10	2.07E-10	2.07E-10
zr 95	1.61E-10	1.61E-10	1.61E-10	1.60E-10	1.60E-10	1.60E-10
ho165	9.24E-11	1.06E-10	1.20E-10	1.34E-10	1.50E-10	1.50E-10
nb 95	1.49E-10	1.48E-10	1.48E-10	1.48E-10	1.48E-10	1.48E-10
y 91	1.37E-10	1.37E-10	1.36E-10	1.36E-10	1.36E-10	1.36E-10
pm151	1.11E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10
dy160	4.03E-11	4.77E-11	5.57E-11	6.44E-11	7.38E-11	7.38E-11
xe128	2.77E-11	3.24E-11	3.75E-11	4.30E-11	4.89E-11	4.89E-11
ba140	4.62E-11	4.61E-11	4.60E-11	4.60E-11	4.59E-11	4.59E-11
eu156	4.24E-11	4.30E-11	4.36E-11	4.42E-11	4.48E-11	4.48E-11
sm153	4.07E-11	4.09E-11	4.11E-11	4.14E-11	4.16E-11	4.16E-11
te124	2.51E-11	2.78E-11	3.06E-11	3.34E-11	3.63E-11	3.63E-11
ru106	3.28E-11	3.34E-11	3.39E-11	3.44E-11	3.49E-11	3.49E-11
sr 86	1.79E-11	2.05E-11	2.33E-11	2.62E-11	2.93E-11	2.93E-11
sr 89	2.93E-11	2.92E-11	2.91E-11	2.90E-11	2.89E-11	2.89E-11
sr 87	1.87E-11	2.03E-11	2.19E-11	2.35E-11	2.51E-11	2.51E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 37
0 fraction of total absorption rate
power= .00mw, burnup= 5844.mwd, flux= 2.68E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

kr 87	2.19E-11	2.19E-11	2.18E-11	2.17E-11	2.17E-11	2.17E-11
sn116	1.06E-11	1.24E-11	1.44E-11	1.65E-11	1.88E-11	1.88E-11
ce143	1.70E-11	1.69E-11	1.69E-11	1.69E-11	1.68E-11	1.68E-11
sb125	1.62E-11	1.63E-11	1.64E-11	1.64E-11	1.65E-11	1.65E-11
y 90	1.56E-11	1.55E-11	1.55E-11	1.54E-11	1.54E-11	1.54E-11
nb 94	1.10E-11	1.20E-11	1.30E-11	1.40E-11	1.51E-11	1.51E-11
la140	1.50E-11	1.50E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11
mo 99	1.29E-11	1.29E-11	1.29E-11	1.28E-11	1.28E-11	1.28E-11
ge 74	8.82E-12	9.55E-12	1.03E-11	1.10E-11	1.18E-11	1.18E-11
se 76	6.52E-12	7.34E-12	8.19E-12	9.09E-12	1.00E-11	1.00E-11
pm148m	9.57E-12	9.57E-12	9.57E-12	9.57E-12	9.58E-12	9.58E-12
ge 72	6.15E-12	6.68E-12	7.21E-12	7.75E-12	8.29E-12	8.29E-12
te127m	8.09E-12	8.14E-12	8.19E-12	8.24E-12	8.28E-12	8.28E-12
er166	4.84E-12	5.57E-12	6.36E-12	7.19E-12	8.06E-12	8.06E-12
te122	4.41E-12	5.17E-12	5.99E-12	6.88E-12	7.82E-12	7.82E-12
i131	6.72E-12	6.72E-12	6.71E-12	6.71E-12	6.71E-12	6.71E-12
te129m	1.83E-12	1.83E-12	1.83E-12	1.84E-12	1.84E-12	1.84E-12
kr 80	4.48E-13	5.13E-13	5.83E-13	6.59E-13	7.41E-13	7.41E-13
ag111	4.66E-13	4.77E-13	4.87E-13	4.98E-13	5.08E-13	5.08E-13
eu157	3.96E-13	4.03E-13	4.10E-13	4.17E-13	4.24E-13	4.24E-13
pm148	3.67E-13	3.66E-13	3.66E-13	3.65E-13	3.65E-13	3.65E-13
er167	1.38E-13	1.68E-13	2.02E-13	2.40E-13	2.82E-13	2.82E-13
cd115m	2.52E-13	2.53E-13	2.54E-13	2.55E-13	2.56E-13	2.56E-13
cs136	1.35E-13	1.41E-13	1.47E-13	1.53E-13	1.59E-13	1.59E-13
te123	7.66E-14	9.18E-14	1.09E-13	1.28E-13	1.50E-13	1.50E-13
tb160	3.75E-14	4.11E-14	4.48E-14	4.86E-14	5.24E-14	5.24E-14
ru105	3.37E-14	3.40E-14	3.43E-14	3.45E-14	3.48E-14	3.48E-14
sn125	3.06E-14	3.07E-14	3.08E-14	3.09E-14	3.10E-14	3.10E-14
pr142	2.01E-14	2.18E-14	2.34E-14	2.50E-14	2.66E-14	2.66E-14
be 9	1.98E-14	2.14E-14	2.30E-14	2.46E-14	2.63E-14	2.63E-14
cd108	6.84E-15	8.61E-15	1.07E-14	1.31E-14	1.58E-14	1.58E-14
rb 88	1.23E-14	1.23E-14	1.22E-14	1.22E-14	1.22E-14	1.22E-14
li 7	7.92E-15	8.57E-15	9.22E-15	9.87E-15	1.05E-14	1.05E-14
sn123	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14

sb126	8.19E-15	8.63E-15	9.06E-15	9.49E-15	9.93E-15	9.93E-15
i135	9.93E-15	9.91E-15	9.90E-15	9.89E-15	9.88E-15	9.88E-15
te132	9.43E-15	9.43E-15	9.42E-15	9.41E-15	9.41E-15	9.41E-15
i130	4.42E-15	4.72E-15	5.02E-15	5.32E-15	5.62E-15	5.62E-15
te134	5.65E-15	5.64E-15	5.62E-15	5.61E-15	5.60E-15	5.60E-15
sn114	2.61E-15	3.07E-15	3.57E-15	4.10E-15	4.67E-15	4.67E-15
sb124	3.63E-15	3.75E-15	3.88E-15	4.00E-15	4.12E-15	4.12E-15
in117m	2.34E-15	2.36E-15	2.38E-15	2.39E-15	2.41E-15	2.41E-15
rb 86	1.42E-15	1.52E-15	1.61E-15	1.70E-15	1.80E-15	1.80E-15
dy165	1.03E-15	1.10E-15	1.16E-15	1.23E-15	1.30E-15	1.30E-15
in117	6.94E-16	7.00E-16	7.06E-16	7.12E-16	7.18E-16	7.18E-16
cs134m	1.48E-16	1.60E-16	1.72E-16	1.84E-16	1.96E-16	1.96E-16
cd118	1.27E-16	1.28E-16	1.28E-16	1.29E-16	1.30E-16	1.30E-16
ge 75	8.47E-17	8.46E-17	8.45E-17	8.44E-17	8.43E-17	8.43E-17
in119m	3.15E-17	3.16E-17	3.17E-17	3.18E-17	3.19E-17	3.19E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 38
0 fraction of total absorption rate
power= .00mw, burnup= 5844.mwd, flux= 2.68E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

ag110	5.70E-18	6.38E-18	7.09E-18	7.82E-18	8.59E-18	8.59E-18
cd109	5.12E-18	5.53E-18	5.94E-18	6.35E-18	6.78E-18	6.78E-18
in119	2.52E-18	2.53E-18	2.55E-18	2.56E-18	2.57E-18	2.57E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 39
power= 4.000E-03mw, burnup=5.8440E+03mwd, flux= 2.68E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d
h 1	2.61E-04	2.83E-04	3.04E-04	3.26E-04	3.48E-04	3.48E-04
h 2	7.77E-07	8.41E-07	9.06E-07	9.70E-07	1.03E-06	1.03E-06
h 3	4.11E-11	4.19E-11	4.24E-11	4.29E-11	4.34E-11	4.34E-11
h 4	1.65E-34	1.68E-34	1.70E-34	1.72E-34	1.74E-34	1.74E-34
he 3	5.43E-09	5.83E-09	6.23E-09	6.61E-09	6.99E-09	6.99E-09
he 4	4.32E-05	4.68E-05	5.04E-05	5.40E-05	5.76E-05	5.76E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	5.19E-06	5.62E-06	6.05E-06	6.48E-06	6.91E-06	6.91E-06
ne 21	5.10E-10	5.92E-10	6.81E-10	7.75E-10	8.74E-10	8.74E-10
ne 22	3.43E-08	3.72E-08	4.00E-08	4.29E-08	4.57E-08	4.57E-08
ne 23	7.12E-15	7.15E-15	7.15E-15	7.14E-15	7.14E-15	7.14E-15
na 22	4.20E-11	4.22E-11	4.22E-11	4.21E-11	4.21E-11	4.21E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.85E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08
na 24m	4.68E-15	4.56E-15	4.56E-15	4.55E-15	4.55E-15	4.55E-15
na 25	1.61E-24	1.85E-24	2.12E-24	2.40E-24	2.69E-24	2.69E-24
mg 24	3.97E-02	4.25E-02	4.54E-02	4.83E-02	5.11E-02	5.11E-02
mg 25	5.57E-08	6.43E-08	7.35E-08	8.32E-08	9.35E-08	9.35E-08
mg 26	7.76E-07	8.41E-07	9.05E-07	9.69E-07	1.03E-06	1.03E-06
mg 27	2.13E-12	2.13E-12	2.13E-12	2.13E-12	2.13E-12	2.13E-12
mg 28	4.28E-24	4.29E-24	4.29E-24	4.28E-24	4.27E-24	4.27E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.11E-10	2.06E-10	2.06E-10	2.05E-10	2.05E-10	2.05E-10
al 29	1.20E-22	1.40E-22	1.61E-22	1.83E-22	2.07E-22	2.07E-22
al 30	6.81E-33	8.58E-33	1.06E-32	1.30E-32	1.56E-32	1.56E-32
si 28	1.15E-01	1.24E-01	1.32E-01	1.41E-01	1.49E-01	1.49E-01
si 29	4.66E-07	5.42E-07	6.23E-07	7.10E-07	8.01E-07	8.01E-07
si 30	1.97E-12	2.49E-12	3.08E-12	3.76E-12	4.53E-12	4.53E-12
si 31	1.40E-24	1.76E-24	2.18E-24	2.66E-24	3.20E-24	3.20E-24
si 32	1.93E-30	2.48E-30	3.11E-30	3.84E-30	4.68E-30	4.68E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04

0 flux 2.68E+08 2.68E+08 2.68E+08 2.68E+08 2.68E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 40
power= 4.000E-03mw, burnup=5.8440E+03mwd, flux= 2.68E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	1.33E+00	1.50E+00	1.68E+00	1.86E+00	2.06E+00	2.06E+00
pb206	3.38E-04	4.21E-04	5.15E-04	6.21E-04	7.39E-04	7.39E-04
pb207	6.81E-05	8.00E-05	9.29E-05	1.07E-04	1.22E-04	1.22E-04
pb208	1.09E-05	1.28E-05	1.48E-05	1.70E-05	1.93E-05	1.93E-05
pb209	1.14E-11	1.32E-11	1.52E-11	1.73E-11	1.96E-11	1.96E-11
pb210	1.00E-05	1.14E-05	1.29E-05	1.44E-05	1.60E-05	1.60E-05
pb211	4.55E-12	4.94E-12	5.32E-12	5.70E-12	6.09E-12	6.09E-12
pb212	1.26E-11	1.36E-11	1.46E-11	1.57E-11	1.67E-11	1.67E-11
pb214	2.29E-11	2.61E-11	2.95E-11	3.29E-11	3.65E-11	3.65E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.18E-05	2.75E-05	3.42E-05	4.18E-05	5.04E-05	5.04E-05
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	6.17E-09	7.03E-09	7.94E-09	8.87E-09	9.82E-09	9.82E-09
bi211	2.70E-13	2.93E-13	3.15E-13	3.38E-13	3.61E-13	3.61E-13
bi212	1.19E-12	1.29E-12	1.39E-12	1.49E-12	1.59E-12	1.59E-12
bi213	2.66E-12	3.09E-12	3.56E-12	4.05E-12	4.57E-12	4.57E-12
bi214	1.70E-11	1.94E-11	2.19E-11	2.44E-11	2.71E-11	2.71E-11
po210	1.70E-07	1.94E-07	2.19E-07	2.45E-07	2.71E-07	2.71E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.98E-18	3.23E-18	3.48E-18	3.74E-18	3.99E-18	3.99E-18
po212	6.26E-23	6.78E-23	7.29E-23	7.81E-23	8.33E-23	8.33E-23
po213	3.99E-21	4.65E-21	5.35E-21	6.09E-21	6.87E-21	6.87E-21
po214	2.34E-18	2.67E-18	3.01E-18	3.36E-18	3.72E-18	3.72E-18
po215	3.74E-18	4.06E-18	4.37E-18	4.69E-18	5.00E-18	5.00E-18
po216	4.75E-17	5.15E-17	5.54E-17	5.93E-17	6.33E-17	6.33E-17
po218	2.65E-12	3.02E-12	3.41E-12	3.81E-12	4.22E-12	4.22E-12
rn218	1.84E-28	1.99E-28	2.14E-28	2.29E-28	2.44E-28	2.44E-28
rn219	8.33E-15	9.03E-15	9.73E-15	1.04E-14	1.11E-14	1.11E-14
rn220	1.82E-14	1.97E-14	2.12E-14	2.28E-14	2.43E-14	2.43E-14
rn222	4.70E-09	5.37E-09	6.05E-09	6.76E-09	7.49E-09	7.49E-09
ra222	2.00E-25	2.16E-25	2.32E-25	2.48E-25	2.65E-25	2.65E-25
ra223	2.08E-09	2.25E-09	2.43E-09	2.60E-09	2.78E-09	2.78E-09
ra224	1.04E-10	1.12E-10	1.21E-10	1.29E-10	1.38E-10	1.38E-10
ra225	1.24E-09	1.45E-09	1.66E-09	1.89E-09	2.14E-09	2.14E-09
ra226	7.19E-04	8.20E-04	9.25E-04	1.03E-03	1.14E-03	1.14E-03
ra228	6.40E-12	6.93E-12	7.47E-12	8.01E-12	8.55E-12	8.55E-12
ac225	8.39E-10	9.77E-10	1.12E-09	1.28E-09	1.44E-09	1.44E-09
ac227	1.44E-06	1.57E-06	1.69E-06	1.81E-06	1.93E-06	1.93E-06
ac228	7.81E-16	8.46E-16	9.12E-16	9.78E-16	1.04E-15	1.04E-15
th226	9.73E-24	1.05E-23	1.13E-23	1.21E-23	1.29E-23	1.29E-23
th227	3.35E-09	3.63E-09	3.92E-09	4.20E-09	4.48E-09	4.48E-09
th228	1.98E-08	2.14E-08	2.31E-08	2.47E-08	2.63E-08	2.63E-08
th229	2.42E-04	2.81E-04	3.23E-04	3.68E-04	4.15E-04	4.15E-04
th230	7.71E-02	8.36E-02	9.00E-02	9.65E-02	1.03E-01	1.03E-01
th231	3.28E-09	3.30E-09	3.33E-09	3.35E-09	3.37E-09	3.37E-09
th232	1.56E-02	1.69E-02	1.83E-02	1.96E-02	2.09E-02	2.09E-02
th233	1.42E-13	1.54E-13	1.66E-13	1.78E-13	1.90E-13	1.90E-13
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	2.17E-03	2.35E-03	2.54E-03	2.72E-03	2.90E-03	2.90E-03
pa232	3.69E-11	4.00E-11	4.30E-11	4.61E-11	4.91E-11	4.91E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 41
power= 4.000E-03mw, burnup=5.8440E+03mwd, flux= 2.68E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	9.43E-21	1.02E-20	1.10E-20	1.17E-20	1.25E-20	1.25E-20
u231	3.07E-17	3.32E-17	3.57E-17	3.81E-17	4.05E-17	4.05E-17
u232	7.21E-07	7.80E-07	8.40E-07	8.99E-07	9.59E-07	9.59E-07
u233	4.00E-02	4.33E-02	4.65E-02	4.98E-02	5.30E-02	5.30E-02
u234	9.46E+00	9.49E+00	9.53E+00	9.56E+00	9.59E+00	9.59E+00
u235	7.09E+02	7.07E+02	7.05E+02	7.04E+02	7.02E+02	7.02E+02
u236	1.78E+02	1.78E+02	1.78E+02	1.79E+02	1.79E+02	1.79E+02
u237	3.17E-06	3.17E-06	3.17E-06	3.17E-06	3.18E-06	3.18E-06
u238	3.64E+04	3.64E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.18E-07	3.18E-07	3.18E-07	3.17E-07	3.17E-07	3.17E-07
u240	1.33E-39	2.77E-39	5.44E-39	9.95E-39	1.74E-38	1.74E-38
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.73E-12	8.74E-12	8.73E-12	8.72E-12	8.71E-12	8.71E-12
np236m	2.08E-12	2.08E-12	2.07E-12	2.07E-12	2.07E-12	2.07E-12
np236	5.97E-07	6.45E-07	6.94E-07	7.42E-07	7.90E-07	7.90E-07
np237	4.19E+01	4.19E+01	4.19E+01	4.19E+01	4.18E+01	4.18E+01
np238	1.54E-06	1.53E-06	1.53E-06	1.53E-06	1.53E-06	1.53E-06
np239	4.60E-05	4.59E-05	4.59E-05	4.59E-05	4.58E-05	4.58E-05
np240m	1.14E-41	2.36E-41	4.64E-41	8.49E-41	1.49E-40	1.49E-40
np240	9.27E-15	9.25E-15	9.24E-15	9.22E-15	9.21E-15	9.21E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.12E-09	1.12E-09
pu237	3.49E-13	3.58E-13	3.66E-13	3.75E-13	3.83E-13	3.83E-13
pu238	2.33E-02	2.32E-02	2.32E-02	2.32E-02	2.31E-02	2.31E-02
pu239	1.38E+01	1.49E+01	1.59E+01	1.69E+01	1.79E+01	1.79E+01
pu240	1.85E-01	2.13E-01	2.43E-01	2.74E-01	3.07E-01	3.07E-01
pu241	7.62E-05	8.78E-05	1.00E-04	1.13E-04	1.26E-04	1.26E-04
pu242	4.36E-06	5.64E-06	7.14E-06	8.88E-06	1.09E-05	1.09E-05
pu243	9.24E-15	1.19E-14	1.51E-14	1.88E-14	2.29E-14	2.29E-14
pu244	6.88E-29	1.40E-28	2.69E-28	4.93E-28	8.68E-28	8.68E-28
pu245	2.75E-39	5.65E-39	1.09E-38	1.99E-38	3.49E-38	3.49E-38
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	4.29E-19	5.10E-19	5.96E-19	6.87E-19	7.83E-19	7.83E-19
am240	1.96E-16	2.33E-16	2.73E-16	3.14E-16	3.58E-16	3.58E-16
am241	1.54E-03	1.83E-03	2.14E-03	2.47E-03	2.82E-03	2.82E-03
am242m	6.77E-07	8.12E-07	9.59E-07	1.12E-06	1.28E-06	1.28E-06
am242	6.18E-11	7.34E-11	8.58E-11	9.91E-11	1.13E-10	1.13E-10
am243	2.23E-08	3.00E-08	3.92E-08	5.03E-08	6.34E-08	6.34E-08
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.70E-16	2.28E-16	2.98E-16	3.83E-16	4.82E-16	4.82E-16
am245	6.27E-40	1.28E-39	2.43E-39	4.42E-39	7.70E-39	7.70E-39
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	3.65E-21	4.34E-21	5.07E-21	5.85E-21	6.68E-21	6.68E-21
cm242	1.25E-08	1.48E-08	1.73E-08	2.00E-08	2.28E-08	2.28E-08
cm243	8.50E-18	1.03E-17	1.22E-17	1.43E-17	1.65E-17	1.65E-17
cm244	2.67E-12	3.58E-12	4.69E-12	6.01E-12	7.57E-12	7.57E-12

1

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
cm245	1.66E-15	2.42E-15	3.42E-15	4.70E-15	6.31E-15	6.31E-15

```
     cm246   4.73E-18  7.45E-18  1.13E-17  1.67E-17  2.38E-17  2.38E-17
     cm247   2.28E-22  3.91E-22  6.42E-22  1.02E-21  1.56E-21  1.56E-21
     cm248   1.09E-25  2.04E-25  3.62E-25  6.17E-25  1.01E-24  1.01E-24
     cm249   3.43E-36  6.41E-36  1.14E-35  1.94E-35  3.18E-35  3.18E-35
     cm250   4.70E-41  9.52E-41  1.83E-40  3.34E-40  5.86E-40  5.86E-40
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.68E+08  2.68E+08  2.68E+08  2.68E+08  2.68E-07
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number  5 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *          made from modified card-image origen-s libraries of scale 4.2       *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *        see information above this box (if present) for later updates         *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
          ********************************************************************************
0
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                  8/28/1996    date library was produced
0                       1697    total number of nuclides in library
                         689    number of light-element nuclides
                         129    number of actinide nuclides
                         879    number of fission product nuclides
```

```
0                    7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                  page   43
          power=    .00mw, burnup=   7305.mwd, flux= 2.67E+08n/cm**2-sec
0                                        basis =
0     (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
      productions  1.157562E+06   1.158774E+06   1.159951E+06   1.161091E+06   1.162197E+06   1.162197E+06
      absorptions  9.515668E+05   9.525161E+05   9.534447E+05   9.543523E+05   9.552406E+05   9.552406E+05
      k infinity   1.216480E+00   1.216540E+00   1.216589E+00   1.216627E+00   1.216654E+00   1.216654E+00
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
      actinide
      absorptions  9.405190E+05   9.413034E+05   9.420698E+05   9.428184E+05   9.435494E+05   9.435494E+05
      non-actinide
      abs. fracs.  1.161009E-02   1.177174E-02   1.193029E-02   1.208556E-02   1.223892E-02   1.223892E-02
1     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              fission products      page   44
0                          fraction of total absorption rate
          power=    .00mw, burnup=   7305.mwd, flux= 2.67E+08n/cm**2-sec
0               initial ******* d ******* d ******* d ******* d ******* d

      sm149     5.33E-03  5.34E-03  5.34E-03  5.35E-03  5.35E-03  5.35E-03
      eu151     7.20E-04  7.58E-04  7.95E-04  8.32E-04  8.67E-04  8.67E-04
      nd143     5.66E-04  6.01E-04  6.35E-04  6.69E-04  7.02E-04  7.02E-04
      rh103     2.75E-04  2.93E-04  3.10E-04  3.27E-04  3.45E-04  3.45E-04
      xe131     1.84E-04  1.95E-04  2.06E-04  2.18E-04  2.29E-04  2.29E-04
      gd155     1.74E-04  1.78E-04  1.82E-04  1.85E-04  1.89E-04  1.89E-04
      cs133     1.42E-04  1.51E-04  1.60E-04  1.68E-04  1.77E-04  1.77E-04
      sm147     1.05E-04  1.11E-04  1.18E-04  1.24E-04  1.31E-04  1.31E-04
      tc 99     1.04E-04  1.10E-04  1.17E-04  1.23E-04  1.29E-04  1.29E-04
      nd145     8.04E-05  8.53E-05  9.02E-05  9.51E-05  1.00E-04  1.00E-04
      cd113     8.82E-05  8.96E-05  9.08E-05  9.19E-05  9.29E-05  9.29E-05
      mo 95     5.59E-05  5.93E-05  6.27E-05  6.61E-05  6.95E-05  6.95E-05
      sm152     5.12E-05  5.48E-05  5.84E-05  6.21E-05  6.58E-05  6.58E-05
      gd157     5.02E-05  5.11E-05  5.20E-05  5.29E-05  5.37E-05  5.37E-05
      sm150     3.60E-05  3.87E-05  4.14E-05  4.41E-05  4.68E-05  4.68E-05
      kr 83     3.44E-05  3.65E-05  3.85E-05  4.06E-05  4.26E-05  4.26E-05
      sm151     4.09E-05  4.10E-05  4.11E-05  4.12E-05  4.12E-05  4.12E-05
      cs135     3.22E-05  3.41E-05  3.61E-05  3.81E-05  4.01E-05  4.01E-05
      ru101     2.51E-05  2.66E-05  2.82E-05  2.97E-05  3.12E-05  3.12E-05
      pr141     2.38E-05  2.52E-05  2.67E-05  2.81E-05  2.96E-05  2.96E-05
      eu153     2.27E-05  2.42E-05  2.57E-05  2.71E-05  2.86E-05  2.86E-05
      la139     1.94E-05  2.06E-05  2.18E-05  2.30E-05  2.42E-05  2.42E-05
      pd105     9.15E-06  9.77E-06  1.04E-05  1.10E-05  1.16E-05  1.16E-05
      ba137     9.21E-06  9.79E-06  1.04E-05  1.09E-05  1.15E-05  1.15E-05
      zr 93     7.87E-06  8.35E-06  8.83E-06  9.30E-06  9.77E-06  9.77E-06
      ag109     6.64E-06  7.26E-06  7.89E-06  8.55E-06  9.23E-06  9.23E-06
       i129     6.18E-06  6.57E-06  6.96E-06  7.35E-06  7.74E-06  7.74E-06
      nd144     5.86E-06  6.22E-06  6.58E-06  6.94E-06  7.30E-06  7.30E-06
      mo 97     4.41E-06  4.69E-06  4.96E-06  5.22E-06  5.49E-06  5.49E-06
      gd152     1.68E-06  1.89E-06  2.11E-06  2.33E-06  2.57E-06  2.57E-06
      zr 91     2.05E-06  2.18E-06  2.30E-06  2.42E-06  2.55E-06  2.55E-06
       y 89     1.96E-06  2.08E-06  2.20E-06  2.32E-06  2.43E-06  2.43E-06
      pd108     1.75E-06  1.90E-06  2.05E-06  2.20E-06  2.37E-06  2.37E-06
      ru102     1.82E-06  1.93E-06  2.04E-06  2.16E-06  2.27E-06  2.27E-06
      xe135     2.27E-06  2.27E-06  2.27E-06  2.26E-06  2.26E-06  2.26E-06
      ce142     1.61E-06  1.71E-06  1.81E-06  1.91E-06  2.01E-06  2.01E-06
      nd148     1.56E-06  1.66E-06  1.75E-06  1.85E-06  1.94E-06  1.94E-06
      nd146     1.30E-06  1.38E-06  1.46E-06  1.54E-06  1.62E-06  1.62E-06
      in115     1.13E-06  1.20E-06  1.27E-06  1.35E-06  1.42E-06  1.42E-06
      ba138     1.11E-06  1.18E-06  1.25E-06  1.32E-06  1.38E-06  1.38E-06
```

ce140	1.04E-06	1.11E-06	1.17E-06	1.23E-06	1.30E-06	1.30E-06
pd107	9.17E-07	9.90E-07	1.07E-06	1.14E-06	1.22E-06	1.22E-06
xe132	9.52E-07	1.01E-06	1.07E-06	1.13E-06	1.19E-06	1.19E-06
mo 98	6.53E-07	6.93E-07	7.33E-07	7.73E-07	8.13E-07	8.13E-07
mo100	6.31E-07	6.69E-07	7.08E-07	7.47E-07	7.85E-07	7.85E-07
xe134	6.17E-07	6.54E-07	6.92E-07	7.30E-07	7.67E-07	7.67E-07
zr 92	4.95E-07	5.25E-07	5.55E-07	5.85E-07	6.14E-07	6.14E-07
i127	4.38E-07	4.67E-07	4.96E-07	5.25E-07	5.54E-07	5.54E-07
ru104	4.08E-07	4.34E-07	4.60E-07	4.87E-07	5.13E-07	5.13E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 45

0 fraction of total absorption rate

power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	3.97E-07	4.21E-07	4.45E-07	4.69E-07	4.93E-07	4.93E-07
nd150	3.50E-07	3.72E-07	3.94E-07	4.16E-07	4.37E-07	4.37E-07
xe136	3.34E-07	3.55E-07	3.75E-07	3.96E-07	4.16E-07	4.16E-07
br 81	2.51E-07	2.66E-07	2.81E-07	2.97E-07	3.12E-07	3.12E-07
rb 85	2.42E-07	2.57E-07	2.71E-07	2.86E-07	3.00E-07	3.00E-07
cd111	2.16E-07	2.32E-07	2.49E-07	2.66E-07	2.84E-07	2.84E-07
pm147	2.65E-07	2.65E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07
zr 94	2.12E-07	2.25E-07	2.38E-07	2.51E-07	2.63E-07	2.63E-07
zr 90	1.92E-07	2.04E-07	2.15E-07	2.27E-07	2.38E-07	2.38E-07
eu152	1.87E-07	1.96E-07	2.06E-07	2.15E-07	2.24E-07	2.24E-07
sm154	1.57E-07	1.67E-07	1.77E-07	1.87E-07	1.98E-07	1.98E-07
te130	1.53E-07	1.62E-07	1.72E-07	1.81E-07	1.90E-07	1.90E-07
eu155	1.83E-07	1.85E-07	1.86E-07	1.87E-07	1.89E-07	1.89E-07
rb 87	1.40E-07	1.48E-07	1.57E-07	1.65E-07	1.73E-07	1.73E-07
ru 99	1.08E-07	1.22E-07	1.36E-07	1.52E-07	1.68E-07	1.68E-07
se 77	9.99E-08	1.06E-07	1.12E-07	1.18E-07	1.24E-07	1.24E-07
pd106	8.74E-08	9.37E-08	1.00E-07	1.07E-07	1.13E-07	1.13E-07
gd154	5.99E-08	6.76E-08	7.59E-08	8.45E-08	9.37E-08	9.37E-08
gd156	6.91E-08	7.50E-08	8.10E-08	8.72E-08	9.34E-08	9.34E-08
kr 84	6.65E-08	7.05E-08	7.46E-08	7.86E-08	8.26E-08	8.26E-08
sb121	5.15E-08	5.48E-08	5.81E-08	6.14E-08	6.48E-08	6.48E-08
se 79	5.13E-08	5.44E-08	5.75E-08	6.07E-08	6.38E-08	6.38E-08
dy161	4.11E-08	4.48E-08	4.86E-08	5.25E-08	5.66E-08	5.66E-08
sb123	4.17E-08	4.44E-08	4.71E-08	4.97E-08	5.24E-08	5.24E-08
kr 86	3.66E-08	3.88E-08	4.10E-08	4.32E-08	4.54E-08	4.54E-08
te128	3.42E-08	3.64E-08	3.85E-08	4.07E-08	4.29E-08	4.29E-08
se 80	2.39E-08	2.54E-08	2.68E-08	2.83E-08	2.97E-08	2.97E-08
ru100	1.86E-08	2.10E-08	2.34E-08	2.61E-08	2.88E-08	2.88E-08
te125	2.25E-08	2.39E-08	2.54E-08	2.69E-08	2.84E-08	2.84E-08
tb159	2.01E-08	2.16E-08	2.33E-08	2.49E-08	2.66E-08	2.66E-08
gd158	1.58E-08	1.71E-08	1.84E-08	1.97E-08	2.10E-08	2.10E-08
cd112	1.60E-08	1.71E-08	1.82E-08	1.94E-08	2.06E-08	2.06E-08
nd142	1.30E-08	1.46E-08	1.63E-08	1.82E-08	2.01E-08	2.01E-08
ba134	1.26E-08	1.42E-08	1.59E-08	1.77E-08	1.96E-08	1.96E-08
sm148	1.16E-08	1.30E-08	1.46E-08	1.62E-08	1.79E-08	1.79E-08
li 6	1.33E-08	1.41E-08	1.48E-08	1.56E-08	1.64E-08	1.64E-08
ba135	1.03E-08	1.17E-08	1.31E-08	1.45E-08	1.61E-08	1.61E-08
sr 90	1.62E-08	1.61E-08	1.61E-08	1.60E-08	1.60E-08	1.60E-08
sn117	1.19E-08	1.27E-08	1.35E-08	1.43E-08	1.51E-08	1.51E-08
eu154	1.15E-08	1.22E-08	1.29E-08	1.37E-08	1.44E-08	1.44E-08
pd104	8.79E-09	9.91E-09	1.11E-08	1.24E-08	1.37E-08	1.37E-08
dy164	8.60E-09	9.48E-09	1.04E-08	1.13E-08	1.23E-08	1.23E-08
cd114	9.10E-09	9.79E-09	1.05E-08	1.12E-08	1.19E-08	1.19E-08
sn119	9.35E-09	9.95E-09	1.06E-08	1.12E-08	1.18E-08	1.18E-08
dy162	7.83E-09	8.62E-09	9.45E-09	1.03E-08	1.12E-08	1.12E-08
sn115	8.56E-09	9.11E-09	9.66E-09	1.02E-08	1.08E-08	1.08E-08

rh105	9.77E-09	9.85E-09	9.93E-09	1.00E-08	1.01E-08	1.01E-08
pd110	7.03E-09	7.59E-09	8.17E-09	8.75E-09	9.35E-09	9.35E-09
sr 88	6.73E-09	7.14E-09	7.55E-09	7.95E-09	8.35E-09	8.35E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 46
0 fraction of total absorption rate
power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

se 82	4.60E-09	4.88E-09	5.15E-09	5.43E-09	5.71E-09	5.71E-09
sn126	4.12E-09	4.39E-09	4.67E-09	4.95E-09	5.24E-09	5.24E-09
mo 96	3.11E-09	3.49E-09	3.88E-09	4.30E-09	4.74E-09	4.74E-09
se 78	3.56E-09	3.78E-09	4.00E-09	4.22E-09	4.44E-09	4.44E-09
sn124	3.02E-09	3.21E-09	3.41E-09	3.61E-09	3.80E-09	3.80E-09
cs137	3.70E-09	3.69E-09	3.69E-09	3.69E-09	3.68E-09	3.68E-09
cd110	2.00E-09	2.31E-09	2.64E-09	3.01E-09	3.41E-09	3.41E-09
ba136	2.23E-09	2.44E-09	2.65E-09	2.87E-09	3.10E-09	3.10E-09
dy163	1.95E-09	2.16E-09	2.37E-09	2.59E-09	2.81E-09	2.81E-09
as 75	2.11E-09	2.24E-09	2.37E-09	2.49E-09	2.62E-09	2.62E-09
xe130	1.75E-09	1.94E-09	2.15E-09	2.37E-09	2.59E-09	2.59E-09
nb 93	1.65E-09	1.86E-09	2.09E-09	2.32E-09	2.57E-09	2.57E-09
pr143	2.57E-09	2.56E-09	2.56E-09	2.55E-09	2.55E-09	2.55E-09
kr 82	1.74E-09	1.92E-09	2.10E-09	2.29E-09	2.49E-09	2.49E-09
in113	1.68E-09	1.80E-09	1.91E-09	2.02E-09	2.13E-09	2.13E-09
xe133	1.96E-09	1.96E-09	1.96E-09	1.96E-09	1.96E-09	1.96E-09
sn118	1.23E-09	1.31E-09	1.39E-09	1.47E-09	1.55E-09	1.55E-09
ce141	1.55E-09	1.54E-09	1.54E-09	1.54E-09	1.54E-09	1.54E-09
br 79	8.40E-10	9.47E-10	1.06E-09	1.18E-09	1.31E-09	1.31E-09
sn122	1.03E-09	1.10E-09	1.16E-09	1.23E-09	1.30E-09	1.30E-09
cs134	1.05E-09	1.11E-09	1.17E-09	1.24E-09	1.30E-09	1.30E-09
cd116	1.03E-09	1.10E-09	1.17E-09	1.23E-09	1.30E-09	1.30E-09
sn120	7.68E-10	8.17E-10	8.67E-10	9.16E-10	9.66E-10	9.66E-10
ag107	5.88E-10	6.72E-10	7.63E-10	8.60E-10	9.65E-10	9.65E-10
pm149	9.55E-10	9.54E-10	9.54E-10	9.53E-10	9.53E-10	9.53E-10
nd147	9.09E-10	9.08E-10	9.06E-10	9.05E-10	9.04E-10	9.04E-10
xe129	4.84E-10	5.47E-10	6.13E-10	6.83E-10	7.57E-10	7.57E-10
ge 73	5.86E-10	6.23E-10	6.60E-10	6.97E-10	7.34E-10	7.34E-10
te126	4.03E-10	4.49E-10	4.97E-10	5.48E-10	6.01E-10	6.01E-10
ce144	5.77E-10	5.76E-10	5.75E-10	5.74E-10	5.73E-10	5.73E-10
kr 85	5.44E-10	5.42E-10	5.41E-10	5.40E-10	5.38E-10	5.38E-10
ru103	3.70E-10	3.70E-10	3.71E-10	3.72E-10	3.72E-10	3.72E-10
gd160	2.10E-10	2.28E-10	2.46E-10	2.64E-10	2.83E-10	2.83E-10
ge 76	2.07E-10	2.19E-10	2.32E-10	2.44E-10	2.57E-10	2.57E-10
ho165	1.50E-10	1.66E-10	1.84E-10	2.02E-10	2.21E-10	2.21E-10
zr 95	1.60E-10	1.60E-10	1.60E-10	1.59E-10	1.59E-10	1.59E-10
nb 95	1.48E-10	1.47E-10	1.47E-10	1.47E-10	1.46E-10	1.46E-10
y 91	1.36E-10	1.35E-10	1.35E-10	1.34E-10	1.34E-10	1.34E-10
dy160	7.39E-11	8.40E-11	9.49E-11	1.06E-10	1.19E-10	1.19E-10
pm151	1.11E-10	1.11E-10	1.11E-10	1.12E-10	1.12E-10	1.12E-10
xe128	4.89E-11	5.51E-11	6.18E-11	6.88E-11	7.63E-11	7.63E-11
te124	3.63E-11	3.93E-11	4.24E-11	4.56E-11	4.89E-11	4.89E-11
eu156	4.48E-11	4.54E-11	4.59E-11	4.65E-11	4.70E-11	4.70E-11
ba140	4.59E-11	4.58E-11	4.57E-11	4.57E-11	4.56E-11	4.56E-11
sr 86	2.93E-11	3.25E-11	3.60E-11	3.95E-11	4.33E-11	4.33E-11
sm153	4.16E-11	4.18E-11	4.21E-11	4.23E-11	4.25E-11	4.25E-11
ru106	3.50E-11	3.55E-11	3.60E-11	3.65E-11	3.70E-11	3.70E-11
sr 87	2.51E-11	2.67E-11	2.84E-11	3.00E-11	3.16E-11	3.16E-11
sn116	1.88E-11	2.12E-11	2.38E-11	2.65E-11	2.94E-11	2.94E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 47
0 fraction of total absorption rate
power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec

0	initial	******* d	******* d	******* d	******* d	******* d
sr 89	2.89E-11	2.88E-11	2.88E-11	2.87E-11	2.86E-11	2.86E-11
kr 87	2.16E-11	2.16E-11	2.15E-11	2.15E-11	2.14E-11	2.14E-11
nb 94	1.51E-11	1.62E-11	1.73E-11	1.84E-11	1.95E-11	1.95E-11
sb125	1.65E-11	1.66E-11	1.67E-11	1.68E-11	1.69E-11	1.69E-11
ce143	1.68E-11	1.68E-11	1.68E-11	1.67E-11	1.67E-11	1.67E-11
y 90	1.54E-11	1.53E-11	1.53E-11	1.52E-11	1.52E-11	1.52E-11
la140	1.49E-11	1.49E-11	1.49E-11	1.48E-11	1.48E-11	1.48E-11
ge 74	1.17E-11	1.25E-11	1.32E-11	1.40E-11	1.47E-11	1.47E-11
se 76	1.00E-11	1.10E-11	1.20E-11	1.31E-11	1.42E-11	1.42E-11
mo 99	1.28E-11	1.28E-11	1.28E-11	1.28E-11	1.28E-11	1.28E-11
te122	7.82E-12	8.83E-12	9.90E-12	1.10E-11	1.22E-11	1.22E-11
er166	8.05E-12	8.97E-12	9.94E-12	1.09E-11	1.20E-11	1.20E-11
ge 72	8.28E-12	8.82E-12	9.36E-12	9.91E-12	1.05E-11	1.05E-11
pm148m	9.57E-12	9.58E-12	9.59E-12	9.59E-12	9.60E-12	9.60E-12
te127m	8.28E-12	8.33E-12	8.37E-12	8.42E-12	8.47E-12	8.47E-12
i131	6.71E-12	6.71E-12	6.71E-12	6.71E-12	6.70E-12	6.70E-12
te129m	1.84E-12	1.84E-12	1.84E-12	1.85E-12	1.85E-12	1.85E-12
kr 80	7.41E-13	8.30E-13	9.26E-13	1.03E-12	1.14E-12	1.14E-12
ag111	5.08E-13	5.19E-13	5.29E-13	5.38E-13	5.48E-13	5.48E-13
er167	2.82E-13	3.29E-13	3.80E-13	4.36E-13	4.97E-13	4.97E-13
eu157	4.24E-13	4.31E-13	4.37E-13	4.44E-13	4.50E-13	4.50E-13
pm148	3.65E-13	3.65E-13	3.65E-13	3.65E-13	3.64E-13	3.64E-13
cd115m	2.56E-13	2.58E-13	2.59E-13	2.60E-13	2.61E-13	2.61E-13
te123	1.50E-13	1.74E-13	2.00E-13	2.29E-13	2.60E-13	2.60E-13
cs136	1.59E-13	1.65E-13	1.71E-13	1.77E-13	1.83E-13	1.83E-13
tb160	5.23E-14	5.63E-14	6.02E-14	6.43E-14	6.84E-14	6.84E-14
ru105	3.49E-14	3.51E-14	3.54E-14	3.57E-14	3.60E-14	3.60E-14
pr142	2.66E-14	2.82E-14	2.98E-14	3.15E-14	3.30E-14	3.30E-14
be 9	2.63E-14	2.79E-14	2.95E-14	3.12E-14	3.28E-14	3.28E-14
sn125	3.10E-14	3.11E-14	3.12E-14	3.13E-14	3.14E-14	3.14E-14
cd108	1.58E-14	1.90E-14	2.25E-14	2.65E-14	3.09E-14	3.09E-14
li 7	1.05E-14	1.11E-14	1.18E-14	1.24E-14	1.31E-14	1.31E-14
rb 88	1.22E-14	1.21E-14	1.21E-14	1.21E-14	1.20E-14	1.20E-14
sb126	9.92E-15	1.04E-14	1.08E-14	1.12E-14	1.17E-14	1.17E-14
sn123	1.03E-14	1.04E-14	1.04E-14	1.04E-14	1.04E-14	1.04E-14
i135	9.87E-15	9.86E-15	9.85E-15	9.84E-15	9.83E-15	9.83E-15
te132	9.40E-15	9.40E-15	9.39E-15	9.39E-15	9.38E-15	9.38E-15
sn114	4.66E-15	5.27E-15	5.92E-15	6.60E-15	7.33E-15	7.33E-15
i130	5.62E-15	5.91E-15	6.21E-15	6.50E-15	6.80E-15	6.80E-15
te134	5.59E-15	5.58E-15	5.57E-15	5.56E-15	5.55E-15	5.55E-15
sb124	4.12E-15	4.25E-15	4.37E-15	4.49E-15	4.61E-15	4.61E-15
in117m	2.41E-15	2.43E-15	2.44E-15	2.46E-15	2.48E-15	2.48E-15
rb 86	1.80E-15	1.89E-15	1.98E-15	2.07E-15	2.16E-15	2.16E-15
dy165	1.30E-15	1.37E-15	1.44E-15	1.50E-15	1.57E-15	1.57E-15
in117	7.17E-16	7.23E-16	7.28E-16	7.34E-16	7.39E-16	7.39E-16
cs134m	1.96E-16	2.08E-16	2.20E-16	2.32E-16	2.44E-16	2.44E-16
cd118	1.29E-16	1.30E-16	1.30E-16	1.31E-16	1.31E-16	1.31E-16
ge 75	8.43E-17	8.42E-17	8.41E-17	8.40E-17	8.39E-17	8.39E-17
in119m	3.19E-17	3.20E-17	3.21E-17	3.22E-17	3.23E-17	3.23E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 48

0 fraction of total absorption rate

power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec

0	initial	******* d	******* d	******* d	******* d	******* d
ag110	8.58E-18	9.38E-18	1.02E-17	1.10E-17	1.19E-17	1.19E-17
cd109	6.77E-18	7.20E-18	7.64E-18	8.09E-18	8.56E-18	8.56E-18
in119	2.57E-18	2.59E-18	2.60E-18	2.61E-18	2.62E-18	2.62E-18

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 49
power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.67E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
h 1	3.48E-04	3.69E-04	3.91E-04	4.13E-04	4.34E-04	4.34E-04
h 2	1.03E-06	1.10E-06	1.16E-06	1.23E-06	1.29E-06	1.29E-06
h 3	4.34E-11	4.42E-11	4.47E-11	4.51E-11	4.56E-11	4.56E-11
h 4	1.74E-34	1.76E-34	1.78E-34	1.80E-34	1.82E-34	1.82E-34
he 3	6.99E-09	7.37E-09	7.73E-09	8.09E-09	8.45E-09	8.45E-09
he 4	5.76E-05	6.11E-05	6.47E-05	6.83E-05	7.19E-05	7.19E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	6.91E-06	7.35E-06	7.78E-06	8.21E-06	8.64E-06	8.64E-06
ne 21	8.74E-10	9.80E-10	1.09E-09	1.21E-09	1.33E-09	1.33E-09
ne 22	4.57E-08	4.86E-08	5.15E-08	5.43E-08	5.72E-08	5.72E-08
ne 23	7.14E-15	7.18E-15	7.17E-15	7.17E-15	7.16E-15	7.16E-15
na 22	4.21E-11	4.24E-11	4.23E-11	4.23E-11	4.23E-11	4.23E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.77E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08
na 24m	4.55E-15	4.54E-15	4.54E-15	4.53E-15	4.53E-15	4.53E-15
na 25	2.69E-24	3.01E-24	3.34E-24	3.68E-24	4.04E-24	4.04E-24
mg 24	5.11E-02	5.40E-02	5.69E-02	5.97E-02	6.26E-02	6.26E-02
mg 25	9.35E-08	1.04E-07	1.16E-07	1.28E-07	1.40E-07	1.40E-07
mg 26	1.03E-06	1.10E-06	1.16E-06	1.23E-06	1.29E-06	1.29E-06
mg 27	2.13E-12	2.14E-12	2.14E-12	2.14E-12	2.14E-12	2.14E-12
mg 28	4.27E-24	4.29E-24	4.28E-24	4.28E-24	4.27E-24	4.27E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.05E-10	2.05E-10	2.05E-10	2.04E-10	2.04E-10	2.04E-10
al 29	2.07E-22	2.32E-22	2.58E-22	2.86E-22	3.15E-22	3.15E-22
al 30	1.56E-32	1.86E-32	2.20E-32	2.56E-32	2.97E-32	2.97E-32
si 28	1.49E-01	1.57E-01	1.66E-01	1.74E-01	1.82E-01	1.82E-01
si 29	8.01E-07	8.98E-07	1.00E-06	1.11E-06	1.22E-06	1.22E-06
si 30	4.53E-12	5.40E-12	6.36E-12	7.43E-12	8.62E-12	8.62E-12
si 31	3.20E-24	3.81E-24	4.49E-24	5.24E-24	6.08E-24	6.08E-24
si 32	4.68E-30	5.62E-30	6.67E-30	7.85E-30	9.16E-30	9.16E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.67E+08	2.67E+08	2.67E+08	2.66E+08	2.66E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 50
power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.67E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	2.06E+00	2.26E+00	2.47E+00	2.69E+00	2.91E+00	2.91E+00
pb206	7.39E-04	8.69E-04	1.01E-03	1.17E-03	1.34E-03	1.34E-03
pb207	1.22E-04	1.37E-04	1.54E-04	1.72E-04	1.90E-04	1.90E-04
pb208	1.93E-05	2.18E-05	2.44E-05	2.72E-05	3.01E-05	3.01E-05
pb209	1.96E-11	2.19E-11	2.44E-11	2.69E-11	2.96E-11	2.96E-11
pb210	1.60E-05	1.75E-05	1.92E-05	2.08E-05	2.25E-05	2.25E-05
pb211	6.09E-12	6.47E-12	6.85E-12	7.24E-12	7.62E-12	7.62E-12
pb212	1.67E-11	1.78E-11	1.88E-11	1.98E-11	2.09E-11	2.09E-11
pb214	3.65E-11	4.01E-11	4.38E-11	4.76E-11	5.14E-11	5.14E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	5.04E-05	6.01E-05	7.09E-05	8.28E-05	9.60E-05	9.60E-05
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	9.82E-09	1.08E-08	1.18E-08	1.28E-08	1.39E-08	1.39E-08
bi211	3.61E-13	3.84E-13	4.06E-13	4.29E-13	4.52E-13	4.52E-13
bi212	1.59E-12	1.68E-12	1.78E-12	1.88E-12	1.98E-12	1.98E-12
bi213	4.57E-12	5.11E-12	5.69E-12	6.29E-12	6.91E-12	6.91E-12
bi214	2.71E-11	2.98E-11	3.25E-11	3.53E-11	3.82E-11	3.82E-11

po210	2.71E-07	2.98E-07	3.26E-07	3.54E-07	3.83E-07	3.83E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.99E-18	4.24E-18	4.49E-18	4.74E-18	4.99E-18	4.99E-18
po212	8.33E-23	8.85E-23	9.37E-23	9.88E-23	1.04E-22	1.04E-22
po213	6.87E-21	7.69E-21	8.55E-21	9.45E-21	1.04E-20	1.04E-20
po214	3.72E-18	4.10E-18	4.47E-18	4.86E-18	5.25E-18	5.25E-18
po215	5.00E-18	5.32E-18	5.63E-18	5.95E-18	6.27E-18	6.27E-18
po216	6.33E-17	6.72E-17	7.11E-17	7.51E-17	7.90E-17	7.90E-17
po218	4.22E-12	4.64E-12	5.07E-12	5.51E-12	5.95E-12	5.95E-12
rn218	2.44E-28	2.60E-28	2.75E-28	2.90E-28	3.05E-28	3.05E-28
rn219	1.11E-14	1.18E-14	1.25E-14	1.32E-14	1.39E-14	1.39E-14
rn220	2.43E-14	2.58E-14	2.73E-14	2.88E-14	3.03E-14	3.03E-14
rn222	7.49E-09	8.24E-09	9.00E-09	9.78E-09	1.06E-08	1.06E-08
ra222	2.65E-25	2.82E-25	2.98E-25	3.14E-25	3.31E-25	3.31E-25
ra223	2.78E-09	2.95E-09	3.13E-09	3.30E-09	3.48E-09	3.48E-09
ra224	1.38E-10	1.47E-10	1.55E-10	1.64E-10	1.72E-10	1.72E-10
ra225	2.14E-09	2.39E-09	2.66E-09	2.94E-09	3.23E-09	3.23E-09
ra226	1.14E-03	1.26E-03	1.38E-03	1.49E-03	1.62E-03	1.62E-03
ra228	8.55E-12	9.09E-12	9.64E-12	1.02E-11	1.07E-11	1.07E-11
ac225	1.44E-09	1.62E-09	1.80E-09	1.99E-09	2.18E-09	2.18E-09
ac227	1.93E-06	2.05E-06	2.17E-06	2.30E-06	2.42E-06	2.42E-06
ac228	1.04E-15	1.11E-15	1.18E-15	1.24E-15	1.31E-15	1.31E-15
th226	1.29E-23	1.38E-23	1.45E-23	1.53E-23	1.61E-23	1.61E-23
th227	4.48E-09	4.76E-09	5.05E-09	5.33E-09	5.61E-09	5.61E-09
th228	2.63E-08	2.80E-08	2.96E-08	3.13E-08	3.29E-08	3.29E-08
th229	4.15E-04	4.65E-04	5.17E-04	5.72E-04	6.28E-04	6.28E-04
th230	1.03E-01	1.10E-01	1.16E-01	1.23E-01	1.29E-01	1.29E-01
th231	3.37E-09	3.39E-09	3.42E-09	3.44E-09	3.46E-09	3.46E-09
th232	2.09E-02	2.22E-02	2.36E-02	2.49E-02	2.62E-02	2.62E-02
th233	1.90E-13	2.02E-13	2.13E-13	2.25E-13	2.37E-13	2.37E-13
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	2.90E-03	3.09E-03	3.27E-03	3.45E-03	3.64E-03	3.64E-03
pa232	4.91E-11	5.22E-11	5.53E-11	5.83E-11	6.14E-11	6.14E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 51
power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.67E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.45E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.25E-20	1.33E-20	1.41E-20	1.49E-20	1.56E-20	1.56E-20
u231	4.05E-17	4.31E-17	4.55E-17	4.79E-17	5.03E-17	5.03E-17
u232	9.59E-07	1.02E-06	1.08E-06	1.14E-06	1.20E-06	1.20E-06
u233	5.30E-02	5.62E-02	5.94E-02	6.26E-02	6.58E-02	6.58E-02
u234	9.59E+00	9.63E+00	9.66E+00	9.70E+00	9.73E+00	9.73E+00
u235	7.02E+02	7.00E+02	6.99E+02	6.97E+02	6.96E+02	6.96E+02
u236	1.79E+02	1.79E+02	1.79E+02	1.80E+02	1.80E+02	1.80E+02
u237	3.18E-06	3.19E-06	3.19E-06	3.19E-06	3.19E-06	3.19E-06
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	1.74E-38	2.96E-38	4.85E-38	7.75E-38	1.21E-37	1.21E-37
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.71E-12	8.75E-12	8.74E-12	8.73E-12	8.72E-12	8.72E-12
np236m	2.07E-12	2.08E-12	2.08E-12	2.07E-12	2.07E-12	2.07E-12
np236	7.90E-07	8.38E-07	8.86E-07	9.33E-07	9.81E-07	9.81E-07
np237	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01
np238	1.53E-06	1.53E-06	1.53E-06	1.53E-06	1.52E-06	1.52E-06

```
     np239   4.58E-05  4.59E-05  4.59E-05  4.58E-05  4.58E-05  4.58E-05
     np240m  1.49E-40  2.52E-40  4.14E-40  6.61E-40  1.03E-39  1.03E-39
     np240   9.21E-15  9.22E-15  9.20E-15  9.19E-15  9.18E-15  9.18E-15
     np241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu236   1.12E-09  1.13E-09  1.13E-09  1.13E-09  1.13E-09  1.13E-09
     pu237   3.83E-13  3.93E-13  4.01E-13  4.09E-13  4.16E-13  4.16E-13
     pu238   2.31E-02  2.31E-02  2.31E-02  2.31E-02  2.31E-02  2.31E-02
     pu239   1.79E+01  1.88E+01  1.98E+01  2.07E+01  2.17E+01  2.17E+01
     pu240   3.07E-01  3.41E-01  3.76E-01  4.13E-01  4.50E-01  4.50E-01
     pu241   1.26E-04  1.40E-04  1.55E-04  1.70E-04  1.85E-04  1.85E-04
     pu242   1.09E-05  1.31E-05  1.56E-05  1.85E-05  2.16E-05  2.16E-05
     pu243   2.29E-14  2.77E-14  3.31E-14  3.90E-14  4.55E-14  4.55E-14
     pu244   8.68E-28  1.47E-27  2.42E-27  3.86E-27  6.01E-27  6.01E-27
     pu245   3.49E-38  5.92E-38  9.73E-38  1.55E-37  2.41E-37  2.41E-37
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239   7.83E-19  8.90E-19  9.96E-19  1.11E-18  1.22E-18  1.22E-18
     am240   3.58E-16  4.07E-16  4.56E-16  5.06E-16  5.59E-16  5.59E-16
     am241   2.82E-03  3.18E-03  3.57E-03  3.97E-03  4.38E-03  4.38E-03
     am242m  1.28E-06  1.46E-06  1.64E-06  1.84E-06  2.04E-06  2.04E-06
     am242   1.13E-10  1.28E-10  1.43E-10  1.59E-10  1.76E-10  1.76E-10
     am243   6.34E-08  7.87E-08  9.63E-08  1.16E-07  1.39E-07  1.39E-07
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   4.82E-16  5.98E-16  7.32E-16  8.84E-16  1.06E-15  1.06E-15
     am245   7.70E-39  1.30E-38  2.12E-38  3.36E-38  5.20E-38  5.20E-38
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   6.68E-21  7.58E-21  8.49E-21  9.44E-21  1.04E-20  1.04E-20
     cm242   2.28E-08  2.58E-08  2.90E-08  3.22E-08  3.56E-08  3.56E-08
     cm243   1.65E-17  1.88E-17  2.12E-17  2.38E-17  2.65E-17  2.65E-17
     cm244   7.57E-12  9.40E-12  1.15E-11  1.39E-11  1.66E-11  1.66E-11
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                actinides        page   52
       power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.67E+08n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
            charge ******* d ******* d ******* d ******* d ******* d
     cm245   6.31E-15  8.32E-15  1.08E-14  1.38E-14  1.73E-14  1.73E-14
     cm246   2.38E-17  3.33E-17  4.56E-17  6.13E-17  8.10E-17  8.10E-17
     cm247   1.56E-21  2.33E-21  3.39E-21  4.82E-21  6.73E-21  6.73E-21
     cm248   1.01E-24  1.61E-24  2.49E-24  3.76E-24  5.54E-24  5.54E-24
     cm249   3.18E-35  5.06E-35  7.82E-35  1.18E-34  1.74E-34  1.74E-34
     cm250   5.86E-40  9.92E-40  1.63E-39  2.59E-39  4.03E-39  4.03E-39
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              2.67E+08  2.67E+08  2.67E+08  2.66E+08  2.66E-07
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

         cross-section data taken from position number  6 of library on unit 33.

         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densities
           pass n applies mid time densities of nth library interval
```

```
        first library updated was...
        pass   1
        pass   0
        *scale-system control module sas2 library*
        used a time-dependent neutron spectrum, for each of the above passes
          pass 0 applies start-up fuel densiities
          pass n applies mid time densities of nth library interval
        first library updated was...
        ******************************************************************************
        *                                                                            *
        *            prelim lwr origen-s binary working library--id = 1143            *
        *         made from modified card-image origen-s libraries of scale 4.2       *
        *      data from the light element, actinide, and fission product libraries   *
        *        decay data, including gamma and total energy, are from endf/b-vi     *
        *                                                                            *
        *      neutron flux spectrum factors and cross sections were produced from    *
        *     the "presas2" case updating all nuclides on the scale "burnup" library  *
        *                                                                            *
        *                  fission product yields are from endf/b-v                  *
        *                                                                            *
        *              photon libraries use an 18-energy-group structure             *
        *             the photon data are from the master photon data base,          *
        *              produced to include bremsstrahlung from uo2 matrix            *
        *                                                                            *
        *        see information above this box (if present) for later updates       *
        *                                                                            *
        ******************************************************************************
        *                                                                            *
0       ******************************************************************************
0                 .other identification and sizes of library.
0                  data set name:  ft33f001
0               8/28/1996    date library was produced
0                    1697    total number of nuclides in library
                      689    number of light-element nuclides
                      129    number of actinide nuclides
                      879    number of fission product nuclides
0                    7993    number of nonzero off-diagonal matrix elements
0       ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   53
        power=    .00mw, burnup=   8766.mwd, flux= 2.66E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                  initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.163128E+06   1.164209E+06   1.165256E+06   1.166270E+06   1.167251E+06   1.167251E+06
     absorptions   9.567318E+05   9.576066E+05   9.584629E+05   9.593006E+05   9.601203E+05   9.601203E+05
     k infinity    1.215731E+00   1.215749E+00   1.215755E+00   1.215750E+00   1.215734E+00   1.215734E+00
0                  initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   9.450275E+05   9.457461E+05   9.464477E+05   9.471324E+05   9.478004E+05   9.478004E+05
     non-actinide
     abs. fracs.   1.223361E-02   1.238549E-02   1.253587E-02   1.268452E-02   1.283157E-02   1.283157E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products    page   54
0                                  fraction of total absorption rate
        power=    .00mw, burnup=   8766.mwd, flux= 2.66E+08n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.34E-03  5.34E-03  5.35E-03  5.35E-03  5.35E-03  5.35E-03
     eu151     8.66E-04  9.01E-04  9.34E-04  9.67E-04  1.00E-03  1.00E-03
     nd143     7.02E-04  7.35E-04  7.69E-04  8.02E-04  8.36E-04  8.36E-04
     rh103     3.45E-04  3.62E-04  3.79E-04  3.97E-04  4.14E-04  4.14E-04
```

xe131	2.29E-04	2.40E-04	2.51E-04	2.63E-04	2.74E-04	2.74E-04
cs133	1.77E-04	1.86E-04	1.94E-04	2.03E-04	2.12E-04	2.12E-04
gd155	1.88E-04	1.91E-04	1.94E-04	1.97E-04	1.99E-04	1.99E-04
sm147	1.31E-04	1.37E-04	1.43E-04	1.50E-04	1.56E-04	1.56E-04
tc 99	1.29E-04	1.36E-04	1.42E-04	1.48E-04	1.54E-04	1.54E-04
nd145	1.00E-04	1.05E-04	1.10E-04	1.14E-04	1.19E-04	1.19E-04
cd113	9.28E-05	9.37E-05	9.46E-05	9.54E-05	9.62E-05	9.62E-05
mo 95	6.95E-05	7.29E-05	7.62E-05	7.96E-05	8.29E-05	8.29E-05
sm152	6.58E-05	6.96E-05	7.33E-05	7.71E-05	8.09E-05	8.09E-05
sm150	4.68E-05	4.95E-05	5.21E-05	5.48E-05	5.75E-05	5.75E-05
gd157	5.37E-05	5.45E-05	5.54E-05	5.62E-05	5.70E-05	5.70E-05
kr 83	4.26E-05	4.46E-05	4.67E-05	4.87E-05	5.07E-05	5.07E-05
cs135	4.01E-05	4.20E-05	4.40E-05	4.60E-05	4.79E-05	4.79E-05
sm151	4.12E-05	4.13E-05	4.14E-05	4.15E-05	4.16E-05	4.16E-05
ru101	3.13E-05	3.28E-05	3.44E-05	3.59E-05	3.74E-05	3.74E-05
pr141	2.96E-05	3.10E-05	3.25E-05	3.39E-05	3.53E-05	3.53E-05
eu153	2.86E-05	3.01E-05	3.16E-05	3.31E-05	3.46E-05	3.46E-05
la139	2.41E-05	2.53E-05	2.65E-05	2.77E-05	2.88E-05	2.88E-05
pd105	1.16E-05	1.23E-05	1.29E-05	1.35E-05	1.42E-05	1.42E-05
ba137	1.15E-05	1.21E-05	1.26E-05	1.32E-05	1.38E-05	1.38E-05
ag109	9.24E-06	9.94E-06	1.07E-05	1.14E-05	1.22E-05	1.22E-05
zr 93	9.78E-06	1.03E-05	1.07E-05	1.12E-05	1.17E-05	1.17E-05
i129	7.73E-06	8.12E-06	8.51E-06	8.90E-06	9.29E-06	9.29E-06
nd144	7.29E-06	7.65E-06	8.01E-06	8.36E-06	8.72E-06	8.72E-06
mo 97	5.49E-06	5.76E-06	6.03E-06	6.30E-06	6.56E-06	6.56E-06
gd152	2.57E-06	2.81E-06	3.07E-06	3.33E-06	3.61E-06	3.61E-06
pd108	2.37E-06	2.53E-06	2.70E-06	2.87E-06	3.05E-06	3.05E-06
zr 91	2.55E-06	2.67E-06	2.79E-06	2.91E-06	3.03E-06	3.03E-06
y 89	2.43E-06	2.55E-06	2.67E-06	2.78E-06	2.90E-06	2.90E-06
ru102	2.27E-06	2.38E-06	2.49E-06	2.60E-06	2.72E-06	2.72E-06
ce142	2.00E-06	2.10E-06	2.20E-06	2.30E-06	2.39E-06	2.39E-06
nd148	1.94E-06	2.04E-06	2.13E-06	2.23E-06	2.32E-06	2.32E-06
xe135	2.26E-06	2.26E-06	2.26E-06	2.26E-06	2.26E-06	2.26E-06
nd146	1.62E-06	1.70E-06	1.78E-06	1.86E-06	1.94E-06	1.94E-06
in115	1.42E-06	1.49E-06	1.56E-06	1.64E-06	1.71E-06	1.71E-06
ba138	1.38E-06	1.45E-06	1.52E-06	1.59E-06	1.65E-06	1.65E-06
pd107	1.22E-06	1.30E-06	1.38E-06	1.47E-06	1.55E-06	1.55E-06
ce140	1.29E-06	1.36E-06	1.42E-06	1.48E-06	1.55E-06	1.55E-06
xe132	1.19E-06	1.25E-06	1.31E-06	1.37E-06	1.42E-06	1.42E-06
mo 98	8.14E-07	8.54E-07	8.94E-07	9.33E-07	9.73E-07	9.73E-07
mo100	7.86E-07	8.24E-07	8.63E-07	9.01E-07	9.40E-07	9.40E-07
xe134	7.67E-07	8.04E-07	8.42E-07	8.79E-07	9.17E-07	9.17E-07
zr 92	6.14E-07	6.44E-07	6.73E-07	7.03E-07	7.32E-07	7.32E-07
i127	5.55E-07	5.84E-07	6.13E-07	6.43E-07	6.73E-07	6.73E-07
ru104	5.13E-07	5.40E-07	5.67E-07	5.93E-07	6.20E-07	6.20E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 55
0 fraction of total absorption rate
power= .00mw, burnup= 8766.mwd, flux= 2.66E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	4.94E-07	5.18E-07	5.42E-07	5.66E-07	5.90E-07	5.90E-07
nd150	4.37E-07	4.59E-07	4.81E-07	5.03E-07	5.24E-07	5.24E-07
xe136	4.16E-07	4.36E-07	4.57E-07	4.77E-07	4.97E-07	4.97E-07
br 81	3.12E-07	3.27E-07	3.42E-07	3.57E-07	3.73E-07	3.73E-07
rb 85	3.00E-07	3.15E-07	3.29E-07	3.43E-07	3.58E-07	3.58E-07
cd111	2.84E-07	3.01E-07	3.19E-07	3.38E-07	3.56E-07	3.56E-07
zr 94	2.64E-07	2.76E-07	2.89E-07	3.02E-07	3.15E-07	3.15E-07
zr 90	2.38E-07	2.50E-07	2.61E-07	2.73E-07	2.84E-07	2.84E-07
pm147	2.64E-07	2.63E-07	2.63E-07	2.63E-07	2.62E-07	2.62E-07
eu152	2.24E-07	2.32E-07	2.41E-07	2.49E-07	2.57E-07	2.57E-07

ru 99	1.68E-07	1.85E-07	2.02E-07	2.21E-07	2.40E-07	2.40E-07
sm154	1.98E-07	2.08E-07	2.18E-07	2.29E-07	2.39E-07	2.39E-07
te130	1.90E-07	2.00E-07	2.09E-07	2.18E-07	2.28E-07	2.28E-07
rb 87	1.73E-07	1.82E-07	1.90E-07	1.98E-07	2.07E-07	2.07E-07
eu155	1.89E-07	1.90E-07	1.91E-07	1.93E-07	1.94E-07	1.94E-07
se 77	1.24E-07	1.30E-07	1.36E-07	1.42E-07	1.48E-07	1.48E-07
pd106	1.13E-07	1.20E-07	1.27E-07	1.33E-07	1.40E-07	1.40E-07
gd154	9.36E-08	1.03E-07	1.13E-07	1.24E-07	1.35E-07	1.35E-07
gd156	9.35E-08	9.98E-08	1.06E-07	1.13E-07	1.19E-07	1.19E-07
kr 84	8.27E-08	8.67E-08	9.06E-08	9.46E-08	9.86E-08	9.86E-08
sb121	6.48E-08	6.81E-08	7.15E-08	7.48E-08	7.82E-08	7.82E-08
se 79	6.37E-08	6.68E-08	6.99E-08	7.30E-08	7.61E-08	7.61E-08
dy161	5.65E-08	6.07E-08	6.50E-08	6.94E-08	7.38E-08	7.38E-08
sb123	5.24E-08	5.51E-08	5.78E-08	6.05E-08	6.32E-08	6.32E-08
kr 86	4.54E-08	4.76E-08	4.97E-08	5.19E-08	5.41E-08	5.41E-08
te128	4.29E-08	4.50E-08	4.72E-08	4.94E-08	5.16E-08	5.16E-08
ru100	2.88E-08	3.17E-08	3.47E-08	3.79E-08	4.12E-08	4.12E-08
se 80	2.97E-08	3.12E-08	3.26E-08	3.41E-08	3.55E-08	3.55E-08
te125	2.84E-08	2.99E-08	3.14E-08	3.29E-08	3.44E-08	3.44E-08
tb159	2.66E-08	2.83E-08	3.01E-08	3.18E-08	3.37E-08	3.37E-08
nd142	2.01E-08	2.21E-08	2.42E-08	2.65E-08	2.88E-08	2.88E-08
ba134	1.96E-08	2.15E-08	2.36E-08	2.58E-08	2.80E-08	2.80E-08
gd158	2.10E-08	2.23E-08	2.37E-08	2.51E-08	2.65E-08	2.65E-08
sm148	1.79E-08	1.97E-08	2.16E-08	2.36E-08	2.56E-08	2.56E-08
cd112	2.05E-08	2.17E-08	2.29E-08	2.41E-08	2.53E-08	2.53E-08
ba135	1.61E-08	1.77E-08	1.94E-08	2.12E-08	2.31E-08	2.31E-08
pd104	1.37E-08	1.51E-08	1.66E-08	1.81E-08	1.97E-08	1.97E-08
li 6	1.64E-08	1.72E-08	1.79E-08	1.87E-08	1.95E-08	1.95E-08
sn117	1.51E-08	1.59E-08	1.67E-08	1.76E-08	1.84E-08	1.84E-08
eu154	1.44E-08	1.51E-08	1.59E-08	1.66E-08	1.74E-08	1.74E-08
dy164	1.23E-08	1.33E-08	1.43E-08	1.54E-08	1.65E-08	1.65E-08
sr 90	1.60E-08	1.59E-08	1.59E-08	1.58E-08	1.58E-08	1.58E-08
dy162	1.12E-08	1.21E-08	1.31E-08	1.40E-08	1.51E-08	1.51E-08
cd114	1.19E-08	1.26E-08	1.34E-08	1.41E-08	1.48E-08	1.48E-08
sn119	1.18E-08	1.24E-08	1.30E-08	1.36E-08	1.42E-08	1.42E-08
sn115	1.08E-08	1.13E-08	1.19E-08	1.24E-08	1.30E-08	1.30E-08
pd110	9.36E-09	9.97E-09	1.06E-08	1.12E-08	1.19E-08	1.19E-08
rh105	1.01E-08	1.01E-08	1.02E-08	1.03E-08	1.04E-08	1.04E-08
sr 88	8.35E-09	8.75E-09	9.15E-09	9.55E-09	9.94E-09	9.94E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 56
0 fraction of total absorption rate
power= .00mw, burnup= 8766.mwd, flux= 2.66E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

se 82	5.71E-09	5.98E-09	6.26E-09	6.53E-09	6.81E-09	6.81E-09
mo 96	4.74E-09	5.20E-09	5.68E-09	6.18E-09	6.71E-09	6.71E-09
sn126	5.23E-09	5.51E-09	5.80E-09	6.09E-09	6.37E-09	6.37E-09
se 78	4.44E-09	4.66E-09	4.88E-09	5.10E-09	5.32E-09	5.32E-09
cd110	3.40E-09	3.83E-09	4.29E-09	4.77E-09	5.30E-09	5.30E-09
sn124	3.81E-09	4.01E-09	4.21E-09	4.41E-09	4.61E-09	4.61E-09
ba136	3.11E-09	3.34E-09	3.59E-09	3.84E-09	4.10E-09	4.10E-09
dy163	2.81E-09	3.05E-09	3.29E-09	3.54E-09	3.80E-09	3.80E-09
nb 93	2.57E-09	2.83E-09	3.10E-09	3.38E-09	3.68E-09	3.68E-09
cs137	3.68E-09	3.68E-09	3.68E-09	3.68E-09	3.67E-09	3.67E-09
xe130	2.59E-09	2.83E-09	3.08E-09	3.33E-09	3.60E-09	3.60E-09
kr 82	2.49E-09	2.69E-09	2.90E-09	3.12E-09	3.35E-09	3.35E-09
as 75	2.62E-09	2.75E-09	2.88E-09	3.01E-09	3.14E-09	3.14E-09
in113	2.13E-09	2.25E-09	2.36E-09	2.47E-09	2.59E-09	2.59E-09
pr143	2.55E-09	2.54E-09	2.54E-09	2.54E-09	2.53E-09	2.53E-09
xe133	1.95E-09	1.95E-09	1.95E-09	1.95E-09	1.95E-09	1.95E-09

br 79	1.31E-09	1.44E-09	1.58E-09	1.72E-09	1.87E-09	1.87E-09
sn118	1.55E-09	1.63E-09	1.71E-09	1.79E-09	1.87E-09	1.87E-09
sn122	1.30E-09	1.37E-09	1.43E-09	1.50E-09	1.57E-09	1.57E-09
cd116	1.30E-09	1.37E-09	1.43E-09	1.50E-09	1.57E-09	1.57E-09
cs134	1.30E-09	1.36E-09	1.43E-09	1.49E-09	1.55E-09	1.55E-09
ce141	1.54E-09	1.53E-09	1.53E-09	1.53E-09	1.53E-09	1.53E-09
ag107	9.64E-10	1.08E-09	1.19E-09	1.32E-09	1.45E-09	1.45E-09
sn120	9.66E-10	1.02E-09	1.07E-09	1.12E-09	1.17E-09	1.17E-09
xe129	7.56E-10	8.34E-10	9.15E-10	1.00E-09	1.09E-09	1.09E-09
pm149	9.52E-10	9.51E-10	9.50E-10	9.50E-10	9.49E-10	9.49E-10
nd147	9.05E-10	9.04E-10	9.03E-10	9.01E-10	9.00E-10	9.00E-10
ge 73	7.34E-10	7.71E-10	8.08E-10	8.45E-10	8.82E-10	8.82E-10
te126	6.01E-10	6.56E-10	7.15E-10	7.75E-10	8.39E-10	8.39E-10
ce144	5.73E-10	5.72E-10	5.71E-10	5.70E-10	5.69E-10	5.69E-10
kr 85	5.38E-10	5.37E-10	5.35E-10	5.34E-10	5.33E-10	5.33E-10
ru103	3.72E-10	3.73E-10	3.74E-10	3.74E-10	3.75E-10	3.75E-10
gd160	2.83E-10	3.02E-10	3.22E-10	3.42E-10	3.63E-10	3.63E-10
ge 76	2.57E-10	2.69E-10	2.82E-10	2.94E-10	3.07E-10	3.07E-10
ho165	2.21E-10	2.41E-10	2.61E-10	2.83E-10	3.05E-10	3.05E-10
dy160	1.19E-10	1.32E-10	1.46E-10	1.61E-10	1.76E-10	1.76E-10
zr 95	1.59E-10	1.59E-10	1.59E-10	1.58E-10	1.58E-10	1.58E-10
nb 95	1.46E-10	1.46E-10	1.46E-10	1.46E-10	1.46E-10	1.46E-10
y 91	1.34E-10	1.34E-10	1.33E-10	1.33E-10	1.33E-10	1.33E-10
pm151	1.12E-10	1.12E-10	1.12E-10	1.12E-10	1.12E-10	1.12E-10
xe128	7.62E-11	8.40E-11	9.22E-11	1.01E-10	1.10E-10	1.10E-10
te124	4.89E-11	5.22E-11	5.57E-11	5.92E-11	6.28E-11	6.28E-11
sr 86	4.32E-11	4.71E-11	5.12E-11	5.54E-11	5.98E-11	5.98E-11
eu156	4.70E-11	4.75E-11	4.81E-11	4.86E-11	4.91E-11	4.91E-11
ba140	4.56E-11	4.55E-11	4.55E-11	4.54E-11	4.54E-11	4.54E-11
sm153	4.25E-11	4.27E-11	4.30E-11	4.32E-11	4.35E-11	4.35E-11
sn116	2.94E-11	3.24E-11	3.56E-11	3.89E-11	4.24E-11	4.24E-11
ru106	3.70E-11	3.75E-11	3.80E-11	3.84E-11	3.89E-11	3.89E-11
sr 87	3.16E-11	3.32E-11	3.49E-11	3.65E-11	3.82E-11	3.82E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 57
0 fraction of total absorption rate
power= .00mw, burnup= 8766.mwd, flux= 2.66E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sr 89	2.86E-11	2.85E-11	2.84E-11	2.83E-11	2.83E-11	2.83E-11
nb 94	1.95E-11	2.07E-11	2.19E-11	2.31E-11	2.44E-11	2.44E-11
kr 87	2.14E-11	2.13E-11	2.13E-11	2.12E-11	2.12E-11	2.12E-11
se 76	1.41E-11	1.53E-11	1.65E-11	1.77E-11	1.89E-11	1.89E-11
ge 74	1.47E-11	1.54E-11	1.61E-11	1.69E-11	1.76E-11	1.76E-11
te122	1.22E-11	1.35E-11	1.48E-11	1.62E-11	1.76E-11	1.76E-11
sb125	1.69E-11	1.70E-11	1.70E-11	1.71E-11	1.72E-11	1.72E-11
ce143	1.67E-11	1.67E-11	1.66E-11	1.66E-11	1.66E-11	1.66E-11
er166	1.20E-11	1.31E-11	1.42E-11	1.54E-11	1.66E-11	1.66E-11
y 90	1.52E-11	1.51E-11	1.51E-11	1.50E-11	1.50E-11	1.50E-11
la140	1.48E-11	1.48E-11	1.48E-11	1.48E-11	1.47E-11	1.47E-11
mo 99	1.28E-11	1.28E-11	1.27E-11	1.27E-11	1.27E-11	1.27E-11
ge 72	1.04E-11	1.10E-11	1.15E-11	1.21E-11	1.27E-11	1.27E-11
pm148m	9.59E-12	9.60E-12	9.61E-12	9.61E-12	9.62E-12	9.62E-12
te127m	8.46E-12	8.50E-12	8.55E-12	8.59E-12	8.63E-12	8.63E-12
i131	6.70E-12	6.70E-12	6.70E-12	6.70E-12	6.70E-12	6.70E-12
te129m	1.85E-12	1.85E-12	1.85E-12	1.86E-12	1.86E-12	1.86E-12
kr 80	1.14E-12	1.26E-12	1.38E-12	1.52E-12	1.66E-12	1.66E-12
er167	4.97E-13	5.63E-13	6.34E-13	7.11E-13	7.93E-13	7.93E-13
ag111	5.48E-13	5.58E-13	5.67E-13	5.76E-13	5.85E-13	5.85E-13
eu157	4.50E-13	4.57E-13	4.63E-13	4.69E-13	4.75E-13	4.75E-13
te123	2.60E-13	2.95E-13	3.32E-13	3.72E-13	4.16E-13	4.16E-13

pm148	3.65E-13	3.65E-13	3.64E-13	3.64E-13	3.64E-13	3.64E-13
cd115m	2.61E-13	2.62E-13	2.63E-13	2.64E-13	2.65E-13	2.65E-13
cs136	1.83E-13	1.89E-13	1.95E-13	2.01E-13	2.06E-13	2.06E-13
tb160	6.83E-14	7.25E-14	7.68E-14	8.11E-14	8.54E-14	8.54E-14
cd108	3.09E-14	3.59E-14	4.13E-14	4.74E-14	5.40E-14	5.40E-14
pr142	3.30E-14	3.46E-14	3.62E-14	3.78E-14	3.94E-14	3.94E-14
be 9	3.28E-14	3.44E-14	3.60E-14	3.76E-14	3.92E-14	3.92E-14
ru105	3.60E-14	3.63E-14	3.65E-14	3.68E-14	3.70E-14	3.70E-14
sn125	3.14E-14	3.15E-14	3.16E-14	3.17E-14	3.18E-14	3.18E-14
li 7	1.31E-14	1.37E-14	1.43E-14	1.50E-14	1.56E-14	1.56E-14
sb126	1.17E-14	1.21E-14	1.25E-14	1.30E-14	1.34E-14	1.34E-14
rb 88	1.20E-14	1.20E-14	1.19E-14	1.19E-14	1.19E-14	1.19E-14
sn114	7.32E-15	8.08E-15	8.88E-15	9.72E-15	1.06E-14	1.06E-14
sn123	1.04E-14	1.04E-14	1.04E-14	1.04E-14	1.04E-14	1.04E-14
i135	9.82E-15	9.81E-15	9.80E-15	9.79E-15	9.78E-15	9.78E-15
te132	9.38E-15	9.37E-15	9.37E-15	9.37E-15	9.36E-15	9.36E-15
i130	6.79E-15	7.09E-15	7.38E-15	7.67E-15	7.96E-15	7.96E-15
te134	5.54E-15	5.53E-15	5.52E-15	5.51E-15	5.50E-15	5.50E-15
sb124	4.62E-15	4.74E-15	4.86E-15	4.98E-15	5.10E-15	5.10E-15
in117m	2.47E-15	2.49E-15	2.51E-15	2.52E-15	2.54E-15	2.54E-15
rb 86	2.16E-15	2.26E-15	2.35E-15	2.44E-15	2.53E-15	2.53E-15
dy165	1.57E-15	1.64E-15	1.71E-15	1.78E-15	1.84E-15	1.84E-15
in117	7.38E-16	7.44E-16	7.49E-16	7.54E-16	7.59E-16	7.59E-16
cs134m	2.43E-16	2.55E-16	2.67E-16	2.79E-16	2.90E-16	2.90E-16
cd118	1.31E-16	1.32E-16	1.32E-16	1.33E-16	1.33E-16	1.33E-16
ge 75	8.39E-17	8.38E-17	8.37E-17	8.36E-17	8.36E-17	8.36E-17
in119m	3.23E-17	3.24E-17	3.25E-17	3.26E-17	3.26E-17	3.26E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 58
0 fraction of total absorption rate
power= .00mw, burnup= 8766.mwd, flux= 2.66E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

ag110	1.19E-17	1.28E-17	1.37E-17	1.47E-17	1.56E-17	1.56E-17
cd109	8.55E-18	9.02E-18	9.52E-18	1.00E-17	1.05E-17	1.05E-17
in119	2.62E-18	2.63E-18	2.64E-18	2.65E-18	2.67E-18	2.67E-18

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 59
power= 4.000E-03mw, burnup=8.7659E+03mwd, flux= 2.66E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
h 1	4.34E-04	4.56E-04	4.78E-04	4.99E-04	5.21E-04	5.21E-04
h 2	1.29E-06	1.36E-06	1.42E-06	1.49E-06	1.55E-06	1.55E-06
h 3	4.56E-11	4.63E-11	4.68E-11	4.72E-11	4.76E-11	4.76E-11
h 4	1.82E-34	1.84E-34	1.86E-34	1.88E-34	1.89E-34	1.89E-34
he 3	8.45E-09	8.80E-09	9.14E-09	9.48E-09	9.81E-09	9.81E-09
he 4	7.19E-05	7.55E-05	7.91E-05	8.28E-05	8.64E-05	8.64E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	8.64E-06	9.07E-06	9.51E-06	9.94E-06	1.04E-05	1.04E-05
ne 21	1.33E-09	1.46E-09	1.59E-09	1.73E-09	1.88E-09	1.88E-09
ne 22	5.72E-08	6.00E-08	6.29E-08	6.58E-08	6.87E-08	6.87E-08
ne 23	7.16E-15	7.20E-15	7.20E-15	7.19E-15	7.19E-15	7.19E-15
na 22	4.23E-11	4.25E-11	4.25E-11	4.25E-11	4.25E-11	4.25E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.75E-08	2.75E-08
na 24m	4.53E-15	4.53E-15	4.53E-15	4.53E-15	4.53E-15	4.53E-15
na 25	4.04E-24	4.43E-24	4.82E-24	5.23E-24	5.65E-24	5.65E-24
mg 24	6.26E-02	6.54E-02	6.83E-02	7.12E-02	7.40E-02	7.40E-02
mg 25	1.40E-07	1.53E-07	1.67E-07	1.81E-07	1.96E-07	1.96E-07
mg 26	1.29E-06	1.36E-06	1.42E-06	1.49E-06	1.55E-06	1.55E-06

mg 27	2.14E-12	2.15E-12	2.15E-12	2.14E-12	2.14E-12	2.14E-12
mg 28	4.27E-24	4.29E-24	4.29E-24	4.28E-24	4.28E-24	4.28E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.04E-10	2.04E-10	2.04E-10	2.04E-10	2.04E-10	2.04E-10
al 29	3.15E-22	3.46E-22	3.78E-22	4.10E-22	4.45E-22	4.45E-22
al 30	2.97E-32	3.43E-32	3.92E-32	4.45E-32	5.02E-32	5.02E-32
si 28	1.82E-01	1.90E-01	1.99E-01	2.07E-01	2.15E-01	2.15E-01
si 29	1.22E-06	1.34E-06	1.46E-06	1.59E-06	1.72E-06	1.72E-06
si 30	8.62E-12	9.92E-12	1.13E-11	1.29E-11	1.46E-11	1.46E-11
si 31	6.08E-24	6.99E-24	7.98E-24	9.07E-24	1.02E-23	1.02E-23
si 32	9.16E-30	1.06E-29	1.22E-29	1.39E-29	1.58E-29	1.58E-29
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.66E+08	2.66E+08	2.66E+08	2.66E+08	2.66E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 60
power= 4.000E-03mw, burnup=8.7659E+03mwd, flux= 2.66E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	2.91E+00	3.15E+00	3.39E+00	3.64E+00	3.89E+00	3.89E+00
pb206	1.34E-03	1.52E-03	1.71E-03	1.92E-03	2.14E-03	2.14E-03
pb207	1.90E-04	2.10E-04	2.31E-04	2.52E-04	2.75E-04	2.75E-04
pb208	3.01E-05	3.32E-05	3.64E-05	3.98E-05	4.33E-05	4.33E-05
pb209	2.96E-11	3.23E-11	3.52E-11	3.82E-11	4.12E-11	4.12E-11
pb210	2.25E-05	2.42E-05	2.60E-05	2.77E-05	2.95E-05	2.95E-05
pb211	7.62E-12	8.01E-12	8.40E-12	8.78E-12	9.17E-12	9.17E-12
pb212	2.09E-11	2.19E-11	2.30E-11	2.40E-11	2.50E-11	2.50E-11
pb214	5.14E-11	5.53E-11	5.93E-11	6.33E-11	6.74E-11	6.74E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	9.60E-05	1.10E-04	1.26E-04	1.43E-04	1.62E-04	1.62E-04
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.39E-08	1.49E-08	1.60E-08	1.71E-08	1.81E-08	1.81E-08
bi211	4.52E-13	4.75E-13	4.98E-13	5.21E-13	5.44E-13	5.44E-13
bi212	1.98E-12	2.08E-12	2.18E-12	2.28E-12	2.37E-12	2.37E-12
bi213	6.91E-12	7.55E-12	8.22E-12	8.91E-12	9.63E-12	9.63E-12
bi214	3.82E-11	4.11E-11	4.40E-11	4.70E-11	5.00E-11	5.00E-11
po210	3.83E-07	4.12E-07	4.41E-07	4.71E-07	5.01E-07	5.01E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	4.99E-18	5.25E-18	5.50E-18	5.75E-18	6.01E-18	6.01E-18
po212	1.04E-22	1.09E-22	1.14E-22	1.20E-22	1.25E-22	1.25E-22
po213	1.04E-20	1.14E-20	1.24E-20	1.34E-20	1.45E-20	1.45E-20
po214	5.25E-18	5.65E-18	6.06E-18	6.47E-18	6.88E-18	6.88E-18
po215	6.27E-18	6.58E-18	6.90E-18	7.22E-18	7.54E-18	7.54E-18
po216	7.90E-17	8.30E-17	8.69E-17	9.08E-17	9.48E-17	9.48E-17
po218	5.95E-12	6.40E-12	6.86E-12	7.32E-12	7.79E-12	7.79E-12
rn218	3.05E-28	3.21E-28	3.36E-28	3.51E-28	3.66E-28	3.66E-28
rn219	1.39E-14	1.46E-14	1.54E-14	1.61E-14	1.68E-14	1.68E-14
rn220	3.03E-14	3.18E-14	3.33E-14	3.48E-14	3.63E-14	3.63E-14
rn222	1.06E-08	1.14E-08	1.22E-08	1.30E-08	1.38E-08	1.38E-08
ra222	3.31E-25	3.48E-25	3.65E-25	3.81E-25	3.97E-25	3.97E-25
ra223	3.48E-09	3.65E-09	3.83E-09	4.01E-09	4.18E-09	4.18E-09
ra224	1.72E-10	1.81E-10	1.89E-10	1.98E-10	2.07E-10	2.07E-10
ra225	3.23E-09	3.53E-09	3.85E-09	4.17E-09	4.50E-09	4.50E-09
ra226	1.62E-03	1.74E-03	1.86E-03	1.99E-03	2.12E-03	2.12E-03
ra228	1.07E-11	1.13E-11	1.18E-11	1.24E-11	1.29E-11	1.29E-11
ac225	2.18E-09	2.39E-09	2.60E-09	2.82E-09	3.04E-09	3.04E-09
ac227	2.42E-06	2.54E-06	2.66E-06	2.79E-06	2.91E-06	2.91E-06
ac228	1.31E-15	1.38E-15	1.44E-15	1.51E-15	1.58E-15	1.58E-15
th226	1.61E-23	1.70E-23	1.78E-23	1.86E-23	1.94E-23	1.94E-23
th227	5.61E-09	5.90E-09	6.18E-09	6.47E-09	6.75E-09	6.75E-09

th228	3.29E-08	3.45E-08	3.62E-08	3.78E-08	3.95E-08	3.95E-08
th229	6.28E-04	6.87E-04	7.48E-04	8.11E-04	8.76E-04	8.76E-04
th230	1.29E-01	1.36E-01	1.42E-01	1.49E-01	1.55E-01	1.55E-01
th231	3.46E-09	3.49E-09	3.51E-09	3.53E-09	3.55E-09	3.55E-09
th232	2.62E-02	2.75E-02	2.89E-02	3.02E-02	3.15E-02	3.15E-02
th233	2.37E-13	2.49E-13	2.61E-13	2.73E-13	2.85E-13	2.85E-13
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	3.64E-03	3.82E-03	4.00E-03	4.19E-03	4.37E-03	4.37E-03
pa232	6.14E-11	6.45E-11	6.75E-11	7.06E-11	7.37E-11	7.37E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 61
power= 4.000E-03mw, burnup=8.7659E+03mwd, flux= 2.66E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d	******* d
pa233	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.56E-20	1.65E-20	1.72E-20	1.80E-20	1.88E-20	1.88E-20
u231	5.03E-17	5.29E-17	5.53E-17	5.77E-17	6.00E-17	6.00E-17
u232	1.20E-06	1.26E-06	1.32E-06	1.38E-06	1.44E-06	1.44E-06
u233	6.58E-02	6.89E-02	7.21E-02	7.52E-02	7.83E-02	7.83E-02
u234	9.73E+00	9.76E+00	9.80E+00	9.83E+00	9.87E+00	9.87E+00
u235	6.96E+02	6.94E+02	6.92E+02	6.91E+02	6.89E+02	6.89E+02
u236	1.80E+02	1.80E+02	1.80E+02	1.81E+02	1.81E+02	1.81E+02
u237	3.19E-06	3.20E-06	3.21E-06	3.21E-06	3.21E-06	3.21E-06
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	1.21E-37	1.84E-37	2.74E-37	4.00E-37	5.75E-37	5.75E-37
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.72E-12	8.76E-12	8.75E-12	8.74E-12	8.73E-12	8.73E-12
np236m	2.07E-12	2.08E-12	2.08E-12	2.08E-12	2.07E-12	2.07E-12
np236	9.81E-07	1.03E-06	1.08E-06	1.12E-06	1.17E-06	1.17E-06
np237	4.18E+01	4.17E+01	4.17E+01	4.17E+01	4.17E+01	4.17E+01
np238	1.52E-06	1.52E-06	1.52E-06	1.52E-06	1.52E-06	1.52E-06
np239	4.58E-05	4.59E-05	4.58E-05	4.58E-05	4.58E-05	4.58E-05
np240m	1.03E-39	1.57E-39	2.34E-39	3.42E-39	4.91E-39	4.91E-39
np240	9.18E-15	9.19E-15	9.18E-15	9.17E-15	9.16E-15	9.16E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09
pu237	4.16E-13	4.26E-13	4.34E-13	4.41E-13	4.48E-13	4.48E-13
pu238	2.31E-02	2.30E-02	2.30E-02	2.30E-02	2.30E-02	2.30E-02
pu239	2.17E+01	2.26E+01	2.35E+01	2.44E+01	2.53E+01	2.53E+01
pu240	4.50E-01	4.88E-01	5.28E-01	5.68E-01	6.09E-01	6.09E-01
pu241	1.85E-04	2.01E-04	2.17E-04	2.33E-04	2.50E-04	2.50E-04
pu242	2.16E-05	2.50E-05	2.87E-05	3.28E-05	3.72E-05	3.72E-05
pu243	4.55E-14	5.29E-14	6.07E-14	6.93E-14	7.86E-14	7.86E-14
pu244	6.01E-27	9.14E-27	1.36E-26	1.99E-26	2.87E-26	2.87E-26
pu245	2.41E-37	3.67E-37	5.47E-37	7.99E-37	1.15E-36	1.15E-36
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.22E-18	1.35E-18	1.47E-18	1.60E-18	1.73E-18	1.73E-18
am240	5.59E-16	6.16E-16	6.73E-16	7.30E-16	7.89E-16	7.89E-16
am241	4.38E-03	4.81E-03	5.25E-03	5.71E-03	6.17E-03	6.17E-03
am242m	2.04E-06	2.24E-06	2.46E-06	2.68E-06	2.91E-06	2.91E-06
am242	1.76E-10	1.93E-10	2.11E-10	2.29E-10	2.48E-10	2.48E-10
am243	1.39E-07	1.65E-07	1.94E-07	2.26E-07	2.61E-07	2.61E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.06E-15	1.25E-15	1.47E-15	1.71E-15	1.98E-15	1.98E-15
am245	5.20E-38	7.87E-38	1.17E-37	1.70E-37	2.43E-37	2.43E-37

```
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   1.04E-20  1.15E-20  1.25E-20  1.36E-20  1.47E-20  1.47E-20
     cm242   3.56E-08  3.90E-08  4.26E-08  4.63E-08  5.01E-08  5.01E-08
     cm243   2.65E-17  2.92E-17  3.21E-17  3.50E-17  3.80E-17  3.80E-17
     cm244   1.66E-11  1.97E-11  2.31E-11  2.69E-11  3.11E-11  3.11E-11
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                actinides        page   62
       power= 4.000E-03mw, burnup=8.7659E+03mwd, flux= 2.66E+08n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
          charge ******* d ******* d ******* d ******* d ******* d
     cm245   1.73E-14  2.15E-14  2.64E-14  3.22E-14  3.88E-14  3.88E-14
     cm246   8.10E-17  1.05E-16  1.35E-16  1.72E-16  2.15E-16  2.15E-16
     cm247   6.73E-21  9.24E-21  1.25E-20  1.66E-20  2.18E-20  2.18E-20
     cm248   5.54E-24  8.00E-24  1.14E-23  1.58E-23  2.18E-23  2.18E-23
     cm249   1.74E-34  2.51E-34  3.56E-34  4.97E-34  6.82E-34  6.82E-34
     cm250   4.03E-39  6.12E-39  9.10E-39  1.33E-38  1.91E-38  1.91E-38
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              2.66E+08  2.66E+08  2.66E+08  2.66E+08  2.66E-07
0       1q array has      20 entries.
0       3q array has       1 entries.
0       3q array has       1 entries.
0       3q array has       1 entries.
0       4q array has       1 entries.
0      54q array has      12 entries.
1library information...

         cross-section data taken from position number  7 of library on unit 33.

         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         ********************************************************************************
         *                                                                              *
         *            prelim lwr origen-s binary working library--id = 1143             *
         *          made from modified card-image origen-s libraries of scale 4.2       *
         *       data from the light element, actinide, and fission product libraries   *
         *         decay data, including gamma and total energy, are from endf/b-vi     *
         *                                                                              *
         *       neutron flux spectrum factors and cross sections were produced from    *
         *      the "presas2" case updating all nuclides on the scale "burnup" library  *
         *                                                                              *
         *                    fission product yields are from endf/b-v                  *
         *                                                                              *
         *                photon libraries use an 18-energy-group structure             *
         *               the photon data are from the master photon data base,          *
         *                produced to include bremsstrahlung from uo2 matrix            *
         *                                                                              *
```

```
         *        see information above this box (if present) for later updates        *
         *                                                                              *
         ********************************************************************************
         *                                                                              *
0        ********************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/28/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   63
        power=    .00mw, burnup=  10227.mwd, flux= 2.65E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.167762E+06   1.168719E+06   1.169645E+06   1.170540E+06   1.171404E+06   1.171404E+06
     absorptions   9.612581E+05   9.620653E+05   9.628549E+05   9.636281E+05   9.643840E+05   9.643840E+05
     k infinity    1.214826E+00   1.214802E+00   1.214768E+00   1.214722E+00   1.214666E+00   1.214666E+00
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   9.489255E+05   9.495816E+05   9.502214E+05   9.508454E+05   9.514534E+05   9.514534E+05
     non-actinide
     abs. fracs.   1.282966E-02   1.297593E-02   1.312083E-02   1.326519E-02   1.340818E-02   1.340818E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products    page   64
0                                 fraction of total absorption rate
        power=    .00mw, burnup=  10227.mwd, flux= 2.65E+08n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.34E-03  5.34E-03  5.35E-03  5.35E-03  5.35E-03  5.35E-03
     eu151     9.99E-04  1.03E-03  1.06E-03  1.09E-03  1.12E-03  1.12E-03
     nd143     8.35E-04  8.68E-04  9.01E-04  9.34E-04  9.67E-04  9.67E-04
     rh103     4.14E-04  4.31E-04  4.49E-04  4.66E-04  4.83E-04  4.83E-04
     xe131     2.74E-04  2.85E-04  2.96E-04  3.08E-04  3.19E-04  3.19E-04
     cs133     2.12E-04  2.20E-04  2.29E-04  2.38E-04  2.46E-04  2.46E-04
     gd155     1.99E-04  2.02E-04  2.04E-04  2.06E-04  2.08E-04  2.08E-04
     sm147     1.56E-04  1.62E-04  1.69E-04  1.75E-04  1.81E-04  1.81E-04
     tc 99     1.55E-04  1.61E-04  1.67E-04  1.73E-04  1.79E-04  1.79E-04
     nd145     1.19E-04  1.24E-04  1.29E-04  1.34E-04  1.38E-04  1.38E-04
     cd113     9.61E-05  9.68E-05  9.75E-05  9.82E-05  9.88E-05  9.88E-05
     sm152     8.10E-05  8.49E-05  8.88E-05  9.27E-05  9.66E-05  9.66E-05
     mo 95     8.30E-05  8.63E-05  8.97E-05  9.30E-05  9.63E-05  9.63E-05
     sm150     5.75E-05  6.02E-05  6.28E-05  6.55E-05  6.82E-05  6.82E-05
     gd157     5.69E-05  5.77E-05  5.85E-05  5.93E-05  6.01E-05  6.01E-05
     kr 83     5.07E-05  5.27E-05  5.47E-05  5.67E-05  5.87E-05  5.87E-05
     cs135     4.80E-05  4.99E-05  5.19E-05  5.38E-05  5.58E-05  5.58E-05
     ru101     3.75E-05  3.90E-05  4.06E-05  4.21E-05  4.36E-05  4.36E-05
     sm151     4.15E-05  4.16E-05  4.17E-05  4.18E-05  4.19E-05  4.19E-05
     pr141     3.53E-05  3.68E-05  3.82E-05  3.96E-05  4.10E-05  4.10E-05
     eu153     3.46E-05  3.61E-05  3.76E-05  3.92E-05  4.07E-05  4.07E-05
     la139     2.88E-05  3.00E-05  3.12E-05  3.23E-05  3.35E-05  3.35E-05
     pd105     1.42E-05  1.48E-05  1.55E-05  1.62E-05  1.68E-05  1.68E-05
     ba137     1.37E-05  1.43E-05  1.49E-05  1.54E-05  1.60E-05  1.60E-05
     ag109     1.22E-05  1.29E-05  1.37E-05  1.45E-05  1.54E-05  1.54E-05
     zr 93     1.17E-05  1.21E-05  1.26E-05  1.31E-05  1.35E-05  1.35E-05
      i129     9.28E-06  9.67E-06  1.01E-05  1.05E-05  1.08E-05  1.08E-05
     nd144     8.71E-06  9.07E-06  9.43E-06  9.78E-06  1.01E-05  1.01E-05
```

mo 97	6.56E-06	6.83E-06	7.09E-06	7.36E-06	7.62E-06	7.62E-06
gd152	3.60E-06	3.88E-06	4.17E-06	4.47E-06	4.78E-06	4.78E-06
pd108	3.05E-06	3.23E-06	3.42E-06	3.60E-06	3.79E-06	3.79E-06
zr 91	3.03E-06	3.15E-06	3.27E-06	3.39E-06	3.51E-06	3.51E-06
y 89	2.90E-06	3.01E-06	3.13E-06	3.24E-06	3.35E-06	3.35E-06
ru102	2.72E-06	2.83E-06	2.94E-06	3.05E-06	3.16E-06	3.16E-06
ce142	2.39E-06	2.49E-06	2.58E-06	2.68E-06	2.78E-06	2.78E-06
nd148	2.32E-06	2.41E-06	2.51E-06	2.60E-06	2.70E-06	2.70E-06
nd146	1.94E-06	2.02E-06	2.09E-06	2.17E-06	2.25E-06	2.25E-06
xe135	2.25E-06	2.25E-06	2.25E-06	2.25E-06	2.25E-06	2.25E-06
in115	1.71E-06	1.78E-06	1.86E-06	1.93E-06	2.01E-06	2.01E-06
ba138	1.65E-06	1.72E-06	1.78E-06	1.85E-06	1.92E-06	1.92E-06
pd107	1.55E-06	1.64E-06	1.73E-06	1.82E-06	1.91E-06	1.91E-06
ce140	1.55E-06	1.61E-06	1.67E-06	1.73E-06	1.80E-06	1.80E-06
xe132	1.42E-06	1.48E-06	1.54E-06	1.60E-06	1.66E-06	1.66E-06
mo 98	9.74E-07	1.01E-06	1.05E-06	1.09E-06	1.13E-06	1.13E-06
mo100	9.40E-07	9.78E-07	1.02E-06	1.06E-06	1.09E-06	1.09E-06
xe134	9.16E-07	9.53E-07	9.90E-07	1.03E-06	1.06E-06	1.06E-06
zr 92	7.31E-07	7.61E-07	7.90E-07	8.19E-07	8.48E-07	8.48E-07
i127	6.73E-07	7.03E-07	7.33E-07	7.63E-07	7.93E-07	7.93E-07
ru104	6.20E-07	6.47E-07	6.74E-07	7.01E-07	7.29E-07	7.29E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 65
0 fraction of total absorption rate
power= .00mw, burnup= 10227.mwd, flux= 2.65E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	5.91E-07	6.15E-07	6.39E-07	6.63E-07	6.87E-07	6.87E-07
nd150	5.24E-07	5.46E-07	5.68E-07	5.89E-07	6.11E-07	6.11E-07
xe136	4.97E-07	5.17E-07	5.37E-07	5.58E-07	5.78E-07	5.78E-07
br 81	3.73E-07	3.88E-07	4.03E-07	4.18E-07	4.33E-07	4.33E-07
cd111	3.56E-07	3.75E-07	3.94E-07	4.13E-07	4.33E-07	4.33E-07
rb 85	3.58E-07	3.72E-07	3.86E-07	4.01E-07	4.15E-07	4.15E-07
zr 94	3.15E-07	3.27E-07	3.40E-07	3.53E-07	3.65E-07	3.65E-07
zr 90	2.84E-07	2.95E-07	3.07E-07	3.18E-07	3.29E-07	3.29E-07
ru 99	2.40E-07	2.60E-07	2.81E-07	3.03E-07	3.25E-07	3.25E-07
eu152	2.57E-07	2.65E-07	2.73E-07	2.81E-07	2.88E-07	2.88E-07
sm154	2.39E-07	2.50E-07	2.60E-07	2.71E-07	2.81E-07	2.81E-07
te130	2.28E-07	2.37E-07	2.46E-07	2.56E-07	2.65E-07	2.65E-07
pm147	2.63E-07	2.62E-07	2.62E-07	2.62E-07	2.61E-07	2.61E-07
rb 87	2.07E-07	2.15E-07	2.23E-07	2.31E-07	2.39E-07	2.39E-07
eu155	1.94E-07	1.95E-07	1.96E-07	1.97E-07	1.99E-07	1.99E-07
gd154	1.35E-07	1.47E-07	1.59E-07	1.71E-07	1.84E-07	1.84E-07
se 77	1.48E-07	1.54E-07	1.60E-07	1.66E-07	1.72E-07	1.72E-07
pd106	1.40E-07	1.47E-07	1.54E-07	1.61E-07	1.69E-07	1.69E-07
gd156	1.19E-07	1.26E-07	1.33E-07	1.39E-07	1.46E-07	1.46E-07
kr 84	9.87E-08	1.03E-07	1.07E-07	1.11E-07	1.14E-07	1.14E-07
dy161	7.38E-08	7.84E-08	8.30E-08	8.78E-08	9.27E-08	9.27E-08
sb121	7.82E-08	8.16E-08	8.50E-08	8.84E-08	9.18E-08	9.18E-08
se 79	7.60E-08	7.91E-08	8.22E-08	8.53E-08	8.83E-08	8.83E-08
sb123	6.33E-08	6.60E-08	6.87E-08	7.14E-08	7.42E-08	7.42E-08
kr 86	5.40E-08	5.62E-08	5.83E-08	6.05E-08	6.26E-08	6.26E-08
te128	5.16E-08	5.38E-08	5.59E-08	5.81E-08	6.03E-08	6.03E-08
ru100	4.12E-08	4.46E-08	4.82E-08	5.19E-08	5.57E-08	5.57E-08
se 80	3.55E-08	3.69E-08	3.83E-08	3.98E-08	4.12E-08	4.12E-08
tb159	3.37E-08	3.55E-08	3.74E-08	3.93E-08	4.12E-08	4.12E-08
te125	3.44E-08	3.59E-08	3.75E-08	3.90E-08	4.05E-08	4.05E-08
nd142	2.87E-08	3.11E-08	3.36E-08	3.62E-08	3.89E-08	3.89E-08
ba134	2.80E-08	3.03E-08	3.28E-08	3.53E-08	3.79E-08	3.79E-08
sm148	2.56E-08	2.78E-08	3.00E-08	3.23E-08	3.47E-08	3.47E-08
gd158	2.65E-08	2.79E-08	2.93E-08	3.08E-08	3.23E-08	3.23E-08

ba135	2.31E-08	2.51E-08	2.71E-08	2.92E-08	3.14E-08	3.14E-08
cd112	2.53E-08	2.65E-08	2.78E-08	2.90E-08	3.03E-08	3.03E-08
pd104	1.97E-08	2.14E-08	2.31E-08	2.49E-08	2.68E-08	2.68E-08
li 6	1.94E-08	2.02E-08	2.09E-08	2.17E-08	2.24E-08	2.24E-08
sn117	1.84E-08	1.92E-08	2.01E-08	2.09E-08	2.18E-08	2.18E-08
dy164	1.65E-08	1.76E-08	1.87E-08	1.99E-08	2.11E-08	2.11E-08
eu154	1.73E-08	1.81E-08	1.89E-08	1.96E-08	2.04E-08	2.04E-08
dy162	1.50E-08	1.61E-08	1.72E-08	1.83E-08	1.94E-08	1.94E-08
cd114	1.48E-08	1.56E-08	1.63E-08	1.71E-08	1.78E-08	1.78E-08
sn119	1.42E-08	1.48E-08	1.54E-08	1.61E-08	1.67E-08	1.67E-08
sr 90	1.58E-08	1.57E-08	1.57E-08	1.57E-08	1.56E-08	1.56E-08
sn115	1.30E-08	1.36E-08	1.41E-08	1.47E-08	1.53E-08	1.53E-08
pd110	1.19E-08	1.25E-08	1.32E-08	1.39E-08	1.46E-08	1.46E-08
sr 88	9.94E-09	1.03E-08	1.07E-08	1.11E-08	1.15E-08	1.15E-08
rh105	1.04E-08	1.04E-08	1.05E-08	1.06E-08	1.06E-08	1.06E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 66
0 fraction of total absorption rate
power= .00mw, burnup= 10227.mwd, flux= 2.65E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

mo 96	6.71E-09	7.25E-09	7.81E-09	8.40E-09	9.00E-09	9.00E-09
se 82	6.80E-09	7.08E-09	7.35E-09	7.62E-09	7.89E-09	7.89E-09
cd110	5.29E-09	5.85E-09	6.44E-09	7.06E-09	7.73E-09	7.73E-09
sn126	6.37E-09	6.66E-09	6.95E-09	7.24E-09	7.54E-09	7.54E-09
se 78	5.32E-09	5.53E-09	5.75E-09	5.97E-09	6.19E-09	6.19E-09
sn124	4.61E-09	4.81E-09	5.02E-09	5.22E-09	5.42E-09	5.42E-09
ba136	4.10E-09	4.37E-09	4.64E-09	4.92E-09	5.21E-09	5.21E-09
nb 93	3.68E-09	3.99E-09	4.31E-09	4.64E-09	4.99E-09	4.99E-09
dy163	3.80E-09	4.06E-09	4.34E-09	4.62E-09	4.91E-09	4.91E-09
xe130	3.60E-09	3.87E-09	4.16E-09	4.45E-09	4.76E-09	4.76E-09
kr 82	3.34E-09	3.57E-09	3.81E-09	4.05E-09	4.30E-09	4.30E-09
cs137	3.67E-09	3.67E-09	3.67E-09	3.66E-09	3.66E-09	3.66E-09
as 75	3.14E-09	3.27E-09	3.39E-09	3.52E-09	3.65E-09	3.65E-09
in113	2.59E-09	2.70E-09	2.82E-09	2.93E-09	3.05E-09	3.05E-09
br 79	1.87E-09	2.03E-09	2.19E-09	2.36E-09	2.54E-09	2.54E-09
pr143	2.53E-09	2.53E-09	2.52E-09	2.52E-09	2.52E-09	2.52E-09
sn118	1.88E-09	1.96E-09	2.04E-09	2.12E-09	2.20E-09	2.20E-09
ag107	1.45E-09	1.59E-09	1.74E-09	1.90E-09	2.06E-09	2.06E-09
xe133	1.94E-09	1.94E-09	1.94E-09	1.94E-09	1.94E-09	1.94E-09
sn122	1.57E-09	1.64E-09	1.71E-09	1.77E-09	1.84E-09	1.84E-09
cd116	1.57E-09	1.64E-09	1.71E-09	1.77E-09	1.84E-09	1.84E-09
cs134	1.55E-09	1.61E-09	1.68E-09	1.74E-09	1.80E-09	1.80E-09
ce141	1.53E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09
xe129	1.09E-09	1.18E-09	1.28E-09	1.38E-09	1.48E-09	1.48E-09
sn120	1.17E-09	1.22E-09	1.27E-09	1.32E-09	1.37E-09	1.37E-09
te126	8.38E-10	9.04E-10	9.73E-10	1.04E-09	1.12E-09	1.12E-09
ge 73	8.81E-10	9.18E-10	9.55E-10	9.92E-10	1.03E-09	1.03E-09
pm149	9.48E-10	9.48E-10	9.47E-10	9.47E-10	9.46E-10	9.46E-10
nd147	9.01E-10	9.00E-10	8.99E-10	8.98E-10	8.97E-10	8.97E-10
ce144	5.68E-10	5.67E-10	5.66E-10	5.66E-10	5.65E-10	5.65E-10
kr 85	5.32E-10	5.31E-10	5.30E-10	5.29E-10	5.28E-10	5.28E-10
gd160	3.63E-10	3.84E-10	4.06E-10	4.28E-10	4.50E-10	4.50E-10
ho165	3.05E-10	3.28E-10	3.52E-10	3.77E-10	4.02E-10	4.02E-10
ru103	3.75E-10	3.76E-10	3.76E-10	3.77E-10	3.78E-10	3.78E-10
ge 76	3.06E-10	3.19E-10	3.31E-10	3.44E-10	3.56E-10	3.56E-10
dy160	1.76E-10	1.93E-10	2.10E-10	2.28E-10	2.47E-10	2.47E-10
zr 95	1.58E-10	1.58E-10	1.58E-10	1.58E-10	1.57E-10	1.57E-10
xe128	1.10E-10	1.19E-10	1.29E-10	1.39E-10	1.50E-10	1.50E-10
nb 95	1.46E-10	1.45E-10	1.45E-10	1.45E-10	1.45E-10	1.45E-10
y 91	1.33E-10	1.32E-10	1.32E-10	1.32E-10	1.31E-10	1.31E-10

pm151	1.12E-10	1.12E-10	1.12E-10	1.12E-10	1.12E-10	1.12E-10
sr 86	5.97E-11	6.43E-11	6.90E-11	7.38E-11	7.88E-11	7.88E-11
te124	6.28E-11	6.65E-11	7.02E-11	7.41E-11	7.81E-11	7.81E-11
sn116	4.25E-11	4.61E-11	4.99E-11	5.38E-11	5.79E-11	5.79E-11
eu156	4.90E-11	4.96E-11	5.01E-11	5.05E-11	5.10E-11	5.10E-11
ba140	4.53E-11	4.53E-11	4.52E-11	4.52E-11	4.51E-11	4.51E-11
sr 87	3.82E-11	3.98E-11	4.15E-11	4.32E-11	4.49E-11	4.49E-11
sm153	4.34E-11	4.37E-11	4.39E-11	4.41E-11	4.44E-11	4.44E-11
ru106	3.89E-11	3.94E-11	3.98E-11	4.03E-11	4.07E-11	4.07E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 67
0 fraction of total absorption rate
power= .00mw, burnup= 10227.mwd, flux= 2.65E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

nb 94	2.44E-11	2.57E-11	2.70E-11	2.83E-11	2.96E-11	2.96E-11
sr 89	2.82E-11	2.82E-11	2.81E-11	2.80E-11	2.79E-11	2.79E-11
se 76	1.89E-11	2.02E-11	2.15E-11	2.29E-11	2.43E-11	2.43E-11
te122	1.76E-11	1.91E-11	2.07E-11	2.23E-11	2.40E-11	2.40E-11
er166	1.66E-11	1.78E-11	1.91E-11	2.05E-11	2.18E-11	2.18E-11
kr 87	2.11E-11	2.11E-11	2.10E-11	2.10E-11	2.09E-11	2.09E-11
ge 74	1.76E-11	1.83E-11	1.91E-11	1.98E-11	2.05E-11	2.05E-11
sb125	1.72E-11	1.73E-11	1.74E-11	1.74E-11	1.75E-11	1.75E-11
ce143	1.66E-11	1.66E-11	1.65E-11	1.65E-11	1.65E-11	1.65E-11
ge 72	1.26E-11	1.32E-11	1.38E-11	1.43E-11	1.49E-11	1.49E-11
y 90	1.50E-11	1.49E-11	1.49E-11	1.49E-11	1.48E-11	1.48E-11
la140	1.47E-11	1.47E-11	1.47E-11	1.47E-11	1.47E-11	1.47E-11
mo 99	1.27E-11	1.27E-11	1.27E-11	1.27E-11	1.27E-11	1.27E-11
pm148m	9.61E-12	9.62E-12	9.63E-12	9.63E-12	9.64E-12	9.64E-12
te127m	8.63E-12	8.67E-12	8.71E-12	8.75E-12	8.79E-12	8.79E-12
i131	6.70E-12	6.70E-12	6.69E-12	6.69E-12	6.69E-12	6.69E-12
kr 80	1.66E-12	1.82E-12	1.98E-12	2.15E-12	2.33E-12	2.33E-12
te129m	1.86E-12	1.86E-12	1.86E-12	1.87E-12	1.87E-12	1.87E-12
er167	7.92E-13	8.80E-13	9.74E-13	1.07E-12	1.18E-12	1.18E-12
te123	4.16E-13	4.63E-13	5.13E-13	5.67E-13	6.25E-13	6.25E-13
ag111	5.86E-13	5.95E-13	6.03E-13	6.12E-13	6.21E-13	6.21E-13
eu157	4.75E-13	4.81E-13	4.87E-13	4.93E-13	4.98E-13	4.98E-13
pm148	3.64E-13	3.64E-13	3.64E-13	3.64E-13	3.64E-13	3.64E-13
cd115m	2.65E-13	2.66E-13	2.67E-13	2.68E-13	2.69E-13	2.69E-13
cs136	2.07E-13	2.12E-13	2.18E-13	2.24E-13	2.29E-13	2.29E-13
tb160	8.54E-14	8.99E-14	9.43E-14	9.89E-14	1.03E-13	1.03E-13
cd108	5.40E-14	6.12E-14	6.91E-14	7.78E-14	8.71E-14	8.71E-14
be 9	3.93E-14	4.09E-14	4.25E-14	4.41E-14	4.57E-14	4.57E-14
pr142	3.94E-14	4.10E-14	4.25E-14	4.41E-14	4.57E-14	4.57E-14
ru105	3.70E-14	3.73E-14	3.75E-14	3.78E-14	3.80E-14	3.80E-14
sn125	3.18E-14	3.19E-14	3.19E-14	3.20E-14	3.21E-14	3.21E-14
li 7	1.56E-14	1.62E-14	1.69E-14	1.75E-14	1.81E-14	1.81E-14
sb126	1.34E-14	1.38E-14	1.43E-14	1.47E-14	1.51E-14	1.51E-14
sn114	1.06E-14	1.15E-14	1.25E-14	1.35E-14	1.45E-14	1.45E-14
rb 88	1.19E-14	1.18E-14	1.18E-14	1.18E-14	1.18E-14	1.18E-14
sn123	1.05E-14	1.05E-14	1.05E-14	1.05E-14	1.05E-14	1.05E-14
i135	9.78E-15	9.77E-15	9.76E-15	9.75E-15	9.74E-15	9.74E-15
te132	9.36E-15	9.35E-15	9.35E-15	9.34E-15	9.34E-15	9.34E-15
i130	7.96E-15	8.25E-15	8.54E-15	8.82E-15	9.11E-15	9.11E-15
sb124	5.10E-15	5.23E-15	5.35E-15	5.47E-15	5.59E-15	5.59E-15
te134	5.50E-15	5.49E-15	5.48E-15	5.47E-15	5.46E-15	5.46E-15
rb 86	2.52E-15	2.62E-15	2.70E-15	2.79E-15	2.88E-15	2.88E-15
in117m	2.54E-15	2.55E-15	2.57E-15	2.58E-15	2.60E-15	2.60E-15
dy165	1.84E-15	1.91E-15	1.98E-15	2.05E-15	2.12E-15	2.12E-15
in117	7.58E-16	7.63E-16	7.68E-16	7.73E-16	7.78E-16	7.78E-16
cs134m	2.90E-16	3.02E-16	3.14E-16	3.25E-16	3.37E-16	3.37E-16

cd118	1.33E-16	1.34E-16	1.34E-16	1.34E-16	1.35E-16	1.35E-16
ge 75	8.35E-17	8.34E-17	8.33E-17	8.33E-17	8.32E-17	8.32E-17
in119m	3.26E-17	3.27E-17	3.28E-17	3.29E-17	3.30E-17	3.30E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 68

0 fraction of total absorption rate

power= .00mw, burnup= 10227.mwd, flux= 2.65E+08n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

ag110	1.56E-17	1.66E-17	1.77E-17	1.87E-17	1.97E-17	1.97E-17
cd109	1.05E-17	1.11E-17	1.16E-17	1.22E-17	1.28E-17	1.28E-17
in119	2.66E-18	2.67E-18	2.68E-18	2.69E-18	2.71E-18	2.71E-18

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 69

power= 4.000E-03mw, burnup=1.0227E+04mwd, flux= 2.65E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
h 1	5.21E-04	5.43E-04	5.65E-04	5.86E-04	6.08E-04	6.08E-04
h 2	1.55E-06	1.62E-06	1.68E-06	1.75E-06	1.81E-06	1.81E-06
h 3	4.76E-11	4.83E-11	4.87E-11	4.91E-11	4.96E-11	4.96E-11
h 4	1.89E-34	1.92E-34	1.93E-34	1.95E-34	1.97E-34	1.97E-34
he 3	9.81E-09	1.01E-08	1.05E-08	1.08E-08	1.11E-08	1.11E-08
he 4	8.64E-05	9.00E-05	9.36E-05	9.72E-05	1.01E-04	1.01E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.04E-05	1.08E-05	1.12E-05	1.17E-05	1.21E-05	1.21E-05
ne 21	1.88E-09	2.03E-09	2.19E-09	2.35E-09	2.52E-09	2.52E-09
ne 22	6.87E-08	7.16E-08	7.44E-08	7.73E-08	8.02E-08	8.02E-08
ne 23	7.19E-15	7.23E-15	7.22E-15	7.22E-15	7.22E-15	7.22E-15
na 22	4.25E-11	4.27E-11	4.27E-11	4.27E-11	4.27E-11	4.27E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.75E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08
na 24m	4.53E-15	4.53E-15	4.53E-15	4.53E-15	4.53E-15	4.53E-15
na 25	5.65E-24	6.11E-24	6.57E-24	7.04E-24	7.53E-24	7.53E-24
mg 24	7.40E-02	7.69E-02	7.97E-02	8.26E-02	8.54E-02	8.54E-02
mg 25	1.96E-07	2.11E-07	2.27E-07	2.44E-07	2.61E-07	2.61E-07
mg 26	1.55E-06	1.62E-06	1.68E-06	1.75E-06	1.81E-06	1.81E-06
mg 27	2.14E-12	2.15E-12	2.15E-12	2.15E-12	2.15E-12	2.15E-12
mg 28	4.28E-24	4.29E-24	4.29E-24	4.29E-24	4.28E-24	4.28E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.04E-10	2.05E-10	2.04E-10	2.04E-10	2.04E-10	2.04E-10
al 29	4.45E-22	4.82E-22	5.19E-22	5.57E-22	5.96E-22	5.96E-22
al 30	5.02E-32	5.67E-32	6.34E-32	7.07E-32	7.84E-32	7.84E-32
si 28	2.15E-01	2.24E-01	2.32E-01	2.40E-01	2.49E-01	2.49E-01
si 29	1.72E-06	1.86E-06	2.00E-06	2.15E-06	2.31E-06	2.31E-06
si 30	1.46E-11	1.64E-11	1.83E-11	2.04E-11	2.27E-11	2.27E-11
si 31	1.02E-23	1.15E-23	1.29E-23	1.44E-23	1.59E-23	1.59E-23
si 32	1.58E-29	1.78E-29	2.00E-29	2.23E-29	2.48E-29	2.48E-29
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.65E+08	2.65E+08	2.65E+08	2.65E+08	2.65E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 70

power= 4.000E-03mw, burnup=1.0227E+04mwd, flux= 2.65E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
he 4	3.89E+00	4.16E+00	4.43E+00	4.71E+00	5.00E+00	5.00E+00
pb206	2.14E-03	2.38E-03	2.63E-03	2.89E-03	3.17E-03	3.17E-03
pb207	2.75E-04	2.99E-04	3.23E-04	3.49E-04	3.75E-04	3.75E-04
pb208	4.33E-05	4.70E-05	5.08E-05	5.48E-05	5.89E-05	5.89E-05
pb209	4.12E-11	4.44E-11	4.76E-11	5.09E-11	5.43E-11	5.43E-11

pb210	2.95E-05	3.13E-05	3.31E-05	3.49E-05	3.67E-05	3.67E-05
pb211	9.17E-12	9.56E-12	9.95E-12	1.03E-11	1.07E-11	1.07E-11
pb212	2.50E-11	2.61E-11	2.71E-11	2.82E-11	2.92E-11	2.92E-11
pb214	6.74E-11	7.14E-11	7.56E-11	7.97E-11	8.39E-11	8.39E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.62E-04	1.82E-04	2.03E-04	2.26E-04	2.51E-04	2.51E-04
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.81E-08	1.92E-08	2.04E-08	2.15E-08	2.26E-08	2.26E-08
bi211	5.44E-13	5.67E-13	5.90E-13	6.13E-13	6.36E-13	6.36E-13
bi212	2.37E-12	2.47E-12	2.57E-12	2.67E-12	2.77E-12	2.77E-12
bi213	9.63E-12	1.04E-11	1.11E-11	1.19E-11	1.27E-11	1.27E-11
bi214	5.00E-11	5.30E-11	5.61E-11	5.92E-11	6.23E-11	6.23E-11
po210	5.01E-07	5.31E-07	5.62E-07	5.93E-07	6.24E-07	6.24E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	6.01E-18	6.26E-18	6.52E-18	6.77E-18	7.03E-18	7.03E-18
po212	1.25E-22	1.30E-22	1.35E-22	1.40E-22	1.46E-22	1.46E-22
po213	1.45E-20	1.56E-20	1.67E-20	1.79E-20	1.91E-20	1.91E-20
po214	6.88E-18	7.30E-18	7.72E-18	8.14E-18	8.57E-18	8.57E-18
po215	7.54E-18	7.86E-18	8.17E-18	8.49E-18	8.81E-18	8.81E-18
po216	9.48E-17	9.87E-17	1.03E-16	1.07E-16	1.11E-16	1.11E-16
po218	7.79E-12	8.27E-12	8.74E-12	9.22E-12	9.71E-12	9.71E-12
rn218	3.66E-28	3.82E-28	3.97E-28	4.12E-28	4.28E-28	4.28E-28
rn219	1.68E-14	1.75E-14	1.82E-14	1.89E-14	1.96E-14	1.96E-14
rn220	3.63E-14	3.79E-14	3.94E-14	4.09E-14	4.24E-14	4.24E-14
rn222	1.38E-08	1.47E-08	1.55E-08	1.64E-08	1.72E-08	1.72E-08
ra222	3.97E-25	4.15E-25	4.31E-25	4.48E-25	4.64E-25	4.64E-25
ra223	4.18E-09	4.36E-09	4.54E-09	4.71E-09	4.89E-09	4.89E-09
ra224	2.07E-10	2.15E-10	2.24E-10	2.33E-10	2.41E-10	2.41E-10
ra225	4.50E-09	4.85E-09	5.20E-09	5.56E-09	5.94E-09	5.94E-09
ra226	2.12E-03	2.24E-03	2.37E-03	2.50E-03	2.64E-03	2.64E-03
ra228	1.29E-11	1.35E-11	1.40E-11	1.46E-11	1.51E-11	1.51E-11
ac225	3.04E-09	3.27E-09	3.51E-09	3.76E-09	4.01E-09	4.01E-09
ac227	2.91E-06	3.03E-06	3.16E-06	3.28E-06	3.40E-06	3.40E-06
ac228	1.58E-15	1.64E-15	1.71E-15	1.78E-15	1.84E-15	1.84E-15
th226	1.94E-23	2.02E-23	2.10E-23	2.18E-23	2.26E-23	2.26E-23
th227	6.75E-09	7.04E-09	7.32E-09	7.61E-09	7.90E-09	7.90E-09
th228	3.95E-08	4.11E-08	4.28E-08	4.44E-08	4.61E-08	4.61E-08
th229	8.76E-04	9.43E-04	1.01E-03	1.08E-03	1.15E-03	1.15E-03
th230	1.55E-01	1.62E-01	1.68E-01	1.75E-01	1.82E-01	1.82E-01
th231	3.55E-09	3.58E-09	3.60E-09	3.62E-09	3.65E-09	3.65E-09
th232	3.15E-02	3.29E-02	3.42E-02	3.56E-02	3.69E-02	3.69E-02
th233	2.85E-13	2.97E-13	3.09E-13	3.21E-13	3.33E-13	3.33E-13
th234	5.37E-07	5.37E-07	5.37E-07	5.36E-07	5.36E-07	5.36E-07
pa231	4.37E-03	4.56E-03	4.74E-03	4.93E-03	5.11E-03	5.11E-03
pa232	7.37E-11	7.68E-11	7.99E-11	8.29E-11	8.60E-11	8.60E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 71
power= 4.000E-03mw, burnup=1.0227E+04mwd, flux= 2.65E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.88E-20	1.96E-20	2.04E-20	2.12E-20	2.20E-20	2.20E-20
u231	6.00E-17	6.26E-17	6.49E-17	6.73E-17	6.96E-17	6.96E-17
u232	1.44E-06	1.50E-06	1.56E-06	1.62E-06	1.68E-06	1.68E-06
u233	7.83E-02	8.14E-02	8.45E-02	8.76E-02	9.07E-02	9.07E-02
u234	9.87E+00	9.90E+00	9.93E+00	9.97E+00	1.00E+01	1.00E+01

u235	6.89E+02	6.88E+02	6.86E+02	6.85E+02	6.83E+02	6.83E+02
u236	1.81E+02	1.81E+02	1.82E+02	1.82E+02	1.82E+02	1.82E+02
u237	3.21E-06	3.22E-06	3.22E-06	3.23E-06	3.23E-06	3.23E-06
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	5.75E-37	8.14E-37	1.14E-36	1.56E-36	2.13E-36	2.13E-36
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.73E-12	8.77E-12	8.76E-12	8.76E-12	8.75E-12	8.75E-12
np236m	2.07E-12	2.08E-12	2.08E-12	2.08E-12	2.08E-12	2.08E-12
np236	1.17E-06	1.22E-06	1.27E-06	1.31E-06	1.36E-06	1.36E-06
np237	4.17E+01	4.17E+01	4.17E+01	4.16E+01	4.16E+01	4.16E+01
np238	1.52E-06	1.52E-06	1.52E-06	1.52E-06	1.51E-06	1.51E-06
np239	4.58E-05	4.58E-05	4.58E-05	4.58E-05	4.58E-05	4.58E-05
np240m	4.91E-39	6.95E-39	9.70E-39	1.33E-38	1.81E-38	1.81E-38
np240	9.16E-15	9.17E-15	9.16E-15	9.16E-15	9.15E-15	9.15E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09
pu237	4.48E-13	4.58E-13	4.65E-13	4.72E-13	4.79E-13	4.79E-13
pu238	2.30E-02	2.30E-02	2.30E-02	2.29E-02	2.29E-02	2.29E-02
pu239	2.53E+01	2.61E+01	2.70E+01	2.78E+01	2.87E+01	2.87E+01
pu240	6.09E-01	6.51E-01	6.93E-01	7.36E-01	7.80E-01	7.80E-01
pu241	2.50E-04	2.67E-04	2.84E-04	3.02E-04	3.20E-04	3.20E-04
pu242	3.72E-05	4.19E-05	4.70E-05	5.25E-05	5.83E-05	5.83E-05
pu243	7.86E-14	8.87E-14	9.95E-14	1.11E-13	1.23E-13	1.23E-13
pu244	2.87E-26	4.06E-26	5.66E-26	7.79E-26	1.06E-25	1.06E-25
pu245	1.15E-36	1.62E-36	2.26E-36	3.12E-36	4.23E-36	4.23E-36
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.73E-18	1.87E-18	2.00E-18	2.14E-18	2.28E-18	2.28E-18
am240	7.89E-16	8.54E-16	9.16E-16	9.80E-16	1.04E-15	1.04E-15
am241	6.17E-03	6.65E-03	7.13E-03	7.63E-03	8.13E-03	8.13E-03
am242m	2.91E-06	3.14E-06	3.38E-06	3.62E-06	3.87E-06	3.87E-06
am242	2.48E-10	2.67E-10	2.87E-10	3.07E-10	3.27E-10	3.27E-10
am243	2.61E-07	3.00E-07	3.43E-07	3.90E-07	4.40E-07	4.40E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.98E-15	2.28E-15	2.60E-15	2.96E-15	3.34E-15	3.34E-15
am245	2.43E-37	3.43E-37	4.77E-37	6.54E-37	8.86E-37	8.86E-37
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	1.47E-20	1.59E-20	1.71E-20	1.83E-20	1.95E-20	1.95E-20
cm242	5.01E-08	5.40E-08	5.79E-08	6.19E-08	6.60E-08	6.60E-08
cm243	3.80E-17	4.12E-17	4.43E-17	4.75E-17	5.08E-17	5.08E-17
cm244	3.11E-11	3.58E-11	4.09E-11	4.64E-11	5.25E-11	5.25E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 72
power= 4.000E-03mw, burnup=1.0227E+04mwd, flux= 2.65E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
cm245	3.88E-14	4.64E-14	5.50E-14	6.47E-14	7.57E-14	7.57E-14
cm246	2.15E-16	2.67E-16	3.29E-16	4.01E-16	4.85E-16	4.85E-16
cm247	2.18E-20	2.83E-20	3.63E-20	4.61E-20	5.80E-20	5.80E-20
cm248	2.18E-23	2.95E-23	3.95E-23	5.22E-23	6.82E-23	6.82E-23
cm249	6.82E-34	9.26E-34	1.24E-33	1.64E-33	2.14E-33	2.14E-33
cm250	1.91E-38	2.69E-38	3.75E-38	5.15E-38	7.00E-38	7.00E-38
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.65E+08	2.65E+08	2.65E+08	2.65E+08	2.65E-07

0 1q array has 20 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.

```
0       4q array has      1 entries.
0      54q array has     12 entries.
1library information...

          cross-section data taken from position number  8 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *          made from modified card-image origen-s libraries of scale 4.2       *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *        see information above this box (if present) for later updates         *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                  8/28/1996    date library was produced
0                       1697    total number of nuclides in library
                         689    number of light-element nuclides
                         129    number of actinide nuclides
                         879    number of fission product nuclides
0                       7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   73
          power=    .00mw, burnup=  11688.mwd, flux= 2.65E+08n/cm**2-sec
0                                    basis =
0     (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                      initial      ******* d     ******* d     ******* d     ******* d     ******* d
      productions   1.171770E+06   1.172613E+06   1.173425E+06   1.174209E+06   1.174963E+06   1.174963E+06
      absorptions   9.653493E+05   9.660934E+05   9.668211E+05   9.675327E+05   9.682284E+05   9.682284E+05
      k infinity    1.213830E+00   1.213767E+00   1.213694E+00   1.213611E+00   1.213519E+00   1.213519E+00
0                      initial      ******* d     ******* d     ******* d     ******* d     ******* d
      actinide
```

absorptions	9.524083E+05	9.530048E+05	9.535861E+05	9.541523E+05	9.547033E+05	9.547033E+05
non-actinide abs. fracs.	1.340544E-02	1.354790E-02	1.368910E-02	1.382947E-02	1.396894E-02	1.396894E-02

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 74
0 fraction of total absorption rate
power= .00mw, burnup= 11688.mwd, flux= 2.65E+08n/cm**2-sec

	initial	******* d	******* d	******* d	******* d
sm149	5.34E-03	5.34E-03	5.34E-03	5.34E-03	5.34E-03
eu151	1.12E-03	1.15E-03	1.18E-03	1.20E-03	1.23E-03	1.23E-03
nd143	9.66E-04	9.99E-04	1.03E-03	1.06E-03	1.10E-03	1.10E-03
rh103	4.83E-04	5.01E-04	5.18E-04	5.35E-04	5.53E-04	5.53E-04
xe131	3.19E-04	3.30E-04	3.41E-04	3.52E-04	3.63E-04	3.63E-04
cs133	2.46E-04	2.55E-04	2.63E-04	2.72E-04	2.81E-04	2.81E-04
gd155	2.08E-04	2.10E-04	2.12E-04	2.14E-04	2.15E-04	2.15E-04
sm147	1.81E-04	1.87E-04	1.94E-04	2.00E-04	2.06E-04	2.06E-04
tc 99	1.79E-04	1.86E-04	1.92E-04	1.98E-04	2.04E-04	2.04E-04
nd145	1.39E-04	1.43E-04	1.48E-04	1.53E-04	1.58E-04	1.58E-04
sm152	9.67E-05	1.01E-04	1.05E-04	1.09E-04	1.13E-04	1.13E-04
mo 95	9.64E-05	9.97E-05	1.03E-04	1.06E-04	1.10E-04	1.10E-04
cd113	9.87E-05	9.93E-05	9.99E-05	1.00E-04	1.01E-04	1.01E-04
sm150	6.82E-05	7.08E-05	7.35E-05	7.61E-05	7.88E-05	7.88E-05
kr 83	5.86E-05	6.06E-05	6.26E-05	6.45E-05	6.65E-05	6.65E-05
cs135	5.58E-05	5.78E-05	5.97E-05	6.17E-05	6.36E-05	6.36E-05
gd157	6.00E-05	6.08E-05	6.15E-05	6.22E-05	6.29E-05	6.29E-05
ru101	4.37E-05	4.52E-05	4.67E-05	4.83E-05	4.98E-05	4.98E-05
eu153	4.07E-05	4.22E-05	4.38E-05	4.53E-05	4.69E-05	4.69E-05
pr141	4.10E-05	4.24E-05	4.39E-05	4.53E-05	4.67E-05	4.67E-05
sm151	4.18E-05	4.19E-05	4.20E-05	4.21E-05	4.22E-05	4.22E-05
la139	3.35E-05	3.46E-05	3.58E-05	3.70E-05	3.81E-05	3.81E-05
pd105	1.68E-05	1.75E-05	1.82E-05	1.88E-05	1.95E-05	1.95E-05
ag109	1.54E-05	1.62E-05	1.71E-05	1.80E-05	1.89E-05	1.89E-05
ba137	1.60E-05	1.66E-05	1.71E-05	1.77E-05	1.82E-05	1.82E-05
zr 93	1.36E-05	1.40E-05	1.45E-05	1.49E-05	1.54E-05	1.54E-05
i129	1.08E-05	1.12E-05	1.16E-05	1.20E-05	1.24E-05	1.24E-05
nd144	1.01E-05	1.05E-05	1.08E-05	1.12E-05	1.16E-05	1.16E-05
mo 97	7.62E-06	7.89E-06	8.15E-06	8.42E-06	8.68E-06	8.68E-06
gd152	4.77E-06	5.09E-06	5.41E-06	5.74E-06	6.07E-06	6.07E-06
pd108	3.80E-06	3.99E-06	4.19E-06	4.39E-06	4.59E-06	4.59E-06
zr 91	3.51E-06	3.63E-06	3.75E-06	3.87E-06	3.99E-06	3.99E-06
y 89	3.35E-06	3.47E-06	3.58E-06	3.69E-06	3.81E-06	3.81E-06
ru102	3.16E-06	3.27E-06	3.39E-06	3.50E-06	3.61E-06	3.61E-06
ce142	2.77E-06	2.87E-06	2.97E-06	3.06E-06	3.16E-06	3.16E-06
nd148	2.70E-06	2.79E-06	2.88E-06	2.98E-06	3.07E-06	3.07E-06
nd146	2.25E-06	2.33E-06	2.41E-06	2.48E-06	2.56E-06	2.56E-06
in115	2.00E-06	2.08E-06	2.15E-06	2.23E-06	2.30E-06	2.30E-06
pd107	1.91E-06	2.00E-06	2.09E-06	2.19E-06	2.29E-06	2.29E-06
xe135	2.25E-06	2.24E-06	2.24E-06	2.24E-06	2.24E-06	2.24E-06
ba138	1.92E-06	1.98E-06	2.05E-06	2.12E-06	2.18E-06	2.18E-06
ce140	1.79E-06	1.86E-06	1.92E-06	1.98E-06	2.04E-06	2.04E-06
xe132	1.66E-06	1.72E-06	1.78E-06	1.84E-06	1.90E-06	1.90E-06
mo 98	1.13E-06	1.17E-06	1.21E-06	1.25E-06	1.29E-06	1.29E-06
mo100	1.09E-06	1.13E-06	1.17E-06	1.21E-06	1.25E-06	1.25E-06
xe134	1.06E-06	1.10E-06	1.14E-06	1.18E-06	1.21E-06	1.21E-06
zr 92	8.48E-07	8.77E-07	9.05E-07	9.34E-07	9.63E-07	9.63E-07
i127	7.94E-07	8.24E-07	8.55E-07	8.85E-07	9.16E-07	9.16E-07
ru104	7.29E-07	7.56E-07	7.83E-07	8.11E-07	8.38E-07	8.38E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 75
0 fraction of total absorption rate
power= .00mw, burnup= 11688.mwd, flux= 2.65E+08n/cm**2-sec

0		initial	******* d	******* d	******* d	******* d	******* d
	zr 96	6.88E-07	7.12E-07	7.36E-07	7.59E-07	7.83E-07	7.83E-07
	nd150	6.11E-07	6.33E-07	6.54E-07	6.76E-07	6.98E-07	6.98E-07
	xe136	5.78E-07	5.98E-07	6.18E-07	6.38E-07	6.58E-07	6.58E-07
	cd111	4.32E-07	4.52E-07	4.73E-07	4.93E-07	5.14E-07	5.14E-07
	br 81	4.33E-07	4.48E-07	4.63E-07	4.78E-07	4.93E-07	4.93E-07
	rb 85	4.15E-07	4.29E-07	4.43E-07	4.57E-07	4.71E-07	4.71E-07
	ru 99	3.26E-07	3.49E-07	3.73E-07	3.98E-07	4.23E-07	4.23E-07
	zr 94	3.66E-07	3.78E-07	3.91E-07	4.03E-07	4.16E-07	4.16E-07
	zr 90	3.29E-07	3.41E-07	3.52E-07	3.63E-07	3.74E-07	3.74E-07
	sm154	2.81E-07	2.92E-07	3.03E-07	3.13E-07	3.24E-07	3.24E-07
	eu152	2.88E-07	2.95E-07	3.02E-07	3.09E-07	3.16E-07	3.16E-07
	te130	2.65E-07	2.74E-07	2.84E-07	2.93E-07	3.02E-07	3.02E-07
	rb 87	2.39E-07	2.48E-07	2.56E-07	2.64E-07	2.72E-07	2.72E-07
	pm147	2.62E-07	2.61E-07	2.61E-07	2.61E-07	2.61E-07	2.61E-07
	gd154	1.84E-07	1.98E-07	2.12E-07	2.26E-07	2.41E-07	2.41E-07
	eu155	1.99E-07	2.00E-07	2.01E-07	2.02E-07	2.03E-07	2.03E-07
	pd106	1.69E-07	1.76E-07	1.83E-07	1.91E-07	1.98E-07	1.98E-07
	se 77	1.72E-07	1.78E-07	1.84E-07	1.90E-07	1.96E-07	1.96E-07
	gd156	1.46E-07	1.53E-07	1.60E-07	1.67E-07	1.74E-07	1.74E-07
	kr 84	1.15E-07	1.19E-07	1.22E-07	1.26E-07	1.30E-07	1.30E-07
	dy161	9.26E-08	9.76E-08	1.03E-07	1.08E-07	1.13E-07	1.13E-07
	sb121	9.18E-08	9.52E-08	9.86E-08	1.02E-07	1.05E-07	1.05E-07
	se 79	8.83E-08	9.13E-08	9.44E-08	9.74E-08	1.00E-07	1.00E-07
	sb123	7.42E-08	7.69E-08	7.97E-08	8.24E-08	8.52E-08	8.52E-08
	ru100	5.56E-08	5.96E-08	6.37E-08	6.79E-08	7.23E-08	7.23E-08
	kr 86	6.26E-08	6.47E-08	6.68E-08	6.89E-08	7.10E-08	7.10E-08
	te128	6.03E-08	6.25E-08	6.47E-08	6.69E-08	6.91E-08	6.91E-08
	nd142	3.89E-08	4.16E-08	4.45E-08	4.75E-08	5.05E-08	5.05E-08
	ba134	3.79E-08	4.06E-08	4.34E-08	4.63E-08	4.93E-08	4.93E-08
	tb159	4.12E-08	4.32E-08	4.52E-08	4.72E-08	4.92E-08	4.92E-08
	se 80	4.12E-08	4.26E-08	4.40E-08	4.55E-08	4.69E-08	4.69E-08
	te125	4.05E-08	4.21E-08	4.36E-08	4.52E-08	4.68E-08	4.68E-08
	sm148	3.47E-08	3.71E-08	3.97E-08	4.23E-08	4.51E-08	4.51E-08
	ba135	3.14E-08	3.36E-08	3.59E-08	3.84E-08	4.08E-08	4.08E-08
	gd158	3.23E-08	3.38E-08	3.53E-08	3.68E-08	3.83E-08	3.83E-08
	cd112	3.03E-08	3.15E-08	3.28E-08	3.41E-08	3.54E-08	3.54E-08
	pd104	2.68E-08	2.88E-08	3.08E-08	3.28E-08	3.50E-08	3.50E-08
	dy164	2.11E-08	2.23E-08	2.36E-08	2.48E-08	2.61E-08	2.61E-08
	li 6	2.24E-08	2.32E-08	2.39E-08	2.46E-08	2.54E-08	2.54E-08
	sn117	2.17E-08	2.26E-08	2.35E-08	2.43E-08	2.52E-08	2.52E-08
	dy162	1.94E-08	2.05E-08	2.17E-08	2.29E-08	2.42E-08	2.42E-08
	eu154	2.04E-08	2.11E-08	2.19E-08	2.27E-08	2.34E-08	2.34E-08
	cd114	1.78E-08	1.86E-08	1.94E-08	2.01E-08	2.09E-08	2.09E-08
	sn119	1.67E-08	1.73E-08	1.79E-08	1.85E-08	1.92E-08	1.92E-08
	sn115	1.52E-08	1.58E-08	1.64E-08	1.70E-08	1.75E-08	1.75E-08
	pd110	1.46E-08	1.53E-08	1.60E-08	1.67E-08	1.74E-08	1.74E-08
	sr 90	1.56E-08	1.56E-08	1.55E-08	1.55E-08	1.55E-08	1.55E-08
	sr 88	1.15E-08	1.19E-08	1.23E-08	1.27E-08	1.31E-08	1.31E-08
	mo 96	9.00E-09	9.63E-09	1.03E-08	1.09E-08	1.16E-08	1.16E-08

0 fraction of total absorption rate

power= .00mw, burnup= 11688.mwd, flux= 2.65E+08n/cm**2-sec

0		initial	******* d	******* d	******* d	******* d	******* d
	rh105	1.06E-08	1.07E-08	1.07E-08	1.08E-08	1.09E-08	1.09E-08
	cd110	7.72E-09	8.42E-09	9.15E-09	9.93E-09	1.07E-08	1.07E-08
	se 82	7.89E-09	8.16E-09	8.43E-09	8.70E-09	8.97E-09	8.97E-09
	sn126	7.53E-09	7.83E-09	8.13E-09	8.43E-09	8.73E-09	8.73E-09

se 78	6.19E-09	6.41E-09	6.63E-09	6.85E-09	7.06E-09	7.06E-09
nb 93	4.98E-09	5.34E-09	5.71E-09	6.09E-09	6.48E-09	6.48E-09
ba136	5.21E-09	5.51E-09	5.81E-09	6.12E-09	6.44E-09	6.44E-09
sn124	5.43E-09	5.63E-09	5.84E-09	6.04E-09	6.25E-09	6.25E-09
dy163	4.91E-09	5.20E-09	5.50E-09	5.81E-09	6.13E-09	6.13E-09
xe130	4.76E-09	5.07E-09	5.40E-09	5.73E-09	6.08E-09	6.08E-09
kr 82	4.30E-09	4.56E-09	4.82E-09	5.09E-09	5.36E-09	5.36E-09
as 75	3.65E-09	3.78E-09	3.90E-09	4.03E-09	4.16E-09	4.16E-09
cs137	3.66E-09	3.66E-09	3.66E-09	3.66E-09	3.65E-09	3.65E-09
in113	3.05E-09	3.17E-09	3.29E-09	3.40E-09	3.52E-09	3.52E-09
br 79	2.54E-09	2.72E-09	2.91E-09	3.10E-09	3.30E-09	3.30E-09
ag107	2.06E-09	2.23E-09	2.41E-09	2.60E-09	2.80E-09	2.80E-09
sn118	2.21E-09	2.29E-09	2.37E-09	2.45E-09	2.54E-09	2.54E-09
pr143	2.52E-09	2.51E-09	2.51E-09	2.50E-09	2.50E-09	2.50E-09
sn122	1.84E-09	1.91E-09	1.98E-09	2.05E-09	2.12E-09	2.12E-09
cd116	1.84E-09	1.91E-09	1.98E-09	2.05E-09	2.12E-09	2.12E-09
cs134	1.80E-09	1.86E-09	1.92E-09	1.99E-09	2.05E-09	2.05E-09
xe129	1.48E-09	1.59E-09	1.70E-09	1.82E-09	1.94E-09	1.94E-09
xe133	1.94E-09	1.94E-09	1.93E-09	1.93E-09	1.93E-09	1.93E-09
sn120	1.37E-09	1.42E-09	1.47E-09	1.52E-09	1.57E-09	1.57E-09
ce141	1.52E-09	1.52E-09	1.51E-09	1.51E-09	1.51E-09	1.51E-09
te126	1.12E-09	1.19E-09	1.27E-09	1.35E-09	1.44E-09	1.44E-09
ge 73	1.03E-09	1.07E-09	1.10E-09	1.14E-09	1.18E-09	1.18E-09
pm149	9.45E-10	9.45E-10	9.44E-10	9.44E-10	9.44E-10	9.44E-10
nd147	8.98E-10	8.97E-10	8.96E-10	8.95E-10	8.94E-10	8.94E-10
ce144	5.64E-10	5.63E-10	5.63E-10	5.62E-10	5.61E-10	5.61E-10
gd160	4.50E-10	4.72E-10	4.96E-10	5.19E-10	5.43E-10	5.43E-10
kr 85	5.27E-10	5.26E-10	5.25E-10	5.24E-10	5.23E-10	5.23E-10
ho165	4.02E-10	4.29E-10	4.56E-10	4.84E-10	5.13E-10	5.13E-10
ge 76	3.56E-10	3.68E-10	3.80E-10	3.92E-10	4.05E-10	4.05E-10
ru103	3.78E-10	3.78E-10	3.79E-10	3.79E-10	3.80E-10	3.80E-10
dy160	2.47E-10	2.67E-10	2.87E-10	3.09E-10	3.31E-10	3.31E-10
xe128	1.50E-10	1.61E-10	1.72E-10	1.84E-10	1.96E-10	1.96E-10
zr 95	1.58E-10	1.57E-10	1.57E-10	1.57E-10	1.57E-10	1.57E-10
nb 95	1.45E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10
y 91	1.31E-10	1.31E-10	1.31E-10	1.30E-10	1.30E-10	1.30E-10
pm151	1.12E-10	1.12E-10	1.12E-10	1.12E-10	1.13E-10	1.13E-10
sr 86	7.87E-11	8.39E-11	8.92E-11	9.47E-11	1.00E-10	1.00E-10
te124	7.80E-11	8.20E-11	8.62E-11	9.04E-11	9.46E-11	9.46E-11
sn116	5.80E-11	6.22E-11	6.66E-11	7.11E-11	7.58E-11	7.58E-11
eu156	5.10E-11	5.15E-11	5.19E-11	5.24E-11	5.28E-11	5.28E-11
sr 87	4.48E-11	4.65E-11	4.82E-11	4.99E-11	5.16E-11	5.16E-11
sm153	4.44E-11	4.46E-11	4.48E-11	4.51E-11	4.53E-11	4.53E-11
ba140	4.51E-11	4.50E-11	4.50E-11	4.49E-11	4.49E-11	4.49E-11
ru106	4.07E-11	4.11E-11	4.16E-11	4.20E-11	4.24E-11	4.24E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 77

0 fraction of total absorption rate

power= .00mw, burnup= 11688.mwd, flux= 2.65E+08n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

nb 94	2.97E-11	3.11E-11	3.25E-11	3.39E-11	3.54E-11	3.54E-11
te122	2.40E-11	2.58E-11	2.76E-11	2.95E-11	3.14E-11	3.14E-11
se 76	2.43E-11	2.57E-11	2.72E-11	2.88E-11	3.03E-11	3.03E-11
er166	2.18E-11	2.32E-11	2.47E-11	2.62E-11	2.77E-11	2.77E-11
sr 89	2.79E-11	2.78E-11	2.78E-11	2.77E-11	2.77E-11	2.77E-11
ge 74	2.05E-11	2.12E-11	2.20E-11	2.27E-11	2.34E-11	2.34E-11
kr 87	2.09E-11	2.09E-11	2.08E-11	2.08E-11	2.07E-11	2.07E-11
sb125	1.75E-11	1.76E-11	1.77E-11	1.77E-11	1.78E-11	1.78E-11
ge 72	1.49E-11	1.54E-11	1.60E-11	1.66E-11	1.72E-11	1.72E-11
ce143	1.65E-11	1.65E-11	1.64E-11	1.64E-11	1.64E-11	1.64E-11

y 90	1.48E-11	1.48E-11	1.48E-11	1.47E-11	1.47E-11	1.47E-11
la140	1.47E-11	1.47E-11	1.47E-11	1.46E-11	1.46E-11	1.46E-11
mo 99	1.27E-11	1.27E-11	1.27E-11	1.26E-11	1.26E-11	1.26E-11
pm148m	9.63E-12	9.64E-12	9.65E-12	9.65E-12	9.66E-12	9.66E-12
te127m	8.79E-12	8.82E-12	8.86E-12	8.90E-12	8.94E-12	8.94E-12
i131	6.69E-12	6.69E-12	6.69E-12	6.69E-12	6.69E-12	6.69E-12
kr 80	2.33E-12	2.52E-12	2.73E-12	2.94E-12	3.17E-12	3.17E-12
te129m	1.87E-12	1.87E-12	1.87E-12	1.88E-12	1.88E-12	1.88E-12
er167	1.18E-12	1.29E-12	1.41E-12	1.54E-12	1.67E-12	1.67E-12
te123	6.25E-13	6.87E-13	7.52E-13	8.22E-13	8.96E-13	8.96E-13
ag111	6.21E-13	6.29E-13	6.37E-13	6.46E-13	6.54E-13	6.54E-13
eu157	4.98E-13	5.04E-13	5.09E-13	5.15E-13	5.20E-13	5.20E-13
pm148	3.64E-13	3.64E-13	3.64E-13	3.64E-13	3.63E-13	3.63E-13
cd115m	2.68E-13	2.69E-13	2.70E-13	2.71E-13	2.72E-13	2.72E-13
cs136	2.30E-13	2.35E-13	2.41E-13	2.46E-13	2.52E-13	2.52E-13
cd108	8.71E-14	9.72E-14	1.08E-13	1.20E-13	1.32E-13	1.32E-13
tb160	1.03E-13	1.08E-13	1.13E-13	1.18E-13	1.22E-13	1.22E-13
be 9	4.58E-14	4.74E-14	4.90E-14	5.06E-14	5.22E-14	5.22E-14
pr142	4.57E-14	4.72E-14	4.88E-14	5.03E-14	5.19E-14	5.19E-14
ru105	3.80E-14	3.83E-14	3.85E-14	3.87E-14	3.90E-14	3.90E-14
sn125	3.21E-14	3.22E-14	3.23E-14	3.24E-14	3.24E-14	3.24E-14
li 7	1.81E-14	1.88E-14	1.94E-14	2.00E-14	2.06E-14	2.06E-14
sn114	1.45E-14	1.55E-14	1.67E-14	1.78E-14	1.90E-14	1.90E-14
sb126	1.51E-14	1.56E-14	1.60E-14	1.64E-14	1.69E-14	1.69E-14
rb 88	1.17E-14	1.17E-14	1.17E-14	1.17E-14	1.16E-14	1.16E-14
sn123	1.05E-14	1.05E-14	1.05E-14	1.05E-14	1.05E-14	1.05E-14
i130	9.11E-15	9.40E-15	9.68E-15	9.97E-15	1.03E-14	1.03E-14
i135	9.73E-15	9.72E-15	9.72E-15	9.71E-15	9.70E-15	9.70E-15
te132	9.33E-15	9.33E-15	9.33E-15	9.32E-15	9.32E-15	9.32E-15
sb124	5.59E-15	5.71E-15	5.83E-15	5.96E-15	6.08E-15	6.08E-15
te134	5.45E-15	5.44E-15	5.43E-15	5.43E-15	5.42E-15	5.42E-15
rb 86	2.88E-15	2.97E-15	3.06E-15	3.15E-15	3.23E-15	3.23E-15
in117m	2.59E-15	2.61E-15	2.62E-15	2.64E-15	2.65E-15	2.65E-15
dy165	2.11E-15	2.18E-15	2.25E-15	2.32E-15	2.39E-15	2.39E-15
in117	7.77E-16	7.82E-16	7.86E-16	7.91E-16	7.95E-16	7.95E-16
cs134m	3.37E-16	3.49E-16	3.60E-16	3.72E-16	3.83E-16	3.83E-16
cd118	1.35E-16	1.35E-16	1.36E-16	1.36E-16	1.36E-16	1.36E-16
ge 75	8.31E-17	8.31E-17	8.30E-17	8.29E-17	8.29E-17	8.29E-17
in119m	3.30E-17	3.30E-17	3.31E-17	3.32E-17	3.33E-17	3.33E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 78

0 fraction of total absorption rate

power= .00mw, burnup= 11688.mwd, flux= 2.65E+08n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

ag110	1.97E-17	2.08E-17	2.19E-17	2.31E-17	2.42E-17	2.42E-17
cd109	1.28E-17	1.34E-17	1.41E-17	1.48E-17	1.55E-17	1.55E-17
in119	2.70E-18	2.71E-18	2.72E-18	2.73E-18	2.74E-18	2.74E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 79

power= 4.000E-03mw, burnup=1.1688E+04mwd, flux= 2.65E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
h 1	6.08E-04	6.30E-04	6.52E-04	6.74E-04	6.96E-04	6.96E-04
h 2	1.81E-06	1.88E-06	1.95E-06	2.01E-06	2.08E-06	2.08E-06
h 3	4.96E-11	5.02E-11	5.06E-11	5.10E-11	5.14E-11	5.14E-11
h 4	1.97E-34	1.99E-34	2.00E-34	2.02E-34	2.03E-34	2.03E-34
he 3	1.11E-08	1.14E-08	1.17E-08	1.20E-08	1.23E-08	1.23E-08
he 4	1.01E-04	1.04E-04	1.08E-04	1.12E-04	1.15E-04	1.15E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ne 20	1.21E-05	1.26E-05	1.30E-05	1.34E-05	1.39E-05	1.39E-05
ne 21	2.52E-09	2.70E-09	2.88E-09	3.06E-09	3.26E-09	3.26E-09
ne 22	8.02E-08	8.31E-08	8.60E-08	8.89E-08	9.18E-08	9.18E-08
ne 23	7.22E-15	7.25E-15	7.25E-15	7.24E-15	7.24E-15	7.24E-15
na 22	4.27E-11	4.29E-11	4.29E-11	4.29E-11	4.28E-11	4.28E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08
na 24m	4.53E-15	4.53E-15	4.53E-15	4.53E-15	4.53E-15	4.53E-15
na 25	7.53E-24	8.05E-24	8.58E-24	9.11E-24	9.66E-24	9.66E-24
mg 24	8.54E-02	8.83E-02	9.12E-02	9.40E-02	9.69E-02	9.69E-02
mg 25	2.61E-07	2.78E-07	2.96E-07	3.15E-07	3.34E-07	3.34E-07
mg 26	1.81E-06	1.88E-06	1.94E-06	2.01E-06	2.07E-06	2.07E-06
mg 27	2.15E-12	2.16E-12	2.16E-12	2.16E-12	2.16E-12	2.16E-12
mg 28	4.28E-24	4.30E-24	4.29E-24	4.29E-24	4.29E-24	4.29E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.04E-10	2.05E-10	2.04E-10	2.04E-10	2.04E-10	2.04E-10
al 29	5.96E-22	6.39E-22	6.81E-22	7.25E-22	7.70E-22	7.70E-22
al 30	7.84E-32	8.70E-32	9.59E-32	1.05E-31	1.15E-31	1.15E-31
si 28	2.49E-01	2.57E-01	2.65E-01	2.74E-01	2.82E-01	2.82E-01
si 29	2.31E-06	2.47E-06	2.63E-06	2.80E-06	2.97E-06	2.97E-06
si 30	2.27E-11	2.51E-11	2.77E-11	3.04E-11	3.33E-11	3.33E-11
si 31	1.59E-23	1.76E-23	1.94E-23	2.13E-23	2.34E-23	2.34E-23
si 32	2.48E-29	2.75E-29	3.04E-29	3.35E-29	3.68E-29	3.68E-29
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.65E+08	2.65E+08	2.65E+08	2.65E+08	2.64E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 80
power= 4.000E-03mw, burnup=1.1688E+04mwd, flux= 2.65E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
he 4	5.00E+00	5.29E+00	5.59E+00	5.90E+00	6.22E+00	6.22E+00
pb206	3.17E-03	3.47E-03	3.77E-03	4.10E-03	4.43E-03	4.43E-03
pb207	3.75E-04	4.03E-04	4.31E-04	4.61E-04	4.91E-04	4.91E-04
pb208	5.89E-05	6.32E-05	6.76E-05	7.22E-05	7.69E-05	7.69E-05
pb209	5.43E-11	5.78E-11	6.14E-11	6.50E-11	6.88E-11	6.88E-11
pb210	3.67E-05	3.86E-05	4.04E-05	4.23E-05	4.42E-05	4.42E-05
pb211	1.07E-11	1.11E-11	1.15E-11	1.19E-11	1.23E-11	1.23E-11
pb212	2.92E-11	3.03E-11	3.13E-11	3.24E-11	3.34E-11	3.34E-11
pb214	8.39E-11	8.81E-11	9.24E-11	9.66E-11	1.01E-10	1.01E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.51E-04	2.77E-04	3.05E-04	3.34E-04	3.66E-04	3.66E-04
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.26E-08	2.37E-08	2.49E-08	2.60E-08	2.72E-08	2.72E-08
bi211	6.36E-13	6.59E-13	6.82E-13	7.05E-13	7.29E-13	7.29E-13
bi212	2.77E-12	2.87E-12	2.97E-12	3.07E-12	3.17E-12	3.17E-12
bi213	1.27E-11	1.35E-11	1.43E-11	1.52E-11	1.61E-11	1.61E-11
bi214	6.23E-11	6.54E-11	6.86E-11	7.17E-11	7.49E-11	7.49E-11
po210	6.24E-07	6.56E-07	6.87E-07	7.19E-07	7.51E-07	7.51E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	7.03E-18	7.28E-18	7.54E-18	7.79E-18	8.05E-18	8.05E-18
po212	1.46E-22	1.51E-22	1.56E-22	1.61E-22	1.67E-22	1.67E-22
po213	1.91E-20	2.03E-20	2.16E-20	2.28E-20	2.41E-20	2.41E-20
po214	8.57E-18	9.00E-18	9.44E-18	9.87E-18	1.03E-17	1.03E-17
po215	8.81E-18	9.14E-18	9.46E-18	9.78E-18	1.01E-17	1.01E-17
po216	1.11E-16	1.15E-16	1.19E-16	1.23E-16	1.27E-16	1.27E-16
po218	9.71E-12	1.02E-11	1.07E-11	1.12E-11	1.17E-11	1.17E-11
rn218	4.28E-28	4.44E-28	4.59E-28	4.74E-28	4.90E-28	4.90E-28
rn219	1.96E-14	2.03E-14	2.10E-14	2.18E-14	2.25E-14	2.25E-14
rn220	4.24E-14	4.39E-14	4.55E-14	4.70E-14	4.85E-14	4.85E-14

rn222	1.72E-08	1.81E-08	1.90E-08	1.99E-08	2.07E-08	2.07E-08
ra222	4.64E-25	4.82E-25	4.99E-25	5.15E-25	5.32E-25	5.32E-25
ra223	4.89E-09	5.07E-09	5.25E-09	5.43E-09	5.61E-09	5.61E-09
ra224	2.41E-10	2.50E-10	2.59E-10	2.67E-10	2.76E-10	2.76E-10
ra225	5.94E-09	6.32E-09	6.71E-09	7.10E-09	7.51E-09	7.51E-09
ra226	2.64E-03	2.77E-03	2.90E-03	3.03E-03	3.17E-03	3.17E-03
ra228	1.51E-11	1.57E-11	1.62E-11	1.68E-11	1.73E-11	1.73E-11
ac225	4.01E-09	4.27E-09	4.53E-09	4.80E-09	5.07E-09	5.07E-09
ac227	3.40E-06	3.53E-06	3.65E-06	3.77E-06	3.90E-06	3.90E-06
ac228	1.84E-15	1.91E-15	1.98E-15	2.05E-15	2.11E-15	2.11E-15
th226	2.26E-23	2.35E-23	2.43E-23	2.51E-23	2.59E-23	2.59E-23
th227	7.90E-09	8.18E-09	8.47E-09	8.76E-09	9.05E-09	9.05E-09
th228	4.61E-08	4.77E-08	4.94E-08	5.10E-08	5.27E-08	5.27E-08
th229	1.15E-03	1.23E-03	1.30E-03	1.38E-03	1.46E-03	1.46E-03
th230	1.82E-01	1.88E-01	1.95E-01	2.01E-01	2.08E-01	2.08E-01
th231	3.65E-09	3.67E-09	3.70E-09	3.72E-09	3.74E-09	3.74E-09
th232	3.69E-02	3.83E-02	3.96E-02	4.10E-02	4.23E-02	4.23E-02
th233	3.33E-13	3.45E-13	3.57E-13	3.69E-13	3.81E-13	3.81E-13
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	5.11E-03	5.30E-03	5.49E-03	5.67E-03	5.86E-03	5.86E-03
pa232	8.60E-11	8.91E-11	9.22E-11	9.53E-11	9.84E-11	9.84E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 81
power= 4.000E-03mw, burnup=1.1688E+04mwd, flux= 2.65E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	2.20E-20	2.28E-20	2.36E-20	2.44E-20	2.51E-20	2.51E-20
u231	6.96E-17	7.22E-17	7.45E-17	7.68E-17	7.91E-17	7.91E-17
u232	1.68E-06	1.74E-06	1.80E-06	1.86E-06	1.92E-06	1.92E-06
u233	9.07E-02	9.38E-02	9.68E-02	9.99E-02	1.03E-01	1.03E-01
u234	1.00E+01	1.00E+01	1.01E+01	1.01E+01	1.01E+01	1.01E+01
u235	6.83E+02	6.82E+02	6.80E+02	6.79E+02	6.77E+02	6.77E+02
u236	1.82E+02	1.82E+02	1.83E+02	1.83E+02	1.83E+02	1.83E+02
u237	3.23E-06	3.24E-06	3.24E-06	3.25E-06	3.25E-06	3.25E-06
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	2.13E-36	2.86E-36	3.80E-36	5.00E-36	6.53E-36	6.53E-36
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.75E-12	8.79E-12	8.78E-12	8.77E-12	8.77E-12	8.77E-12
np236m	2.08E-12	2.09E-12	2.08E-12	2.08E-12	2.08E-12	2.08E-12
np236	1.36E-06	1.41E-06	1.46E-06	1.50E-06	1.55E-06	1.55E-06
np237	4.16E+01	4.16E+01	4.16E+01	4.16E+01	4.16E+01	4.16E+01
np238	1.51E-06	1.51E-06	1.51E-06	1.51E-06	1.51E-06	1.51E-06
np239	4.58E-05	4.58E-05	4.58E-05	4.58E-05	4.58E-05	4.58E-05
np240m	1.81E-38	2.44E-38	3.24E-38	4.27E-38	5.57E-38	5.57E-38
np240	9.15E-15	9.16E-15	9.15E-15	9.14E-15	9.14E-15	9.14E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09
pu237	4.79E-13	4.89E-13	4.95E-13	5.02E-13	5.09E-13	5.09E-13
pu238	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02
pu239	2.87E+01	2.95E+01	3.03E+01	3.11E+01	3.19E+01	3.19E+01
pu240	7.80E-01	8.24E-01	8.69E-01	9.14E-01	9.60E-01	9.60E-01
pu241	3.20E-04	3.38E-04	3.56E-04	3.75E-04	3.93E-04	3.93E-04
pu242	5.83E-05	6.45E-05	7.10E-05	7.79E-05	8.53E-05	8.53E-05
pu243	1.23E-13	1.36E-13	1.50E-13	1.65E-13	1.80E-13	1.80E-13

```
      pu244   1.06E-25  1.42E-25  1.89E-25  2.49E-25  3.25E-25  3.25E-25
      pu245   4.23E-36  5.69E-36  7.56E-36  9.95E-36  1.30E-35  1.30E-35
      pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am239   2.28E-18  2.44E-18  2.58E-18  2.73E-18  2.88E-18  2.88E-18
      am240   1.04E-15  1.11E-15  1.18E-15  1.25E-15  1.32E-15  1.32E-15
      am241   8.13E-03  8.65E-03  9.17E-03  9.70E-03  1.02E-02  1.02E-02
      am242m  3.87E-06  4.12E-06  4.37E-06  4.63E-06  4.89E-06  4.89E-06
      am242   3.27E-10  3.48E-10  3.68E-10  3.90E-10  4.11E-10  4.11E-10
      am243   4.40E-07  4.95E-07  5.55E-07  6.19E-07  6.87E-07  6.87E-07
      am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am244   3.34E-15  3.76E-15  4.21E-15  4.69E-15  5.21E-15  5.21E-15
      am245   8.86E-37  1.19E-36  1.57E-36  2.07E-36  2.69E-36  2.69E-36
      am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      cm241   1.95E-20  2.08E-20  2.20E-20  2.33E-20  2.45E-20  2.45E-20
      cm242   6.60E-08  7.02E-08  7.44E-08  7.87E-08  8.30E-08  8.30E-08
      cm243   5.08E-17  5.42E-17  5.76E-17  6.11E-17  6.45E-17  6.45E-17
      cm244   5.25E-11  5.91E-11  6.61E-11  7.37E-11  8.19E-11  8.19E-11
1
      sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                actinides          page   82
        power= 4.000E-03mw, burnup=1.1688E+04mwd, flux= 2.65E+08n/cm**2-sec
0                                                nuclide concentrations, gram atoms
                                                 basis = single reactor assembly
               charge ******* d ******* d ******* d ******* d ******* d
      cm245   7.57E-14  8.81E-14  1.02E-13  1.17E-13  1.34E-13  1.34E-13
      cm246   4.85E-16  5.82E-16  6.94E-16  8.21E-16  9.67E-16  9.67E-16
      cm247   5.80E-20  7.24E-20  8.96E-20  1.10E-19  1.34E-19  1.34E-19
      cm248   6.82E-23  8.84E-23  1.13E-22  1.44E-22  1.82E-22  1.82E-22
      cm249   2.14E-33  2.77E-33  3.56E-33  4.52E-33  5.70E-33  5.70E-33
      cm250   7.00E-38  9.39E-38  1.25E-37  1.64E-37  2.13E-37  2.13E-37
      cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
    totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0     flux              2.65E+08  2.65E+08  2.65E+08  2.65E+08  2.64E-07
0         1q array has      20 entries.
0         3q array has       1 entries.
0         3q array has       1 entries.
0         3q array has       1 entries.
0         4q array has       1 entries.
0        54q array has      12 entries.
1library information...

          cross-section data taken from position number  9 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *         made from modified card-image origen-s libraries of scale 4.2        *
```

```
         *      data from the light element, actinide, and fission product libraries    *
         *        decay data, including gamma and total energy, are from endf/b-vi      *
         *                                                                              *
         *      neutron flux spectrum factors and cross sections were produced from     *
         *     the "presas2" case updating all nuclides on the scale "burnup" library   *
         *                                                                              *
         *                  fission product yields are from endf/b-v                    *
         *                                                                              *
         *              photon libraries use an 18-energy-group structure               *
         *             the photon data are from the master photon data base,            *
         *              produced to include bremsstrahlung from uo2 matrix              *
         *                                                                              *
         *        see information above this box (if present) for later updates         *
         *                                                                              *
         ********************************************************************************
         *                                                                              *
0        ********************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/28/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   83
        power=    .00mw, burnup=  13149.mwd, flux= 2.64E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.175230E+06   1.175964E+06   1.176671E+06   1.177350E+06   1.178002E+06   1.178002E+06
     absorptions   9.690727E+05   9.697574E+05   9.704266E+05   9.710801E+05   9.717191E+05   9.717191E+05
     k infinity    1.212737E+00   1.212638E+00   1.212529E+00   1.212412E+00   1.212286E+00   1.212286E+00
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   9.555376E+05   9.560779E+05   9.566034E+05   9.571145E+05   9.576114E+05   9.576114E+05
     non-actinide
     abs. fracs.   1.396710E-02   1.410609E-02   1.424450E-02   1.438147E-02   1.451826E-02   1.451826E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products    page   84
0                                 fraction of total absorption rate
        power=    .00mw, burnup=  13149.mwd, flux= 2.64E+08n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.34E-03  5.34E-03  5.34E-03  5.34E-03  5.34E-03  5.34E-03
     eu151     1.23E-03  1.26E-03  1.28E-03  1.31E-03  1.33E-03  1.33E-03
     nd143     1.10E-03  1.13E-03  1.16E-03  1.19E-03  1.22E-03  1.22E-03
     rh103     5.53E-04  5.70E-04  5.88E-04  6.05E-04  6.22E-04  6.22E-04
     xe131     3.63E-04  3.75E-04  3.86E-04  3.97E-04  4.08E-04  4.08E-04
     cs133     2.81E-04  2.89E-04  2.98E-04  3.06E-04  3.15E-04  3.15E-04
     sm147     2.06E-04  2.13E-04  2.19E-04  2.25E-04  2.31E-04  2.31E-04
     tc 99     2.04E-04  2.10E-04  2.16E-04  2.22E-04  2.29E-04  2.29E-04
     gd155     2.15E-04  2.17E-04  2.19E-04  2.20E-04  2.22E-04  2.22E-04
     nd145     1.58E-04  1.62E-04  1.67E-04  1.72E-04  1.76E-04  1.76E-04
     sm152     1.13E-04  1.17E-04  1.21E-04  1.25E-04  1.29E-04  1.29E-04
     mo 95     1.10E-04  1.13E-04  1.16E-04  1.20E-04  1.23E-04  1.23E-04
     cd113     1.01E-04  1.02E-04  1.02E-04  1.03E-04  1.03E-04  1.03E-04
     sm150     7.88E-05  8.14E-05  8.40E-05  8.67E-05  8.93E-05  8.93E-05
     kr 83     6.65E-05  6.84E-05  7.04E-05  7.23E-05  7.43E-05  7.43E-05
     cs135     6.36E-05  6.56E-05  6.75E-05  6.95E-05  7.14E-05  7.14E-05
```

gd157	6.29E-05	6.36E-05	6.43E-05	6.50E-05	6.57E-05	6.57E-05
ru101	4.99E-05	5.14E-05	5.29E-05	5.44E-05	5.60E-05	5.60E-05
eu153	4.69E-05	4.85E-05	5.00E-05	5.16E-05	5.32E-05	5.32E-05
pr141	4.67E-05	4.81E-05	4.95E-05	5.09E-05	5.23E-05	5.23E-05
la139	3.81E-05	3.92E-05	4.04E-05	4.16E-05	4.27E-05	4.27E-05
sm151	4.21E-05	4.22E-05	4.23E-05	4.24E-05	4.25E-05	4.25E-05
ag109	1.89E-05	1.98E-05	2.07E-05	2.17E-05	2.26E-05	2.26E-05
pd105	1.95E-05	2.02E-05	2.09E-05	2.16E-05	2.23E-05	2.23E-05
ba137	1.82E-05	1.88E-05	1.93E-05	1.99E-05	2.05E-05	2.05E-05
zr 93	1.54E-05	1.59E-05	1.63E-05	1.68E-05	1.73E-05	1.73E-05
i129	1.24E-05	1.28E-05	1.32E-05	1.36E-05	1.40E-05	1.40E-05
nd144	1.15E-05	1.19E-05	1.23E-05	1.26E-05	1.30E-05	1.30E-05
mo 97	8.68E-06	8.94E-06	9.20E-06	9.47E-06	9.73E-06	9.73E-06
gd152	6.07E-06	6.41E-06	6.76E-06	7.11E-06	7.48E-06	7.48E-06
pd108	4.60E-06	4.80E-06	5.02E-06	5.23E-06	5.45E-06	5.45E-06
zr 91	3.99E-06	4.10E-06	4.22E-06	4.34E-06	4.46E-06	4.46E-06
y 89	3.80E-06	3.92E-06	4.03E-06	4.14E-06	4.25E-06	4.25E-06
ru102	3.61E-06	3.72E-06	3.83E-06	3.94E-06	4.06E-06	4.06E-06
ce142	3.16E-06	3.25E-06	3.35E-06	3.44E-06	3.54E-06	3.54E-06
nd148	3.07E-06	3.16E-06	3.26E-06	3.35E-06	3.44E-06	3.44E-06
nd146	2.56E-06	2.64E-06	2.72E-06	2.79E-06	2.87E-06	2.87E-06
pd107	2.29E-06	2.38E-06	2.48E-06	2.58E-06	2.69E-06	2.69E-06
in115	2.30E-06	2.38E-06	2.45E-06	2.53E-06	2.60E-06	2.60E-06
ba138	2.18E-06	2.25E-06	2.31E-06	2.38E-06	2.44E-06	2.44E-06
ce140	2.04E-06	2.10E-06	2.16E-06	2.23E-06	2.29E-06	2.29E-06
xe135	2.24E-06	2.24E-06	2.24E-06	2.24E-06	2.23E-06	2.23E-06
xe132	1.90E-06	1.96E-06	2.01E-06	2.07E-06	2.13E-06	2.13E-06
mo 98	1.29E-06	1.33E-06	1.37E-06	1.41E-06	1.45E-06	1.45E-06
mo100	1.25E-06	1.29E-06	1.32E-06	1.36E-06	1.40E-06	1.40E-06
xe134	1.21E-06	1.25E-06	1.28E-06	1.32E-06	1.36E-06	1.36E-06
zr 92	9.63E-07	9.91E-07	1.02E-06	1.05E-06	1.08E-06	1.08E-06
i127	9.16E-07	9.47E-07	9.79E-07	1.01E-06	1.04E-06	1.04E-06
ru104	8.39E-07	8.66E-07	8.94E-07	9.22E-07	9.50E-07	9.50E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 85
0 fraction of total absorption rate
power= .00mw, burnup= 13149.mwd, flux= 2.64E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	7.84E-07	8.08E-07	8.32E-07	8.55E-07	8.79E-07	8.79E-07
nd150	6.98E-07	7.19E-07	7.41E-07	7.63E-07	7.84E-07	7.84E-07
xe136	6.58E-07	6.78E-07	6.98E-07	7.18E-07	7.38E-07	7.38E-07
cd111	5.13E-07	5.34E-07	5.55E-07	5.77E-07	5.98E-07	5.98E-07
br 81	4.93E-07	5.08E-07	5.23E-07	5.38E-07	5.53E-07	5.53E-07
ru 99	4.23E-07	4.50E-07	4.77E-07	5.05E-07	5.33E-07	5.33E-07
rb 85	4.71E-07	4.85E-07	4.99E-07	5.13E-07	5.27E-07	5.27E-07
zr 94	4.16E-07	4.29E-07	4.41E-07	4.54E-07	4.66E-07	4.66E-07
zr 90	3.74E-07	3.85E-07	3.96E-07	4.07E-07	4.18E-07	4.18E-07
sm154	3.24E-07	3.35E-07	3.46E-07	3.57E-07	3.68E-07	3.68E-07
eu152	3.16E-07	3.22E-07	3.29E-07	3.35E-07	3.41E-07	3.41E-07
te130	3.02E-07	3.11E-07	3.21E-07	3.30E-07	3.39E-07	3.39E-07
gd154	2.41E-07	2.57E-07	2.73E-07	2.89E-07	3.06E-07	3.06E-07
rb 87	2.72E-07	2.80E-07	2.88E-07	2.96E-07	3.04E-07	3.04E-07
pm147	2.61E-07	2.60E-07	2.60E-07	2.60E-07	2.60E-07	2.60E-07
pd106	1.98E-07	2.06E-07	2.14E-07	2.21E-07	2.29E-07	2.29E-07
se 77	1.95E-07	2.01E-07	2.07E-07	2.13E-07	2.19E-07	2.19E-07
eu155	2.03E-07	2.04E-07	2.05E-07	2.06E-07	2.07E-07	2.07E-07
gd156	1.74E-07	1.82E-07	1.89E-07	1.96E-07	2.03E-07	2.03E-07
kr 84	1.30E-07	1.34E-07	1.38E-07	1.42E-07	1.46E-07	1.46E-07
dy161	1.13E-07	1.18E-07	1.24E-07	1.29E-07	1.35E-07	1.35E-07
sb121	1.06E-07	1.09E-07	1.12E-07	1.16E-07	1.19E-07	1.19E-07

se 79	1.00E-07	1.03E-07	1.06E-07	1.09E-07	1.13E-07	1.13E-07
sb123	8.52E-08	8.80E-08	9.08E-08	9.35E-08	9.63E-08	9.63E-08
ru100	7.22E-08	7.67E-08	8.14E-08	8.61E-08	9.10E-08	9.10E-08
kr 86	7.10E-08	7.31E-08	7.52E-08	7.73E-08	7.94E-08	7.94E-08
te128	6.91E-08	7.13E-08	7.35E-08	7.57E-08	7.79E-08	7.79E-08
nd142	5.05E-08	5.36E-08	5.68E-08	6.02E-08	6.36E-08	6.36E-08
ba134	4.93E-08	5.24E-08	5.56E-08	5.88E-08	6.22E-08	6.22E-08
tb159	4.92E-08	5.13E-08	5.34E-08	5.55E-08	5.77E-08	5.77E-08
sm148	4.50E-08	4.78E-08	5.07E-08	5.37E-08	5.67E-08	5.67E-08
te125	4.68E-08	4.83E-08	4.99E-08	5.15E-08	5.31E-08	5.31E-08
se 80	4.68E-08	4.83E-08	4.97E-08	5.11E-08	5.25E-08	5.25E-08
ba135	4.08E-08	4.34E-08	4.61E-08	4.88E-08	5.16E-08	5.16E-08
gd158	3.84E-08	3.99E-08	4.15E-08	4.31E-08	4.47E-08	4.47E-08
pd104	3.50E-08	3.72E-08	3.95E-08	4.19E-08	4.43E-08	4.43E-08
cd112	3.54E-08	3.67E-08	3.80E-08	3.93E-08	4.07E-08	4.07E-08
dy164	2.61E-08	2.74E-08	2.88E-08	3.01E-08	3.15E-08	3.15E-08
dy162	2.42E-08	2.54E-08	2.67E-08	2.80E-08	2.94E-08	2.94E-08
sn117	2.52E-08	2.61E-08	2.69E-08	2.78E-08	2.87E-08	2.87E-08
li 6	2.54E-08	2.61E-08	2.68E-08	2.75E-08	2.82E-08	2.82E-08
eu154	2.34E-08	2.42E-08	2.50E-08	2.57E-08	2.65E-08	2.65E-08
cd114	2.09E-08	2.17E-08	2.24E-08	2.32E-08	2.40E-08	2.40E-08
sn119	1.92E-08	1.98E-08	2.04E-08	2.11E-08	2.17E-08	2.17E-08
pd110	1.74E-08	1.82E-08	1.89E-08	1.97E-08	2.05E-08	2.05E-08
sn115	1.75E-08	1.81E-08	1.87E-08	1.93E-08	1.98E-08	1.98E-08
sr 90	1.54E-08	1.54E-08	1.54E-08	1.53E-08	1.53E-08	1.53E-08
sr 88	1.31E-08	1.34E-08	1.38E-08	1.42E-08	1.46E-08	1.46E-08
mo 96	1.16E-08	1.23E-08	1.31E-08	1.38E-08	1.46E-08	1.46E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 86
0 fraction of total absorption rate
power= .00mw, burnup= 13149.mwd, flux= 2.64E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

cd110	1.07E-08	1.16E-08	1.25E-08	1.34E-08	1.44E-08	1.44E-08
rh105	1.09E-08	1.09E-08	1.10E-08	1.10E-08	1.11E-08	1.11E-08
se 82	8.96E-09	9.23E-09	9.50E-09	9.76E-09	1.00E-08	1.00E-08
sn126	8.72E-09	9.02E-09	9.33E-09	9.63E-09	9.94E-09	9.94E-09
nb 93	6.48E-09	6.88E-09	7.30E-09	7.73E-09	8.17E-09	8.17E-09
se 78	7.06E-09	7.28E-09	7.50E-09	7.72E-09	7.94E-09	7.94E-09
ba136	6.44E-09	6.76E-09	7.10E-09	7.43E-09	7.78E-09	7.78E-09
xe130	6.07E-09	6.42E-09	6.79E-09	7.16E-09	7.55E-09	7.55E-09
dy163	6.13E-09	6.45E-09	6.78E-09	7.12E-09	7.47E-09	7.47E-09
sn124	6.26E-09	6.46E-09	6.67E-09	6.88E-09	7.09E-09	7.09E-09
kr 82	5.36E-09	5.64E-09	5.92E-09	6.21E-09	6.51E-09	6.51E-09
as 75	4.16E-09	4.29E-09	4.41E-09	4.54E-09	4.67E-09	4.67E-09
br 79	3.30E-09	3.51E-09	3.72E-09	3.94E-09	4.17E-09	4.17E-09
in113	3.52E-09	3.64E-09	3.76E-09	3.88E-09	4.00E-09	4.00E-09
ag107	2.79E-09	3.00E-09	3.21E-09	3.44E-09	3.67E-09	3.67E-09
cs137	3.65E-09	3.65E-09	3.65E-09	3.65E-09	3.64E-09	3.64E-09
sn118	2.54E-09	2.62E-09	2.71E-09	2.79E-09	2.88E-09	2.88E-09
pr143	2.50E-09	2.50E-09	2.49E-09	2.49E-09	2.49E-09	2.49E-09
xe129	1.94E-09	2.06E-09	2.19E-09	2.32E-09	2.45E-09	2.45E-09
sn122	2.12E-09	2.19E-09	2.26E-09	2.33E-09	2.40E-09	2.40E-09
cd116	2.12E-09	2.19E-09	2.26E-09	2.33E-09	2.40E-09	2.40E-09
cs134	2.05E-09	2.11E-09	2.17E-09	2.23E-09	2.29E-09	2.29E-09
xe133	1.93E-09	1.93E-09	1.93E-09	1.93E-09	1.92E-09	1.92E-09
te126	1.44E-09	1.52E-09	1.61E-09	1.70E-09	1.80E-09	1.80E-09
sn120	1.57E-09	1.62E-09	1.68E-09	1.73E-09	1.78E-09	1.78E-09
ce141	1.51E-09	1.51E-09	1.51E-09	1.51E-09	1.50E-09	1.50E-09
ge 73	1.18E-09	1.21E-09	1.25E-09	1.29E-09	1.33E-09	1.33E-09
pm149	9.43E-10	9.42E-10	9.42E-10	9.41E-10	9.41E-10	9.41E-10

nd147	8.95E-10	8.94E-10	8.93E-10	8.92E-10	8.91E-10	8.91E-10
gd160	5.43E-10	5.67E-10	5.92E-10	6.16E-10	6.42E-10	6.42E-10
ho165	5.13E-10	5.43E-10	5.74E-10	6.05E-10	6.37E-10	6.37E-10
ce144	5.61E-10	5.60E-10	5.59E-10	5.58E-10	5.57E-10	5.57E-10
kr 85	5.23E-10	5.22E-10	5.21E-10	5.20E-10	5.19E-10	5.19E-10
ge 76	4.05E-10	4.17E-10	4.29E-10	4.41E-10	4.53E-10	4.53E-10
dy160	3.31E-10	3.54E-10	3.79E-10	4.04E-10	4.30E-10	4.30E-10
ru103	3.80E-10	3.81E-10	3.81E-10	3.82E-10	3.82E-10	3.82E-10
xe128	1.96E-10	2.08E-10	2.21E-10	2.35E-10	2.49E-10	2.49E-10
zr 95	1.57E-10	1.57E-10	1.56E-10	1.56E-10	1.56E-10	1.56E-10
nb 95	1.44E-10	1.44E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10
y 91	1.30E-10	1.30E-10	1.29E-10	1.29E-10	1.29E-10	1.29E-10
sr 86	1.00E-10	1.06E-10	1.12E-10	1.18E-10	1.24E-10	1.24E-10
pm151	1.12E-10	1.13E-10	1.13E-10	1.13E-10	1.13E-10	1.13E-10
te124	9.46E-11	9.89E-11	1.03E-10	1.08E-10	1.13E-10	1.13E-10
sn116	7.59E-11	8.07E-11	8.58E-11	9.09E-11	9.62E-11	9.62E-11
sr 87	5.16E-11	5.33E-11	5.50E-11	5.67E-11	5.84E-11	5.84E-11
eu156	5.28E-11	5.32E-11	5.37E-11	5.41E-11	5.45E-11	5.45E-11
sm153	4.53E-11	4.56E-11	4.58E-11	4.60E-11	4.63E-11	4.63E-11
ba140	4.49E-11	4.48E-11	4.48E-11	4.47E-11	4.47E-11	4.47E-11
ru106	4.24E-11	4.28E-11	4.32E-11	4.36E-11	4.40E-11	4.40E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 87
0 fraction of total absorption rate
power= .00mw, burnup= 13149.mwd, flux= 2.64E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

nb 94	3.55E-11	3.70E-11	3.86E-11	4.02E-11	4.18E-11	4.18E-11
te122	3.14E-11	3.34E-11	3.55E-11	3.76E-11	3.98E-11	3.98E-11
se 76	3.03E-11	3.19E-11	3.35E-11	3.52E-11	3.69E-11	3.69E-11
er166	2.77E-11	2.92E-11	3.08E-11	3.24E-11	3.41E-11	3.41E-11
sr 89	2.76E-11	2.76E-11	2.75E-11	2.74E-11	2.74E-11	2.74E-11
ge 74	2.34E-11	2.42E-11	2.49E-11	2.56E-11	2.64E-11	2.64E-11
kr 87	2.07E-11	2.07E-11	2.06E-11	2.06E-11	2.05E-11	2.05E-11
ge 72	1.71E-11	1.77E-11	1.83E-11	1.89E-11	1.95E-11	1.95E-11
sb125	1.78E-11	1.79E-11	1.79E-11	1.80E-11	1.81E-11	1.81E-11
ce143	1.64E-11	1.64E-11	1.63E-11	1.63E-11	1.63E-11	1.63E-11
la140	1.46E-11	1.46E-11	1.46E-11	1.46E-11	1.46E-11	1.46E-11
y 90	1.47E-11	1.46E-11	1.46E-11	1.46E-11	1.45E-11	1.45E-11
mo 99	1.26E-11	1.26E-11	1.26E-11	1.26E-11	1.26E-11	1.26E-11
pm148m	9.65E-12	9.67E-12	9.67E-12	9.68E-12	9.68E-12	9.68E-12
te127m	8.93E-12	8.97E-12	9.01E-12	9.04E-12	9.08E-12	9.08E-12
i131	6.69E-12	6.69E-12	6.69E-12	6.68E-12	6.68E-12	6.68E-12
kr 80	3.17E-12	3.40E-12	3.65E-12	3.91E-12	4.19E-12	4.19E-12
er167	1.67E-12	1.81E-12	1.95E-12	2.10E-12	2.27E-12	2.27E-12
te129m	1.88E-12	1.88E-12	1.88E-12	1.88E-12	1.89E-12	1.89E-12
te123	8.96E-13	9.74E-13	1.06E-12	1.14E-12	1.24E-12	1.24E-12
ag111	6.54E-13	6.62E-13	6.69E-13	6.77E-13	6.85E-13	6.85E-13
eu157	5.20E-13	5.25E-13	5.30E-13	5.35E-13	5.40E-13	5.40E-13
pm148	3.64E-13	3.64E-13	3.64E-13	3.63E-13	3.63E-13	3.63E-13
cd115m	2.72E-13	2.73E-13	2.74E-13	2.75E-13	2.75E-13	2.75E-13
cs136	2.52E-13	2.58E-13	2.63E-13	2.68E-13	2.74E-13	2.74E-13
cd108	1.32E-13	1.46E-13	1.60E-13	1.76E-13	1.92E-13	1.92E-13
tb160	1.22E-13	1.27E-13	1.32E-13	1.37E-13	1.42E-13	1.42E-13
be 9	5.23E-14	5.39E-14	5.55E-14	5.70E-14	5.86E-14	5.86E-14
pr142	5.19E-14	5.35E-14	5.50E-14	5.66E-14	5.81E-14	5.81E-14
ru105	3.90E-14	3.92E-14	3.94E-14	3.96E-14	3.98E-14	3.98E-14
sn125	3.25E-14	3.25E-14	3.26E-14	3.27E-14	3.28E-14	3.28E-14
sn114	1.90E-14	2.02E-14	2.15E-14	2.28E-14	2.42E-14	2.42E-14
li 7	2.06E-14	2.13E-14	2.19E-14	2.25E-14	2.31E-14	2.31E-14
sb126	1.69E-14	1.73E-14	1.77E-14	1.82E-14	1.86E-14	1.86E-14

rb 88	1.16E-14	1.16E-14	1.16E-14	1.15E-14	1.15E-14	1.15E-14
i130	1.03E-14	1.05E-14	1.08E-14	1.11E-14	1.14E-14	1.14E-14
sn123	1.06E-14	1.06E-14	1.06E-14	1.06E-14	1.06E-14	1.06E-14
i135	9.69E-15	9.69E-15	9.68E-15	9.67E-15	9.66E-15	9.66E-15
te132	9.32E-15	9.31E-15	9.31E-15	9.31E-15	9.30E-15	9.30E-15
sb124	6.08E-15	6.20E-15	6.32E-15	6.44E-15	6.56E-15	6.56E-15
te134	5.41E-15	5.40E-15	5.40E-15	5.39E-15	5.38E-15	5.38E-15
rb 86	3.23E-15	3.32E-15	3.41E-15	3.49E-15	3.58E-15	3.58E-15
in117m	2.65E-15	2.66E-15	2.67E-15	2.69E-15	2.70E-15	2.70E-15
dy165	2.39E-15	2.45E-15	2.52E-15	2.59E-15	2.66E-15	2.66E-15
in117	7.94E-16	7.99E-16	8.03E-16	8.07E-16	8.12E-16	8.12E-16
cs134m	3.83E-16	3.95E-16	4.06E-16	4.18E-16	4.29E-16	4.29E-16
cd118	1.36E-16	1.37E-16	1.37E-16	1.38E-16	1.38E-16	1.38E-16
ge 75	8.28E-17	8.27E-17	8.27E-17	8.26E-17	8.26E-17	8.26E-17
in119m	3.33E-17	3.34E-17	3.34E-17	3.35E-17	3.36E-17	3.36E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 88
0 fraction of total absorption rate
power= .00mw, burnup= 13149.mwd, flux= 2.64E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

ag110	2.42E-17	2.54E-17	2.65E-17	2.78E-17	2.90E-17	2.90E-17
cd109	1.55E-17	1.62E-17	1.70E-17	1.78E-17	1.86E-17	1.86E-17
in119	2.74E-18	2.75E-18	2.76E-18	2.77E-18	2.78E-18	2.78E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 89
power= 4.000E-03mw, burnup=1.3149E+04mwd, flux= 2.64E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
h 1	6.96E-04	7.18E-04	7.40E-04	7.61E-04	7.83E-04	7.83E-04
h 2	2.08E-06	2.14E-06	2.21E-06	2.27E-06	2.34E-06	2.34E-06
h 3	5.14E-11	5.19E-11	5.23E-11	5.27E-11	5.30E-11	5.30E-11
h 4	2.03E-34	2.05E-34	2.07E-34	2.08E-34	2.10E-34	2.10E-34
he 3	1.23E-08	1.26E-08	1.29E-08	1.31E-08	1.34E-08	1.34E-08
he 4	1.15E-04	1.19E-04	1.23E-04	1.26E-04	1.30E-04	1.30E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.39E-05	1.43E-05	1.47E-05	1.52E-05	1.56E-05	1.56E-05
ne 21	3.26E-09	3.46E-09	3.66E-09	3.87E-09	4.09E-09	4.09E-09
ne 22	9.18E-08	9.47E-08	9.76E-08	1.01E-07	1.03E-07	1.03E-07
ne 23	7.24E-15	7.27E-15	7.27E-15	7.27E-15	7.26E-15	7.26E-15
na 22	4.28E-11	4.30E-11	4.30E-11	4.30E-11	4.30E-11	4.30E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08
na 24m	4.53E-15	4.54E-15	4.53E-15	4.53E-15	4.53E-15	4.53E-15
na 25	9.66E-24	1.03E-23	1.08E-23	1.14E-23	1.21E-23	1.21E-23
mg 24	9.69E-02	9.97E-02	1.03E-01	1.05E-01	1.08E-01	1.08E-01
mg 25	3.34E-07	3.54E-07	3.74E-07	3.95E-07	4.16E-07	4.16E-07
mg 26	2.07E-06	2.14E-06	2.21E-06	2.27E-06	2.34E-06	2.34E-06
mg 27	2.16E-12	2.17E-12	2.17E-12	2.16E-12	2.16E-12	2.16E-12
mg 28	4.29E-24	4.30E-24	4.30E-24	4.30E-24	4.29E-24	4.29E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.04E-10	2.05E-10	2.05E-10	2.04E-10	2.04E-10	2.04E-10
al 29	7.70E-22	8.19E-22	8.66E-22	9.15E-22	9.66E-22	9.66E-22
al 30	1.15E-31	1.26E-31	1.38E-31	1.50E-31	1.62E-31	1.62E-31
si 28	2.82E-01	2.90E-01	2.99E-01	3.07E-01	3.15E-01	3.15E-01
si 29	2.97E-06	3.15E-06	3.34E-06	3.53E-06	3.72E-06	3.72E-06
si 30	3.33E-11	3.64E-11	3.97E-11	4.32E-11	4.68E-11	4.68E-11
si 31	2.34E-23	2.55E-23	2.78E-23	3.02E-23	3.28E-23	3.28E-23
si 32	3.68E-29	4.03E-29	4.40E-29	4.79E-29	5.20E-29	5.20E-29
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04

0 flux 2.64E+08 2.64E+08 2.64E+08 2.64E+08 2.64E-07
1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 90
power= 4.000E-03mw, burnup=1.3149E+04mwd, flux= 2.64E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge *******	d *******	d *******	d *******	d *******	d *******
he 4	6.22E+00	6.54E+00	6.87E+00	7.21E+00	7.56E+00	7.56E+00
pb206	4.43E-03	4.78E-03	5.15E-03	5.53E-03	5.93E-03	5.93E-03
pb207	4.91E-04	5.22E-04	5.55E-04	5.88E-04	6.23E-04	6.23E-04
pb208	7.69E-05	8.18E-05	8.68E-05	9.20E-05	9.73E-05	9.73E-05
pb209	6.88E-11	7.25E-11	7.64E-11	8.03E-11	8.43E-11	8.43E-11
pb210	4.42E-05	4.61E-05	4.79E-05	4.98E-05	5.17E-05	5.17E-05
pb211	1.23E-11	1.27E-11	1.31E-11	1.35E-11	1.39E-11	1.39E-11
pb212	3.34E-11	3.45E-11	3.55E-11	3.66E-11	3.76E-11	3.76E-11
pb214	1.01E-10	1.05E-10	1.10E-10	1.14E-10	1.18E-10	1.18E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	3.66E-04	3.99E-04	4.33E-04	4.70E-04	5.09E-04	5.09E-04
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.72E-08	2.83E-08	2.95E-08	3.07E-08	3.18E-08	3.18E-08
bi211	7.29E-13	7.52E-13	7.75E-13	7.98E-13	8.22E-13	8.22E-13
bi212	3.17E-12	3.27E-12	3.37E-12	3.47E-12	3.57E-12	3.57E-12
bi213	1.61E-11	1.69E-11	1.78E-11	1.88E-11	1.97E-11	1.97E-11
bi214	7.49E-11	7.81E-11	8.13E-11	8.45E-11	8.78E-11	8.78E-11
po210	7.51E-07	7.83E-07	8.15E-07	8.47E-07	8.79E-07	8.79E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	8.05E-18	8.31E-18	8.57E-18	8.82E-18	9.08E-18	9.08E-18
po212	1.67E-22	1.72E-22	1.77E-22	1.82E-22	1.88E-22	1.88E-22
po213	2.41E-20	2.55E-20	2.68E-20	2.82E-20	2.96E-20	2.96E-20
po214	1.03E-17	1.07E-17	1.12E-17	1.16E-17	1.21E-17	1.21E-17
po215	1.01E-17	1.04E-17	1.07E-17	1.11E-17	1.14E-17	1.14E-17
po216	1.27E-16	1.31E-16	1.35E-16	1.39E-16	1.43E-16	1.43E-16
po218	1.17E-11	1.22E-11	1.27E-11	1.32E-11	1.37E-11	1.37E-11
rn218	4.90E-28	5.06E-28	5.22E-28	5.37E-28	5.52E-28	5.52E-28
rn219	2.25E-14	2.32E-14	2.39E-14	2.46E-14	2.53E-14	2.53E-14
rn220	4.85E-14	5.00E-14	5.16E-14	5.31E-14	5.46E-14	5.46E-14
rn222	2.07E-08	2.16E-08	2.25E-08	2.34E-08	2.43E-08	2.43E-08
ra222	5.32E-25	5.50E-25	5.66E-25	5.83E-25	6.00E-25	6.00E-25
ra223	5.61E-09	5.78E-09	5.96E-09	6.14E-09	6.32E-09	6.32E-09
ra224	2.76E-10	2.85E-10	2.93E-10	3.02E-10	3.11E-10	3.11E-10
ra225	7.51E-09	7.92E-09	8.35E-09	8.78E-09	9.21E-09	9.21E-09
ra226	3.17E-03	3.30E-03	3.44E-03	3.58E-03	3.71E-03	3.71E-03
ra228	1.73E-11	1.79E-11	1.84E-11	1.90E-11	1.95E-11	1.95E-11
ac225	5.07E-09	5.35E-09	5.64E-09	5.93E-09	6.22E-09	6.22E-09
ac227	3.90E-06	4.02E-06	4.15E-06	4.27E-06	4.40E-06	4.40E-06
ac228	2.11E-15	2.18E-15	2.25E-15	2.32E-15	2.38E-15	2.38E-15
th226	2.59E-23	2.68E-23	2.76E-23	2.85E-23	2.93E-23	2.93E-23
th227	9.05E-09	9.34E-09	9.63E-09	9.92E-09	1.02E-08	1.02E-08
th228	5.27E-08	5.43E-08	5.60E-08	5.77E-08	5.93E-08	5.93E-08
th229	1.46E-03	1.54E-03	1.62E-03	1.71E-03	1.79E-03	1.79E-03
th230	2.08E-01	2.15E-01	2.21E-01	2.28E-01	2.34E-01	2.34E-01
th231	3.74E-09	3.77E-09	3.79E-09	3.81E-09	3.84E-09	3.84E-09
th232	4.23E-02	4.37E-02	4.50E-02	4.64E-02	4.77E-02	4.77E-02
th233	3.81E-13	3.94E-13	4.06E-13	4.18E-13	4.30E-13	4.30E-13
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	5.86E-03	6.05E-03	6.24E-03	6.42E-03	6.61E-03	6.61E-03
pa232	9.84E-11	1.02E-10	1.05E-10	1.08E-10	1.11E-10	1.11E-10

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 91
power= 4.000E-03mw, burnup=1.3149E+04mwd, flux= 2.64E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	2.51E-20	2.60E-20	2.68E-20	2.76E-20	2.84E-20	2.84E-20
u231	7.91E-17	8.17E-17	8.40E-17	8.62E-17	8.85E-17	8.85E-17
u232	1.92E-06	1.98E-06	2.04E-06	2.10E-06	2.16E-06	2.16E-06
u233	1.03E-01	1.06E-01	1.09E-01	1.12E-01	1.15E-01	1.15E-01
u234	1.01E+01	1.02E+01	1.02E+01	1.02E+01	1.03E+01	1.03E+01
u235	6.77E+02	6.76E+02	6.74E+02	6.73E+02	6.71E+02	6.71E+02
u236	1.83E+02	1.83E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02
u237	3.25E-06	3.26E-06	3.26E-06	3.26E-06	3.27E-06	3.27E-06
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	6.53E-36	8.44E-36	1.08E-35	1.38E-35	1.74E-35	1.74E-35
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.77E-12	8.80E-12	8.79E-12	8.79E-12	8.78E-12	8.78E-12
np236m	2.08E-12	2.09E-12	2.09E-12	2.09E-12	2.08E-12	2.08E-12
np236	1.55E-06	1.60E-06	1.64E-06	1.69E-06	1.74E-06	1.74E-06
np237	4.16E+01	4.16E+01	4.15E+01	4.15E+01	4.15E+01	4.15E+01
np238	1.51E-06	1.51E-06	1.51E-06	1.51E-06	1.51E-06	1.51E-06
np239	4.58E-05	4.58E-05	4.58E-05	4.58E-05	4.58E-05	4.58E-05
np240m	5.57E-38	7.20E-38	9.24E-38	1.18E-37	1.49E-37	1.49E-37
np240	9.14E-15	9.15E-15	9.14E-15	9.14E-15	9.13E-15	9.13E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.14E-09	1.14E-09	1.14E-09	1.13E-09	1.13E-09
pu237	5.09E-13	5.18E-13	5.24E-13	5.31E-13	5.37E-13	5.37E-13
pu238	2.29E-02	2.29E-02	2.29E-02	2.28E-02	2.28E-02	2.28E-02
pu239	3.19E+01	3.27E+01	3.34E+01	3.42E+01	3.49E+01	3.49E+01
pu240	9.60E-01	1.01E+00	1.05E+00	1.10E+00	1.15E+00	1.15E+00
pu241	3.93E-04	4.12E-04	4.31E-04	4.50E-04	4.69E-04	4.69E-04
pu242	8.53E-05	9.29E-05	1.01E-04	1.09E-04	1.18E-04	1.18E-04
pu243	1.80E-13	1.97E-13	2.14E-13	2.32E-13	2.50E-13	2.50E-13
pu244	3.25E-25	4.20E-25	5.39E-25	6.86E-25	8.67E-25	8.67E-25
pu245	1.30E-35	1.68E-35	2.15E-35	2.74E-35	3.46E-35	3.46E-35
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	2.88E-18	3.05E-18	3.20E-18	3.35E-18	3.51E-18	3.51E-18
am240	1.32E-15	1.39E-15	1.46E-15	1.53E-15	1.60E-15	1.60E-15
am241	1.02E-02	1.08E-02	1.13E-02	1.19E-02	1.24E-02	1.24E-02
am242m	4.89E-06	5.16E-06	5.42E-06	5.69E-06	5.97E-06	5.97E-06
am242	4.11E-10	4.33E-10	4.54E-10	4.77E-10	4.99E-10	4.99E-10
am243	6.87E-07	7.61E-07	8.39E-07	9.23E-07	1.01E-06	1.01E-06
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	5.21E-15	5.78E-15	6.37E-15	7.00E-15	7.67E-15	7.67E-15
am245	2.69E-36	3.47E-36	4.44E-36	5.64E-36	7.12E-36	7.12E-36
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	2.45E-20	2.59E-20	2.72E-20	2.85E-20	2.99E-20	2.99E-20
cm242	8.30E-08	8.74E-08	9.18E-08	9.62E-08	1.01E-07	1.01E-07
cm243	6.45E-17	6.81E-17	7.17E-17	7.53E-17	7.89E-17	7.89E-17
cm244	8.19E-11	9.07E-11	1.00E-10	1.10E-10	1.21E-10	1.21E-10

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 92
power= 4.000E-03mw, burnup=1.3149E+04mwd, flux= 2.64E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
cm245	1.34E-13	1.53E-13	1.73E-13	1.95E-13	2.20E-13	2.20E-13

```
     cm246   9.67E-16  1.13E-15  1.32E-15  1.53E-15  1.76E-15  1.76E-15
     cm247   1.34E-19  1.62E-19  1.95E-19  2.34E-19  2.78E-19  2.78E-19
     cm248   1.82E-22  2.27E-22  2.82E-22  3.49E-22  4.27E-22  4.27E-22
     cm249   5.70E-33  7.14E-33  8.87E-33  1.09E-32  1.34E-32  1.34E-32
     cm250   2.13E-37  2.76E-37  3.53E-37  4.49E-37  5.66E-37  5.66E-37
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.64E+08  2.64E+08  2.64E+08  2.64E+08  2.64E-07
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number  1 of library on unit 15.

          pass  10
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *         see information above this box (if present) for later updates        *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
          ********************************************************************************
0
0                  .other identification and sizes of library.
0                   data set name:  ft15f001
0                 8/28/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
```

879 number of fission product nuclides
7993 number of nonzero off-diagonal matrix elements

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 page 93
power= .00mw, burnup= 14610.mwd, flux= 2.64E+08n/cm**2-sec
basis =
(note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)

	initial	******* d	******* d	******* d	******* d
productions	1.178193E+06	1.178826E+06	1.179432E+06	1.180014E+06	1.180570E+06
absorptions	9.724615E+05	9.730900E+05	9.737038E+05	9.743031E+05	9.748882E+05
k infinity	1.211557E+00	1.211425E+00	1.211285E+00	1.211136E+00	1.210979E+00
	initial	******* d	******* d	******* d	******* d
actinide absorptions	9.583446E+05	9.588312E+05	9.593039E+05	9.597630E+05	9.602088E+05
non-actinide abs. fracs.	1.451671E-02	1.465315E-02	1.478875E-02	1.492357E-02	1.505756E-02

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 94
fraction of total absorption rate
power= .00mw, burnup= 14610.mwd, flux= 2.64E+08n/cm**2-sec

	initial	******* d	******* d	******* d	******* d
sm149	5.33E-03	5.33E-03	5.33E-03	5.33E-03	5.33E-03
eu151	1.33E-03	1.36E-03	1.38E-03	1.40E-03	1.43E-03
nd143	1.22E-03	1.26E-03	1.29E-03	1.32E-03	1.35E-03
rh103	6.22E-04	6.40E-04	6.57E-04	6.75E-04	6.92E-04
xe131	4.08E-04	4.19E-04	4.30E-04	4.41E-04	4.52E-04
cs133	3.15E-04	3.23E-04	3.32E-04	3.40E-04	3.49E-04
sm147	2.31E-04	2.37E-04	2.44E-04	2.50E-04	2.56E-04
tc 99	2.29E-04	2.35E-04	2.41E-04	2.47E-04	2.53E-04
gd155	2.22E-04	2.23E-04	2.25E-04	2.26E-04	2.27E-04
nd145	1.76E-04	1.81E-04	1.86E-04	1.91E-04	1.95E-04
sm152	1.29E-04	1.34E-04	1.38E-04	1.42E-04	1.46E-04
mo 95	1.23E-04	1.26E-04	1.29E-04	1.33E-04	1.36E-04
cd113	1.03E-04	1.03E-04	1.04E-04	1.04E-04	1.05E-04
sm150	8.93E-05	9.19E-05	9.46E-05	9.72E-05	9.98E-05
kr 83	7.42E-05	7.61E-05	7.81E-05	8.00E-05	8.19E-05
cs135	7.15E-05	7.34E-05	7.53E-05	7.73E-05	7.92E-05
gd157	6.56E-05	6.63E-05	6.69E-05	6.76E-05	6.82E-05
ru101	5.60E-05	5.75E-05	5.91E-05	6.06E-05	6.21E-05
eu153	5.32E-05	5.48E-05	5.64E-05	5.80E-05	5.96E-05
pr141	5.23E-05	5.37E-05	5.51E-05	5.65E-05	5.79E-05
la139	4.27E-05	4.38E-05	4.50E-05	4.61E-05	4.73E-05
sm151	4.24E-05	4.25E-05	4.26E-05	4.27E-05	4.28E-05
ag109	2.27E-05	2.36E-05	2.46E-05	2.56E-05	2.67E-05
pd105	2.23E-05	2.30E-05	2.37E-05	2.44E-05	2.51E-05
ba137	2.04E-05	2.10E-05	2.16E-05	2.21E-05	2.27E-05
zr 93	1.73E-05	1.77E-05	1.82E-05	1.86E-05	1.91E-05
i129	1.39E-05	1.43E-05	1.47E-05	1.51E-05	1.55E-05
nd144	1.29E-05	1.33E-05	1.37E-05	1.40E-05	1.44E-05
mo 97	9.73E-06	9.99E-06	1.03E-05	1.05E-05	1.08E-05
gd152	7.47E-06	7.84E-06	8.21E-06	8.59E-06	8.98E-06
pd108	5.45E-06	5.67E-06	5.89E-06	6.12E-06	6.35E-06
zr 91	4.46E-06	4.57E-06	4.69E-06	4.81E-06	4.92E-06
y 89	4.25E-06	4.36E-06	4.47E-06	4.58E-06	4.69E-06
ru102	4.05E-06	4.16E-06	4.28E-06	4.39E-06	4.50E-06
ce142	3.53E-06	3.63E-06	3.72E-06	3.82E-06	3.91E-06
nd148	3.44E-06	3.53E-06	3.63E-06	3.72E-06	3.81E-06
nd146	2.87E-06	2.95E-06	3.02E-06	3.10E-06	3.18E-06
pd107	2.69E-06	2.79E-06	2.89E-06	3.00E-06	3.11E-06
in115	2.60E-06	2.68E-06	2.75E-06	2.83E-06	2.90E-06

ba138	2.44E-06	2.51E-06	2.57E-06	2.64E-06	2.71E-06
ce140	2.29E-06	2.35E-06	2.41E-06	2.47E-06	2.53E-06
xe132	2.13E-06	2.19E-06	2.25E-06	2.31E-06	2.37E-06
xe135	2.23E-06	2.23E-06	2.23E-06	2.23E-06	2.23E-06
mo 98	1.45E-06	1.49E-06	1.53E-06	1.57E-06	1.61E-06
mo100	1.40E-06	1.44E-06	1.48E-06	1.51E-06	1.55E-06
xe134	1.36E-06	1.39E-06	1.43E-06	1.47E-06	1.50E-06
zr 92	1.08E-06	1.10E-06	1.13E-06	1.16E-06	1.19E-06
i127	1.04E-06	1.07E-06	1.10E-06	1.14E-06	1.17E-06
ru104	9.50E-07	9.78E-07	1.01E-06	1.03E-06	1.06E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 95
0 fraction of total absorption rate
power= .00mw, burnup= 14610.mwd, flux= 2.64E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d

zr 96	8.80E-07	9.04E-07	9.27E-07	9.51E-07	9.74E-07
nd150	7.84E-07	8.06E-07	8.28E-07	8.49E-07	8.71E-07
xe136	7.38E-07	7.58E-07	7.78E-07	7.98E-07	8.18E-07
cd111	5.98E-07	6.20E-07	6.42E-07	6.64E-07	6.87E-07
ru 99	5.33E-07	5.63E-07	5.93E-07	6.24E-07	6.56E-07
br 81	5.53E-07	5.68E-07	5.83E-07	5.97E-07	6.12E-07
rb 85	5.27E-07	5.41E-07	5.55E-07	5.69E-07	5.83E-07
zr 94	4.66E-07	4.79E-07	4.91E-07	5.04E-07	5.16E-07
zr 90	4.18E-07	4.29E-07	4.40E-07	4.51E-07	4.62E-07
sm154	3.67E-07	3.78E-07	3.89E-07	4.00E-07	4.11E-07
gd154	3.06E-07	3.23E-07	3.42E-07	3.60E-07	3.79E-07
te130	3.39E-07	3.48E-07	3.58E-07	3.67E-07	3.76E-07
eu152	3.41E-07	3.47E-07	3.53E-07	3.59E-07	3.65E-07
rb 87	3.04E-07	3.12E-07	3.20E-07	3.28E-07	3.36E-07
pd106	2.29E-07	2.37E-07	2.45E-07	2.53E-07	2.61E-07
pm147	2.60E-07	2.60E-07	2.59E-07	2.59E-07	2.59E-07
se 77	2.19E-07	2.25E-07	2.31E-07	2.36E-07	2.42E-07
gd156	2.03E-07	2.11E-07	2.18E-07	2.26E-07	2.33E-07
eu155	2.07E-07	2.08E-07	2.09E-07	2.10E-07	2.11E-07
kr 84	1.46E-07	1.50E-07	1.54E-07	1.58E-07	1.62E-07
dy161	1.35E-07	1.40E-07	1.46E-07	1.52E-07	1.58E-07
sb121	1.19E-07	1.23E-07	1.26E-07	1.30E-07	1.33E-07
se 79	1.12E-07	1.15E-07	1.18E-07	1.21E-07	1.24E-07
ru100	9.09E-08	9.59E-08	1.01E-07	1.06E-07	1.12E-07
sb123	9.64E-08	9.91E-08	1.02E-07	1.05E-07	1.08E-07
kr 86	7.93E-08	8.14E-08	8.35E-08	8.56E-08	8.76E-08
te128	7.79E-08	8.01E-08	8.23E-08	8.45E-08	8.67E-08
nd142	6.35E-08	6.70E-08	7.06E-08	7.43E-08	7.81E-08
ba134	6.22E-08	6.56E-08	6.91E-08	7.28E-08	7.65E-08
sm148	5.67E-08	5.99E-08	6.31E-08	6.64E-08	6.97E-08
tb159	5.77E-08	5.98E-08	6.21E-08	6.43E-08	6.65E-08
ba135	5.16E-08	5.44E-08	5.74E-08	6.04E-08	6.35E-08
te125	5.31E-08	5.47E-08	5.63E-08	5.79E-08	5.95E-08
se 80	5.25E-08	5.39E-08	5.53E-08	5.67E-08	5.81E-08
pd104	4.43E-08	4.68E-08	4.93E-08	5.20E-08	5.47E-08
gd158	4.47E-08	4.63E-08	4.80E-08	4.96E-08	5.13E-08
cd112	4.07E-08	4.20E-08	4.34E-08	4.47E-08	4.61E-08
dy164	3.15E-08	3.29E-08	3.43E-08	3.57E-08	3.72E-08
dy162	2.94E-08	3.07E-08	3.21E-08	3.36E-08	3.50E-08
sn117	2.87E-08	2.96E-08	3.05E-08	3.14E-08	3.23E-08
li 6	2.82E-08	2.89E-08	2.97E-08	3.04E-08	3.11E-08
eu154	2.65E-08	2.73E-08	2.81E-08	2.89E-08	2.97E-08
cd114	2.40E-08	2.48E-08	2.56E-08	2.64E-08	2.72E-08
sn119	2.17E-08	2.23E-08	2.29E-08	2.36E-08	2.42E-08
pd110	2.05E-08	2.13E-08	2.20E-08	2.28E-08	2.37E-08

sn115	1.98E-08	2.04E-08	2.10E-08	2.16E-08	2.22E-08
cd110	1.44E-08	1.54E-08	1.65E-08	1.76E-08	1.87E-08
mo 96	1.46E-08	1.54E-08	1.62E-08	1.70E-08	1.78E-08
sr 88	1.46E-08	1.50E-08	1.54E-08	1.57E-08	1.61E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 96
0 fraction of total absorption rate
power= .00mw, burnup= 14610.mwd, flux= 2.64E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d

sr 90	1.53E-08	1.53E-08	1.52E-08	1.52E-08	1.52E-08
rh105	1.11E-08	1.12E-08	1.12E-08	1.13E-08	1.13E-08
sn126	9.93E-09	1.02E-08	1.05E-08	1.09E-08	1.12E-08
se 82	1.00E-08	1.03E-08	1.06E-08	1.08E-08	1.11E-08
nb 93	8.17E-09	8.62E-09	9.08E-09	9.55E-09	1.00E-08
ba136	7.78E-09	8.13E-09	8.49E-09	8.86E-09	9.23E-09
xe130	7.54E-09	7.93E-09	8.33E-09	8.75E-09	9.17E-09
dy163	7.46E-09	7.81E-09	8.17E-09	8.53E-09	8.90E-09
se 78	7.94E-09	8.15E-09	8.37E-09	8.59E-09	8.81E-09
sn124	7.10E-09	7.31E-09	7.52E-09	7.73E-09	7.94E-09
kr 82	6.51E-09	6.81E-09	7.12E-09	7.43E-09	7.75E-09
as 75	4.67E-09	4.79E-09	4.92E-09	5.04E-09	5.17E-09
br 79	4.17E-09	4.40E-09	4.64E-09	4.88E-09	5.13E-09
ag107	3.67E-09	3.91E-09	4.16E-09	4.42E-09	4.68E-09
in113	4.00E-09	4.12E-09	4.25E-09	4.37E-09	4.49E-09
cs137	3.64E-09	3.64E-09	3.64E-09	3.64E-09	3.64E-09
sn118	2.88E-09	2.97E-09	3.05E-09	3.14E-09	3.22E-09
xe129	2.45E-09	2.59E-09	2.73E-09	2.88E-09	3.03E-09
sn122	2.40E-09	2.47E-09	2.54E-09	2.61E-09	2.68E-09
cd116	2.40E-09	2.47E-09	2.54E-09	2.61E-09	2.68E-09
cs134	2.29E-09	2.36E-09	2.42E-09	2.48E-09	2.54E-09
pr143	2.49E-09	2.48E-09	2.48E-09	2.48E-09	2.47E-09
te126	1.80E-09	1.90E-09	1.99E-09	2.10E-09	2.20E-09
sn120	1.78E-09	1.83E-09	1.88E-09	1.94E-09	1.99E-09
xe133	1.92E-09	1.92E-09	1.92E-09	1.92E-09	1.92E-09
ce141	1.50E-09	1.50E-09	1.50E-09	1.50E-09	1.50E-09
ge 73	1.33E-09	1.36E-09	1.40E-09	1.44E-09	1.48E-09
pm149	9.40E-10	9.40E-10	9.40E-10	9.39E-10	9.39E-10
nd147	8.92E-10	8.91E-10	8.90E-10	8.89E-10	8.88E-10
ho165	6.37E-10	6.70E-10	7.04E-10	7.39E-10	7.75E-10
gd160	6.42E-10	6.67E-10	6.93E-10	7.19E-10	7.46E-10
ce144	5.57E-10	5.56E-10	5.56E-10	5.55E-10	5.54E-10
dy160	4.30E-10	4.57E-10	4.85E-10	5.14E-10	5.44E-10
kr 85	5.18E-10	5.17E-10	5.16E-10	5.15E-10	5.14E-10
ge 76	4.53E-10	4.65E-10	4.77E-10	4.89E-10	5.01E-10
ru103	3.82E-10	3.83E-10	3.83E-10	3.84E-10	3.84E-10
xe128	2.48E-10	2.63E-10	2.77E-10	2.92E-10	3.08E-10
zr 95	1.56E-10	1.56E-10	1.56E-10	1.55E-10	1.55E-10
sr 86	1.24E-10	1.30E-10	1.37E-10	1.44E-10	1.50E-10
nb 95	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.42E-10
te124	1.12E-10	1.17E-10	1.22E-10	1.27E-10	1.32E-10
y 91	1.29E-10	1.28E-10	1.28E-10	1.28E-10	1.28E-10
sn116	9.63E-11	1.02E-10	1.07E-10	1.13E-10	1.19E-10
pm151	1.13E-10	1.13E-10	1.13E-10	1.13E-10	1.13E-10
sr 87	5.84E-11	6.01E-11	6.19E-11	6.36E-11	6.54E-11
eu156	5.45E-11	5.49E-11	5.53E-11	5.57E-11	5.61E-11
te122	3.99E-11	4.21E-11	4.45E-11	4.69E-11	4.93E-11
nb 94	4.18E-11	4.35E-11	4.52E-11	4.70E-11	4.88E-11
sm153	4.63E-11	4.65E-11	4.67E-11	4.70E-11	4.72E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 97
0 fraction of total absorption rate

power= .00mw, burnup= 14610.mwd, flux= 2.64E+08n/cm**2-sec

0	initial	******* d	******* d	******* d	******* d
ru106	4.40E-11	4.44E-11	4.48E-11	4.51E-11	4.55E-11
ba140	4.47E-11	4.46E-11	4.46E-11	4.46E-11	4.45E-11
se 76	3.69E-11	3.87E-11	4.05E-11	4.23E-11	4.42E-11
er166	3.41E-11	3.58E-11	3.75E-11	3.93E-11	4.11E-11
ge 74	2.64E-11	2.71E-11	2.78E-11	2.86E-11	2.93E-11
sr 89	2.74E-11	2.73E-11	2.72E-11	2.72E-11	2.71E-11
ge 72	1.94E-11	2.00E-11	2.06E-11	2.12E-11	2.18E-11
kr 87	2.05E-11	2.05E-11	2.04E-11	2.04E-11	2.03E-11
sb125	1.81E-11	1.81E-11	1.82E-11	1.83E-11	1.83E-11
ce143	1.63E-11	1.63E-11	1.62E-11	1.62E-11	1.62E-11
la140	1.46E-11	1.46E-11	1.45E-11	1.45E-11	1.45E-11
y 90	1.45E-11	1.45E-11	1.45E-11	1.44E-11	1.44E-11
mo 99	1.26E-11	1.26E-11	1.26E-11	1.26E-11	1.26E-11
pm148m	9.68E-12	9.69E-12	9.70E-12	9.70E-12	9.71E-12
te127m	9.07E-12	9.11E-12	9.14E-12	9.18E-12	9.21E-12
i131	6.68E-12	6.68E-12	6.68E-12	6.68E-12	6.68E-12
kr 80	4.19E-12	4.47E-12	4.77E-12	5.09E-12	5.41E-12
er167	2.26E-12	2.43E-12	2.61E-12	2.79E-12	2.98E-12
te129m	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.90E-12
te123	1.24E-12	1.33E-12	1.44E-12	1.54E-12	1.66E-12
ag111	6.85E-13	6.92E-13	7.00E-13	7.07E-13	7.14E-13
eu157	5.40E-13	5.45E-13	5.50E-13	5.55E-13	5.59E-13
pm148	3.64E-13	3.64E-13	3.64E-13	3.63E-13	3.63E-13
cs136	2.74E-13	2.80E-13	2.85E-13	2.90E-13	2.96E-13
cd115m	2.75E-13	2.76E-13	2.77E-13	2.78E-13	2.79E-13
cd108	1.92E-13	2.10E-13	2.28E-13	2.48E-13	2.69E-13
tb160	1.42E-13	1.47E-13	1.53E-13	1.58E-13	1.63E-13
be 9	5.87E-14	6.03E-14	6.19E-14	6.35E-14	6.51E-14
pr142	5.81E-14	5.96E-14	6.12E-14	6.27E-14	6.43E-14
ru105	3.99E-14	4.01E-14	4.03E-14	4.05E-14	4.07E-14
sn125	3.28E-14	3.28E-14	3.29E-14	3.30E-14	3.31E-14
sn114	2.42E-14	2.56E-14	2.70E-14	2.85E-14	3.00E-14
li 7	2.31E-14	2.37E-14	2.44E-14	2.50E-14	2.56E-14
sb126	1.86E-14	1.91E-14	1.95E-14	1.99E-14	2.04E-14
i130	1.14E-14	1.17E-14	1.20E-14	1.22E-14	1.25E-14
rb 88	1.15E-14	1.15E-14	1.15E-14	1.14E-14	1.14E-14
sn123	1.06E-14	1.06E-14	1.06E-14	1.06E-14	1.06E-14
i135	9.66E-15	9.65E-15	9.64E-15	9.64E-15	9.63E-15
te132	9.30E-15	9.30E-15	9.29E-15	9.29E-15	9.29E-15
sb124	6.56E-15	6.68E-15	6.80E-15	6.92E-15	7.04E-15
te134	5.38E-15	5.37E-15	5.36E-15	5.35E-15	5.34E-15
rb 86	3.58E-15	3.67E-15	3.75E-15	3.84E-15	3.92E-15
dy165	2.66E-15	2.72E-15	2.79E-15	2.86E-15	2.93E-15
in117m	2.70E-15	2.71E-15	2.72E-15	2.74E-15	2.75E-15
in117	8.11E-16	8.15E-16	8.19E-16	8.23E-16	8.27E-16
cs134m	4.29E-16	4.41E-16	4.52E-16	4.64E-16	4.75E-16
cd118	1.38E-16	1.38E-16	1.39E-16	1.39E-16	1.39E-16
ge 75	8.25E-17	8.25E-17	8.24E-17	8.24E-17	8.23E-17
ag110	2.89E-17	3.02E-17	3.15E-17	3.28E-17	3.41E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 98

0 fraction of total absorption rate

power= .00mw, burnup= 14610.mwd, flux= 2.64E+08n/cm**2-sec

0	initial	******* d	******* d	******* d	******* d
in119m	3.36E-17	3.37E-17	3.37E-17	3.38E-17	3.39E-17
cd109	1.86E-17	1.95E-17	2.04E-17	2.13E-17	2.23E-17
in119	2.78E-18	2.78E-18	2.79E-18	2.80E-18	2.81E-18

	in120	4.62E-22	4.63E-22	4.64E-22	4.65E-22	4.66E-22
	in120m	7.96E-23	8.04E-23	8.11E-23	8.18E-23	8.25E-23

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 99
power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d
h 1	7.83E-04	8.05E-04	8.27E-04	8.49E-04	8.71E-04
h 2	2.34E-06	2.41E-06	2.47E-06	2.54E-06	2.60E-06
h 3	5.30E-11	5.36E-11	5.39E-11	5.43E-11	5.46E-11
h 4	2.10E-34	2.12E-34	2.13E-34	2.14E-34	2.16E-34
he 3	1.34E-08	1.37E-08	1.39E-08	1.42E-08	1.45E-08
he 4	1.30E-04	1.34E-04	1.37E-04	1.41E-04	1.45E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.56E-05	1.61E-05	1.65E-05	1.69E-05	1.74E-05
ne 21	4.09E-09	4.31E-09	4.53E-09	4.77E-09	5.01E-09
ne 22	1.03E-07	1.06E-07	1.09E-07	1.12E-07	1.15E-07
ne 23	7.26E-15	7.29E-15	7.29E-15	7.29E-15	7.29E-15
na 22	4.30E-11	4.32E-11	4.32E-11	4.32E-11	4.32E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08
na 24m	4.53E-15	4.54E-15	4.54E-15	4.54E-15	4.54E-15
na 25	1.21E-23	1.27E-23	1.34E-23	1.40E-23	1.47E-23
mg 24	1.08E-01	1.11E-01	1.14E-01	1.17E-01	1.20E-01
mg 25	4.16E-07	4.38E-07	4.61E-07	4.84E-07	5.08E-07
mg 26	2.34E-06	2.40E-06	2.47E-06	2.53E-06	2.60E-06
mg 27	2.16E-12	2.17E-12	2.17E-12	2.17E-12	2.17E-12
mg 28	4.29E-24	4.31E-24	4.31E-24	4.30E-24	4.30E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.04E-10	2.05E-10	2.05E-10	2.05E-10	2.05E-10
al 29	9.66E-22	1.02E-21	1.07E-21	1.13E-21	1.18E-21
al 30	1.62E-31	1.76E-31	1.90E-31	2.05E-31	2.20E-31
si 28	3.15E-01	3.24E-01	3.32E-01	3.40E-01	3.49E-01
si 29	3.72E-06	3.92E-06	4.13E-06	4.34E-06	4.55E-06
si 30	4.68E-11	5.07E-11	5.47E-11	5.90E-11	6.35E-11
si 31	3.28E-23	3.54E-23	3.83E-23	4.12E-23	4.44E-23
si 32	5.20E-29	5.64E-29	6.10E-29	6.58E-29	7.09E-29
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.64E+08	2.64E+08	2.64E+08	2.64E+08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 100
power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d
he 4	7.56E+00	7.91E+00	8.27E+00	8.63E+00	9.00E+00
pb206	5.93E-03	6.34E-03	6.76E-03	7.20E-03	7.66E-03
pb207	6.23E-04	6.58E-04	6.95E-04	7.32E-04	7.70E-04
pb208	9.73E-05	1.03E-04	1.08E-04	1.14E-04	1.20E-04
pb209	8.43E-11	8.84E-11	9.25E-11	9.67E-11	1.01E-10
pb210	5.17E-05	5.37E-05	5.56E-05	5.75E-05	5.94E-05
pb211	1.39E-11	1.43E-11	1.47E-11	1.51E-11	1.54E-11
pb212	3.76E-11	3.87E-11	3.98E-11	4.08E-11	4.19E-11
pb214	1.18E-10	1.23E-10	1.27E-10	1.31E-10	1.36E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	5.09E-04	5.49E-04	5.91E-04	6.35E-04	6.81E-04
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	3.18E-08	3.30E-08	3.42E-08	3.54E-08	3.66E-08
bi211	8.22E-13	8.45E-13	8.69E-13	8.92E-13	9.16E-13

bi212	3.57E-12	3.67E-12	3.77E-12	3.87E-12	3.97E-12
bi213	1.97E-11	2.06E-11	2.16E-11	2.26E-11	2.36E-11
bi214	8.78E-11	9.10E-11	9.43E-11	9.75E-11	1.01E-10
po210	8.79E-07	9.12E-07	9.44E-07	9.77E-07	1.01E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.08E-18	9.34E-18	9.60E-18	9.86E-18	1.01E-17
po212	1.88E-22	1.93E-22	1.98E-22	2.03E-22	2.09E-22
po213	2.96E-20	3.10E-20	3.25E-20	3.40E-20	3.54E-20
po214	1.21E-17	1.25E-17	1.30E-17	1.34E-17	1.39E-17
po215	1.14E-17	1.17E-17	1.20E-17	1.24E-17	1.27E-17
po216	1.43E-16	1.47E-16	1.51E-16	1.55E-16	1.59E-16
po218	1.37E-11	1.42E-11	1.47E-11	1.52E-11	1.57E-11
rn218	5.52E-28	5.69E-28	5.85E-28	6.00E-28	6.16E-28
rn219	2.53E-14	2.61E-14	2.68E-14	2.75E-14	2.82E-14
rn220	5.46E-14	5.62E-14	5.77E-14	5.93E-14	6.08E-14
rn222	2.43E-08	2.52E-08	2.61E-08	2.70E-08	2.79E-08
ra222	6.00E-25	6.18E-25	6.35E-25	6.52E-25	6.69E-25
ra223	6.32E-09	6.50E-09	6.68E-09	6.86E-09	7.05E-09
ra224	3.11E-10	3.20E-10	3.28E-10	3.37E-10	3.46E-10
ra225	9.21E-09	9.66E-09	1.01E-08	1.06E-08	1.10E-08
ra226	3.71E-03	3.85E-03	3.99E-03	4.12E-03	4.26E-03
ra228	1.95E-11	2.01E-11	2.06E-11	2.12E-11	2.18E-11
ac225	6.22E-09	6.52E-09	6.83E-09	7.13E-09	7.45E-09
ac227	4.40E-06	4.52E-06	4.65E-06	4.77E-06	4.90E-06
ac228	2.38E-15	2.45E-15	2.52E-15	2.59E-15	2.66E-15
th226	2.93E-23	3.02E-23	3.10E-23	3.18E-23	3.26E-23
th227	1.02E-08	1.05E-08	1.08E-08	1.11E-08	1.14E-08
th228	5.93E-08	6.10E-08	6.27E-08	6.44E-08	6.60E-08
th229	1.79E-03	1.88E-03	1.96E-03	2.05E-03	2.14E-03
th230	2.34E-01	2.41E-01	2.48E-01	2.54E-01	2.61E-01
th231	3.84E-09	3.86E-09	3.89E-09	3.91E-09	3.94E-09
th232	4.77E-02	4.91E-02	5.05E-02	5.18E-02	5.32E-02
th233	4.30E-13	4.42E-13	4.54E-13	4.67E-13	4.79E-13
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	6.61E-03	6.80E-03	6.99E-03	7.18E-03	7.37E-03
pa232	1.11E-10	1.14E-10	1.17E-10	1.20E-10	1.23E-10

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 101
power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge *******	d *******	d *******	d *******	d *******
pa233	1.44E-06	1.43E-06	1.43E-06	1.43E-06	1.43E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	2.84E-20	2.92E-20	3.00E-20	3.08E-20	3.16E-20
u231	8.85E-17	9.10E-17	9.33E-17	9.56E-17	9.78E-17
u232	2.16E-06	2.22E-06	2.28E-06	2.34E-06	2.40E-06
u233	1.15E-01	1.18E-01	1.21E-01	1.24E-01	1.27E-01
u234	1.03E+01	1.03E+01	1.03E+01	1.04E+01	1.04E+01
u235	6.71E+02	6.70E+02	6.68E+02	6.67E+02	6.65E+02
u236	1.84E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02
u237	3.27E-06	3.28E-06	3.28E-06	3.29E-06	3.29E-06
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	1.74E-35	2.18E-35	2.72E-35	3.38E-35	4.16E-35
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.78E-12	8.82E-12	8.81E-12	8.81E-12	8.80E-12
np236m	2.08E-12	2.09E-12	2.09E-12	2.09E-12	2.09E-12

np236	1.74E-06	1.79E-06	1.83E-06	1.88E-06	1.93E-06
np237	4.15E+01	4.15E+01	4.15E+01	4.15E+01	4.15E+01
np238	1.51E-06	1.51E-06	1.51E-06	1.51E-06	1.51E-06
np239	4.58E-05	4.58E-05	4.58E-05	4.58E-05	4.58E-05
np240m	1.49E-37	1.86E-37	2.32E-37	2.88E-37	3.55E-37
np240	9.13E-15	9.14E-15	9.14E-15	9.13E-15	9.13E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.14E-09	1.14E-09	1.14E-09	1.14E-09
pu237	5.37E-13	5.46E-13	5.52E-13	5.58E-13	5.64E-13
pu238	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02
pu239	3.49E+01	3.57E+01	3.64E+01	3.71E+01	3.78E+01
pu240	1.15E+00	1.19E+00	1.24E+00	1.29E+00	1.34E+00
pu241	4.69E-04	4.89E-04	5.08E-04	5.28E-04	5.47E-04
pu242	1.18E-04	1.28E-04	1.37E-04	1.47E-04	1.58E-04
pu243	2.50E-13	2.70E-13	2.91E-13	3.12E-13	3.34E-13
pu244	8.67E-25	1.09E-24	1.36E-24	1.68E-24	2.07E-24
pu245	3.46E-35	4.33E-35	5.40E-35	6.69E-35	8.24E-35
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	3.51E-18	3.68E-18	3.84E-18	4.00E-18	4.16E-18
am240	1.60E-15	1.68E-15	1.75E-15	1.83E-15	1.90E-15
am241	1.24E-02	1.30E-02	1.35E-02	1.41E-02	1.47E-02
am242m	5.97E-06	6.24E-06	6.52E-06	6.80E-06	7.07E-06
am242	4.99E-10	5.21E-10	5.44E-10	5.66E-10	5.89E-10
am243	1.01E-06	1.11E-06	1.21E-06	1.31E-06	1.42E-06
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	7.67E-15	8.40E-15	9.16E-15	9.96E-15	1.08E-14
am245	7.12E-36	8.92E-36	1.11E-35	1.37E-35	1.69E-35
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	2.99E-20	3.13E-20	3.27E-20	3.40E-20	3.54E-20
cm242	1.01E-07	1.05E-07	1.10E-07	1.14E-07	1.19E-07
cm243	7.89E-17	8.27E-17	8.64E-17	9.01E-17	9.38E-17
cm244	1.21E-10	1.32E-10	1.44E-10	1.56E-10	1.70E-10

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 102
power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	******* d	******* d	******* d	******* d
cm245	2.20E-13	2.46E-13	2.75E-13	3.06E-13	3.40E-13
cm246	1.76E-15	2.02E-15	2.31E-15	2.64E-15	2.99E-15
cm247	2.78E-19	3.29E-19	3.87E-19	4.54E-19	5.30E-19
cm248	4.27E-22	5.21E-22	6.31E-22	7.61E-22	9.12E-22
cm249	1.34E-32	1.64E-32	1.98E-32	2.39E-32	2.86E-32
cm250	5.66E-37	7.09E-37	8.83E-37	1.09E-36	1.34E-36
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.64E+08	2.64E+08	2.64E+08	2.64E+08

0 .results on logical unit no. 71, position 1, for time step 4, subcase11. (run position 1, case position 1)
title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 103
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 1	8.71E-04	8.71E-04	8.71E-04	8.71E-04	8.71E-04	8.71E-04	8.71E-04
h 2	5.21E-06	5.21E-06	5.21E-06	5.21E-06	5.21E-06	5.21E-06	5.21E-06
he 4	5.78E-04	5.78E-04	5.78E-04	5.78E-04	5.78E-04	5.78E-04	5.78E-04
ne 20	3.47E-04	3.47E-04	3.47E-04	3.47E-04	3.47E-04	3.47E-04	3.47E-04
ne 22	2.53E-06	2.53E-06	2.53E-06	2.53E-06	2.53E-06	2.53E-06	2.53E-06

na 23	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05
mg 24	2.87E+00	2.87E+00	2.87E+00	2.87E+00	2.87E+00	2.87E+00	2.87E+00
mg 25	1.27E-05	1.27E-05	1.27E-05	1.27E-05	1.27E-05	1.27E-05	1.27E-05
mg 26	6.76E-05	6.76E-05	6.76E-05	6.76E-05	6.76E-05	6.76E-05	6.76E-05
al 27	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06
si 28	9.76E+00	9.76E+00	9.76E+00	9.76E+00	9.76E+00	9.76E+00	9.76E+00
si 29	1.32E-04	1.32E-04	1.32E-04	1.32E-04	1.32E-04	1.32E-04	1.32E-04
total	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 104
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 element radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h	1.58E-06	1.51E-06	1.44E-06	1.38E-06	1.31E-06	1.25E-06	1.20E-06
na	8.44E+00	4.75E-06	3.81E-06	3.05E-06	2.44E-06	1.96E-06	1.57E-06
totals	2.57E+01	6.26E-06	5.25E-06	4.43E-06	3.76E-06	3.21E-06	2.76E-06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 105
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
na	1.71E-01	6.73E-08	5.39E-08	4.31E-08	3.46E-08	2.77E-08	2.22E-08
totals	4.79E-01	6.73E-08	5.39E-08	4.32E-08	3.46E-08	2.77E-08	2.22E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 106
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
na 22	7.71E-08	6.18E-08	4.95E-08	3.96E-08	3.17E-08	2.54E-08	2.04E-08
total	3.33E-01	6.18E-08	4.95E-08	3.96E-08	3.17E-08	2.54E-08	2.04E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 107
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he 4	9.00E+00	9.01E+00	9.01E+00	9.01E+00	9.01E+00	9.01E+00	9.01E+00
pb206	7.66E-03	7.66E-03	7.66E-03	7.66E-03	7.66E-03	7.67E-03	7.67E-03
pb207	7.70E-04	7.71E-04	7.71E-04	7.71E-04	7.71E-04	7.71E-04	7.71E-04
pb208	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04
pb210	5.94E-05	5.94E-05	5.94E-05	5.94E-05	5.94E-05	5.94E-05	5.94E-05
bi209	6.81E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04
po210	1.01E-06	1.00E-06	9.97E-07	9.97E-07	9.97E-07	9.97E-07	9.97E-07
ra226	4.26E-03	4.26E-03	4.26E-03	4.26E-03	4.26E-03	4.27E-03	4.27E-03
ac227	4.90E-06	4.90E-06	4.90E-06	4.90E-06	4.90E-06	4.90E-06	4.90E-06
th229	2.14E-03	2.14E-03	2.14E-03	2.14E-03	2.15E-03	2.15E-03	2.15E-03
th230	2.61E-01	2.61E-01	2.61E-01	2.61E-01	2.61E-01	2.61E-01	2.61E-01
th232	5.32E-02	5.32E-02	5.32E-02	5.32E-02	5.32E-02	5.32E-02	5.32E-02
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	7.37E-03	7.37E-03	7.37E-03	7.37E-03	7.37E-03	7.37E-03	7.37E-03
pa233	1.43E-06	1.43E-06	1.43E-06	1.43E-06	1.43E-06	1.43E-06	1.43E-06
u232	2.40E-06	2.38E-06	2.36E-06	2.35E-06	2.33E-06	2.31E-06	2.29E-06
u233	1.27E-01	1.27E-01	1.27E-01	1.27E-01	1.27E-01	1.27E-01	1.27E-01
u234	1.04E+01	1.04E+01	1.04E+01	1.04E+01	1.04E+01	1.04E+01	1.04E+01
u235	6.65E+02	6.65E+02	6.65E+02	6.65E+02	6.65E+02	6.65E+02	6.65E+02
u236	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04

np236	1.93E-06	1.93E-06	1.93E-06	1.93E-06	1.93E-06	1.93E-06	1.93E-06
np237	4.15E+01	4.15E+01	4.15E+01	4.15E+01	4.15E+01	4.15E+01	4.15E+01
pu238	2.28E-02	2.27E-02	2.25E-02	2.24E-02	2.22E-02	2.21E-02	2.19E-02
pu239	3.78E+01	3.78E+01	3.78E+01	3.78E+01	3.78E+01	3.78E+01	3.78E+01
pu240	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00
pu241	5.47E-04	5.26E-04	5.05E-04	4.85E-04	4.66E-04	4.47E-04	4.30E-04
pu242	1.58E-04	1.58E-04	1.58E-04	1.58E-04	1.58E-04	1.58E-04	1.58E-04
am241	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02
am242m	7.07E-06	7.05E-06	7.02E-06	6.99E-06	6.96E-06	6.93E-06	6.90E-06
am243	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.42E-06
total	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 108
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 element concentrations, gram atoms
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	9.00E+00	9.01E+00	9.01E+00	9.01E+00	9.01E+00	9.01E+00	9.01E+00
pb	8.61E-03	8.61E-03	8.61E-03	8.61E-03	8.61E-03	8.62E-03	8.62E-03
bi	6.81E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04
po	1.01E-06	1.00E-06	9.97E-07	9.97E-07	9.97E-07	9.97E-07	9.97E-07
ra	4.26E-03	4.26E-03	4.26E-03	4.26E-03	4.26E-03	4.27E-03	4.27E-03
ac	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06
th	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.17E-01	3.17E-01
pa	7.37E-03	7.37E-03	7.37E-03	7.37E-03	7.37E-03	7.37E-03	7.37E-03
u	3.72E+04	3.72E+04	3.72E+04	3.72E+04	3.72E+04	3.72E+04	3.72E+04
np	4.15E+01	4.15E+01	4.15E+01	4.15E+01	4.15E+01	4.15E+01	4.15E+01
pu	3.92E+01	3.92E+01	3.92E+01	3.92E+01	3.92E+01	3.92E+01	3.92E+01
am	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 109
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he 4	3.60E+01	3.60E+01	3.60E+01	3.60E+01	3.60E+01	3.60E+01	3.60E+01
pb206	1.58E+00	1.58E+00	1.58E+00	1.58E+00	1.58E+00	1.58E+00	1.58E+00
pb207	1.59E-01	1.59E-01	1.60E-01	1.60E-01	1.60E-01	1.60E-01	1.60E-01
pb208	2.50E-02	2.50E-02	2.50E-02	2.50E-02	2.50E-02	2.50E-02	2.50E-02
pb210	1.25E-02	1.25E-02	1.25E-02	1.25E-02	1.25E-02	1.25E-02	1.25E-02
bi209	1.42E-01	1.42E-01	1.42E-01	1.43E-01	1.43E-01	1.43E-01	1.43E-01
bi210	7.68E-06	7.68E-06	7.68E-06	7.68E-06	7.68E-06	7.68E-06	7.68E-06
po210	2.12E-04	2.10E-04	2.09E-04	2.09E-04	2.09E-04	2.09E-04	2.09E-04
rn222	6.19E-06	6.19E-06	6.19E-06	6.19E-06	6.20E-06	6.20E-06	6.20E-06
ra223	1.57E-06	1.57E-06	1.57E-06	1.57E-06	1.57E-06	1.57E-06	1.57E-06
ra225	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06
ra226	9.63E-01	9.64E-01	9.64E-01	9.64E-01	9.64E-01	9.64E-01	9.64E-01
ac225	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.68E-06
ac227	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03
th227	2.58E-06	2.59E-06	2.59E-06	2.59E-06	2.59E-06	2.59E-06	2.59E-06
th228	1.51E-05	1.50E-05	1.50E-05	1.49E-05	1.48E-05	1.47E-05	1.46E-05
th229	4.91E-01	4.91E-01	4.91E-01	4.91E-01	4.91E-01	4.91E-01	4.91E-01
th230	6.00E+01	6.00E+01	6.00E+01	6.01E+01	6.01E+01	6.01E+01	6.01E+01
th231	9.09E-07	6.36E-07	6.36E-07	6.36E-07	6.36E-07	6.36E-07	6.36E-07
th232	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01
th234	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04
pa231	1.70E+00	1.70E+00	1.70E+00	1.70E+00	1.70E+00	1.70E+00	1.70E+00
pa233	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04
u232	5.58E-04	5.53E-04	5.49E-04	5.44E-04	5.40E-04	5.35E-04	5.31E-04

u233	2.95E+01	2.96E+01	2.96E+01	2.96E+01	2.96E+01	2.96E+01	2.96E+01
u234	2.43E+03	2.43E+03	2.43E+03	2.43E+03	2.43E+03	2.43E+03	2.43E+03
u235	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05
u236	4.37E+04	4.37E+04	4.37E+04	4.37E+04	4.37E+04	4.37E+04	4.37E+04
u238	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06
np236	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.54E-04
np237	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03
pu238	5.43E+00	5.39E+00	5.36E+00	5.32E+00	5.29E+00	5.25E+00	5.22E+00
pu239	9.03E+03	9.03E+03	9.03E+03	9.03E+03	9.03E+03	9.03E+03	9.03E+03
pu240	3.21E+02	3.21E+02	3.21E+02	3.21E+02	3.21E+02	3.21E+02	3.21E+02
pu241	1.32E-01	1.27E-01	1.22E-01	1.17E-01	1.12E-01	1.08E-01	1.04E-01
pu242	3.82E-02	3.82E-02	3.82E-02	3.82E-02	3.82E-02	3.82E-02	3.82E-02
am241	3.54E+00	3.54E+00	3.54E+00	3.54E+00	3.54E+00	3.54E+00	3.54E+00
am242m	1.71E-03	1.71E-03	1.70E-03	1.69E-03	1.68E-03	1.68E-03	1.67E-03
am243	3.46E-04	3.46E-04	3.46E-04	3.46E-04	3.46E-04	3.46E-04	3.46E-04
cm242	2.88E-05	1.11E-05	6.26E-06	4.91E-06	4.53E-06	4.41E-06	4.37E-06
total	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 110
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 element concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	3.60E+01	3.60E+01	3.60E+01	3.60E+01	3.60E+01	3.60E+01	3.60E+01
pb	1.77E+00	1.77E+00	1.78E+00	1.78E+00	1.78E+00	1.78E+00	1.78E+00
bi	1.42E-01	1.42E-01	1.42E-01	1.43E-01	1.43E-01	1.43E-01	1.43E-01
po	2.12E-04	2.10E-04	2.09E-04	2.09E-04	2.09E-04	2.09E-04	2.09E-04
rn	6.19E-06	6.19E-06	6.19E-06	6.19E-06	6.20E-06	6.20E-06	6.20E-06
ra	9.63E-01	9.64E-01	9.64E-01	9.64E-01	9.64E-01	9.64E-01	9.64E-01
ac	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03
th	7.29E+01	7.29E+01	7.29E+01	7.29E+01	7.29E+01	7.29E+01	7.29E+01
pa	1.70E+00	1.70E+00	1.70E+00	1.70E+00	1.70E+00	1.70E+00	1.70E+00
u	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06
np	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03
pu	9.36E+03	9.36E+03	9.36E+03	9.36E+03	9.36E+03	9.36E+03	9.36E+03
am	3.54E+00	3.54E+00	3.54E+00	3.54E+00	3.54E+00	3.54E+00	3.54E+00
cm	2.88E-05	1.12E-05	6.30E-06	4.95E-06	4.57E-06	4.45E-06	4.40E-06
totals	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 111
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl206	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06
tl207	8.03E-02	8.05E-02	8.05E-02	8.05E-02	8.04E-02	8.04E-02	8.04E-02
tl208	4.44E-03	4.45E-03	4.43E-03	4.41E-03	4.39E-03	4.36E-03	4.33E-03
tl209	2.04E-03	2.04E-03	2.04E-03	2.04E-03	2.04E-03	2.04E-03	2.04E-03
pb209	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.74E-02
pb210	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01
pb211	8.05E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02
pb212	1.23E-02	1.24E-02	1.23E-02	1.23E-02	1.22E-02	1.21E-02	1.20E-02
pb214	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01
bi210	9.53E-01	9.54E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01
bi211	8.05E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02
bi212	1.23E-02	1.24E-02	1.23E-02	1.23E-02	1.22E-02	1.21E-02	1.20E-02
bi213	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.74E-02
bi214	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01
po210	9.53E-01	9.43E-01	9.41E-01	9.41E-01	9.41E-01	9.41E-01	9.41E-01
po211	2.21E-04	2.22E-04	2.22E-04	2.22E-04	2.22E-04	2.22E-04	2.22E-04

po212	7.91E-03	7.93E-03	7.90E-03	7.86E-03	7.82E-03	7.77E-03	7.72E-03
po213	9.52E-02	9.53E-02	9.53E-02	9.53E-02	9.53E-02	9.53E-02	9.53E-02
po214	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01
po215	8.05E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02
po216	1.23E-02	1.24E-02	1.23E-02	1.23E-02	1.22E-02	1.21E-02	1.20E-02
po218	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.54E-01
at217	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.74E-02
rn219	8.05E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02
rn220	1.23E-02	1.24E-02	1.23E-02	1.23E-02	1.22E-02	1.21E-02	1.20E-02
rn222	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.54E-01
fr221	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.74E-02
fr223	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03
ra223	8.05E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02
ra224	1.23E-02	1.24E-02	1.23E-02	1.23E-02	1.22E-02	1.21E-02	1.20E-02
ra225	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.74E-02
ra226	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.54E-01
ra228	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06
ac225	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.74E-02
ac227	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.05E-02
ac228	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06
th227	7.94E-02	7.96E-02	7.96E-02	7.96E-02	7.96E-02	7.96E-02	7.96E-02
th228	1.23E-02	1.23E-02	1.23E-02	1.22E-02	1.22E-02	1.21E-02	1.20E-02
th229	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.74E-02
th230	1.24E+00	1.24E+00	1.24E+00	1.24E+00	1.24E+00	1.24E+00	1.24E+00
th231	4.83E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01
th232	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.36E-06
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	8.04E-02	8.04E-02	8.04E-02	8.04E-02	8.04E-02	8.04E-02	8.04E-02
pa233	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
u232	1.23E-02	1.22E-02	1.21E-02	1.20E-02	1.19E-02	1.18E-02	1.17E-02
u233	2.85E-01	2.85E-01	2.85E-01	2.85E-01	2.85E-01	2.85E-01	2.85E-01
u234	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01
u235	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01
u236	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 112
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0
nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
u237	6.37E+01	3.13E-04	3.01E-04	2.89E-04	2.78E-04	2.67E-04	2.56E-04
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
np236	5.99E-06	5.99E-06	5.99E-06	5.99E-06	5.99E-06	5.99E-06	5.99E-06
np237	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00
np238	9.29E+01	8.04E-05	8.01E-05	7.98E-05	7.94E-05	7.91E-05	7.88E-05
np239	2.54E+03	6.91E-05	6.91E-05	6.91E-05	6.91E-05	6.91E-05	6.91E-05
pu236	1.40E-04	1.15E-04	9.44E-05	7.75E-05	6.36E-05	5.22E-05	4.29E-05
pu238	9.30E+01	9.24E+01	9.18E+01	9.12E+01	9.06E+01	9.00E+01	8.94E+01
pu239	5.61E+02	5.61E+02	5.61E+02	5.61E+02	5.61E+02	5.61E+02	5.61E+02
pu240	7.28E+01	7.28E+01	7.28E+01	7.28E+01	7.28E+01	7.28E+01	7.28E+01
pu241	1.36E+01	1.31E+01	1.26E+01	1.21E+01	1.16E+01	1.12E+01	1.07E+01
pu242	1.51E-04	1.51E-04	1.51E-04	1.51E-04	1.51E-04	1.51E-04	1.51E-04
am241	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01
am242m	1.79E-02	1.79E-02	1.78E-02	1.77E-02	1.77E-02	1.76E-02	1.75E-02
am242	1.15E-01	1.78E-02	1.77E-02	1.76E-02	1.76E-02	1.75E-02	1.74E-02
am243	6.91E-05	6.91E-05	6.91E-05	6.91E-05	6.91E-05	6.91E-05	6.91E-05
cm242	9.53E-02	3.69E-02	2.07E-02	1.63E-02	1.50E-02	1.46E-02	1.45E-02
cm244	3.35E-06	3.25E-06	3.15E-06	3.05E-06	2.95E-06	2.86E-06	2.77E-06

total	6.04E+03	8.04E+02	8.03E+02	8.02E+02	8.01E+02	8.00E+02	7.99E+02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 113
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl	3.74E-04	3.75E-04	3.75E-04	3.74E-04	3.74E-04	3.73E-04	3.72E-04
pb	3.68E-03	3.68E-03	3.68E-03	3.68E-03	3.68E-03	3.68E-03	3.68E-03
bi	1.82E-02	1.83E-02	1.83E-02	1.83E-02	1.83E-02	1.83E-02	1.83E-02
po	1.19E-01	1.18E-01	1.18E-01	1.18E-01	1.18E-01	1.18E-01	1.18E-01
at	4.15E-03	4.15E-03	4.15E-03	4.15E-03	4.15E-03	4.15E-03	4.16E-03
rn	3.54E-02	3.54E-02	3.54E-02	3.54E-02	3.54E-02	3.54E-02	3.54E-02
fr	3.76E-03	3.76E-03	3.76E-03	3.76E-03	3.76E-03	3.76E-03	3.76E-03
ra	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02
ac	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03
th	4.30E-02	4.28E-02	4.28E-02	4.28E-02	4.28E-02	4.28E-02	4.28E-02
pa	3.44E-02	3.44E-02	3.44E-02	3.44E-02	3.44E-02	3.44E-02	3.44E-02
u	7.62E+00	6.04E-01	6.04E-01	6.04E-01	6.04E-01	6.04E-01	6.04E-01
np	7.09E+00	1.98E-01	1.98E-01	1.98E-01	1.98E-01	1.98E-01	1.98E-01
pu	2.28E+01	2.28E+01	2.27E+01	2.27E+01	2.27E+01	2.27E+01	2.27E+01
am	4.05E-01	4.05E-01	4.05E-01	4.05E-01	4.05E-01	4.05E-01	4.05E-01
cm	3.48E-03	1.35E-03	7.57E-04	5.94E-04	5.48E-04	5.34E-04	5.28E-04
totals	3.82E+01	2.43E+01	2.42E+01	2.42E+01	2.42E+01	2.42E+01	2.42E+01

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 114
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl207	1.05E-06	1.05E-06	1.05E-06	1.05E-06	1.05E-06	1.05E-06	1.05E-06
tl208	8.84E-05	8.86E-05	8.83E-05	8.79E-05	8.74E-05	8.68E-05	8.63E-05
tl209	2.57E-05	2.57E-05	2.57E-05	2.57E-05	2.57E-05	2.57E-05	2.57E-05
pb210	2.85E-05	2.85E-05	2.85E-05	2.85E-05	2.85E-05	2.85E-05	2.85E-05
pb211	3.23E-05	3.23E-05	3.23E-05	3.23E-05	3.23E-05	3.23E-05	3.23E-05
pb212	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.05E-05	1.04E-05	1.04E-05
pb214	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03
bi211	2.23E-05	2.24E-05	2.24E-05	2.24E-05	2.24E-05	2.24E-05	2.24E-05
bi212	7.70E-06	7.72E-06	7.69E-06	7.65E-06	7.61E-06	7.56E-06	7.51E-06
bi213	7.28E-05	7.28E-05	7.28E-05	7.29E-05	7.29E-05	7.29E-05	7.29E-05
bi214	8.51E-03	8.52E-03	8.52E-03	8.52E-03	8.52E-03	8.52E-03	8.52E-03
po210	4.80E-08	4.75E-08	4.74E-08	4.74E-08	4.74E-08	4.74E-08	4.74E-08
po211	1.01E-08	1.01E-08	1.01E-08	1.01E-08	1.01E-08	1.01E-08	1.01E-08
po214	4.69E-07	4.69E-07	4.69E-07	4.69E-07	4.69E-07	4.69E-07	4.69E-07
po215	8.37E-08	8.39E-08	8.39E-08	8.39E-08	8.39E-08	8.39E-08	8.39E-08
rn219	2.67E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05
rn220	4.46E-08	4.47E-08	4.46E-08	4.44E-08	4.41E-08	4.39E-08	4.36E-08
rn222	2.20E-06	2.20E-06	2.20E-06	2.20E-06	2.20E-06	2.20E-06	2.20E-06
fr221	1.71E-05	1.71E-05	1.71E-05	1.71E-05	1.71E-05	1.71E-05	1.71E-05
fr223	3.78E-07	3.78E-07	3.78E-07	3.78E-07	3.78E-07	3.78E-07	3.78E-07
ra223	6.41E-05	6.43E-05	6.43E-05	6.43E-05	6.43E-05	6.43E-05	6.43E-05
ra224	7.37E-07	7.38E-07	7.36E-07	7.33E-07	7.29E-07	7.24E-07	7.19E-07
ra225	8.30E-06	8.30E-06	8.30E-06	8.30E-06	8.31E-06	8.31E-06	8.31E-06
ra226	4.08E-05	4.08E-05	4.08E-05	4.08E-05	4.08E-05	4.08E-05	4.08E-05
ac225	9.69E-06	9.69E-06	9.69E-06	9.69E-06	9.69E-06	9.70E-06	9.70E-06
ac227	9.21E-08	9.21E-08	9.21E-08	9.21E-08	9.21E-08	9.21E-08	9.21E-08
ac228	7.06E-09	7.07E-09	7.07E-09	7.07E-09	7.07E-09	7.07E-09	7.07E-09
th227	5.22E-05	5.24E-05	5.24E-05	5.24E-05	5.24E-05	5.24E-05	5.23E-05
th228	2.58E-07	2.57E-07	2.56E-07	2.55E-07	2.54E-07	2.52E-07	2.50E-07
th229	5.46E-05	5.46E-05	5.46E-05	5.46E-05	5.46E-05	5.46E-05	5.46E-05

th230	1.23E-05	1.23E-05	1.23E-05	1.23E-05	1.23E-05	1.23E-05	1.23E-05
th231	8.89E-05	6.22E-05	6.22E-05	6.22E-05	6.22E-05	6.22E-05	6.22E-05
th234	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04
pa231	1.91E-05	1.91E-05	1.91E-05	1.91E-05	1.91E-05	1.91E-05	1.91E-05
pa233	9.19E-03	9.19E-03	9.19E-03	9.19E-03	9.19E-03	9.19E-03	9.19E-03
pa234m	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04
pa234	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05
u232	1.58E-07	1.57E-07	1.56E-07	1.55E-07	1.53E-07	1.52E-07	1.51E-07
u233	2.09E-06	2.09E-06	2.09E-06	2.09E-06	2.10E-06	2.10E-06	2.10E-06
u234	1.44E-04	1.44E-04	1.44E-04	1.44E-04	1.44E-04	1.44E-04	1.44E-04
u235	3.33E-04	3.33E-04	3.33E-04	3.33E-04	3.33E-04	3.33E-04	3.33E-04
u236	2.85E-05	2.85E-05	2.85E-05	2.85E-05	2.85E-05	2.85E-05	2.85E-05
u237	5.38E-02	2.65E-07	2.55E-07	2.44E-07	2.35E-07	2.26E-07	2.17E-07
u238	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05
np236	5.22E-09	5.22E-09	5.22E-09	5.22E-09	5.22E-09	5.22E-09	5.22E-09
np237	1.44E-03	1.44E-03	1.44E-03	1.44E-03	1.44E-03	1.44E-03	1.44E-03
np238	3.56E-01	3.08E-07	3.07E-07	3.06E-07	3.05E-07	3.03E-07	3.02E-07
np239	2.76E+00	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08
pu238	1.05E-03	1.04E-03	1.03E-03	1.03E-03	1.02E-03	1.01E-03	1.01E-03
pu239	2.69E-03	2.69E-03	2.69E-03	2.69E-03	2.69E-03	2.69E-03	2.69E-03
pu240	7.12E-04	7.12E-04	7.12E-04	7.12E-04	7.12E-04	7.12E-04	7.12E-04
pu241	1.41E-07	1.36E-07	1.31E-07	1.25E-07	1.20E-07	1.16E-07	1.11E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 115
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
am241	2.06E-03	2.06E-03	2.06E-03	2.06E-03	2.06E-03	2.06E-03	2.06E-03
am242m	6.49E-07	6.46E-07	6.43E-07	6.41E-07	6.38E-07	6.36E-07	6.33E-07
am242	1.33E-05	2.05E-06	2.04E-06	2.03E-06	2.02E-06	2.02E-06	2.01E-06
am243	2.40E-08	2.40E-08	2.40E-08	2.40E-08	2.40E-08	2.40E-08	2.40E-08
cm242	1.19E-06	4.61E-07	2.59E-07	2.04E-07	1.88E-07	1.83E-07	1.81E-07
total	3.97E+00	2.87E-02	2.87E-02	2.86E-02	2.86E-02	2.86E-02	2.86E-02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 116
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	3.94E-05	3.76E-05	3.59E-05	3.42E-05	3.27E-05	3.12E-05	2.97E-05
li 6	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04
li 7	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06
be 9	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06
be 10	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05
c 14	6.90E-06	6.90E-06	6.90E-06	6.90E-06	6.90E-06	6.90E-06	6.90E-06
zn 70	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06
ga 71	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05
ge 72	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03
ge 73	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03
ge 74	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03
as 75	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02
ge 76	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01
se 76	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05
se 77	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01
se 78	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
se 79	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00
br 79	2.37E-02	2.37E-02	2.37E-02	2.38E-02	2.38E-02	2.38E-02	2.38E-02
se 80	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00
kr 80	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05

br 81	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01
se 82	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01
kr 82	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02
kr 83	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01
kr 84	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01
kr 85	2.12E-02	2.01E-02	1.90E-02	1.80E-02	1.71E-02	1.62E-02	1.53E-02
rb 85	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01
kr 86	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02
sr 86	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03
rb 87	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02
sr 87	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.73E-04
sr 88	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02
y 89	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
sr 90	1.29E+00	1.27E+00	1.24E+00	1.21E+00	1.19E+00	1.17E+00	1.14E+00
y 90	3.36E-04	3.29E-04	3.22E-04	3.16E-04	3.09E-04	3.03E-04	2.97E-04
zr 90	3.28E+02	3.28E+02	3.28E+02	3.28E+02	3.28E+02	3.28E+02	3.28E+02
zr 91	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02
zr 92	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02
zr 93	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02
nb 93	5.67E-01	5.67E-01	5.67E-01	5.67E-01	5.67E-01	5.67E-01	5.67E-01
nb 93m	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03
zr 94	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02
nb 94	1.46E-04	1.46E-04	1.46E-04	1.46E-04	1.46E-04	1.46E-04	1.46E-04
mo 95	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02
zr 96	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02
mo 96	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01
mo 97	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02
mo 98	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02
tc 98	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05
tc 99	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.87E+02
ru 99	6.41E+00	6.41E+00	6.41E+00	6.41E+00	6.42E+00	6.42E+00	6.42E+00
mo100	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 117
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
ru100	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00
ru101	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02
ru102	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02
rh103	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02
ru104	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02
pd104	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00
pd105	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01
ru106	8.89E-03	5.04E-03	2.86E-03	1.62E-03	9.18E-04	5.20E-04	2.95E-04
pd106	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01
pd107	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01
ag107	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02
pd108	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01
cd108	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05
ag109	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01
pd110	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00
cd110	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01
cd111	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00
cd112	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00
cd113	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01
cd113m	5.60E-05	5.37E-05	5.16E-05	4.95E-05	4.75E-05	4.56E-05	4.38E-05
in113	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02
cd114	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00

sn114	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05
in115	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01
sn115	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02
cd116	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00
sn116	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02
sn117	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00
sn118	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00
sn119	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
sn120	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
sn121m	8.73E-05	8.64E-05	8.55E-05	8.46E-05	8.37E-05	8.28E-05	8.20E-05
sb121	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00
sn122	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00
te122	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03
sb123	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00
sn124	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00
te124	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03
sb125	1.24E-03	1.01E-03	8.16E-04	6.60E-04	5.34E-04	4.33E-04	3.50E-04
te125	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00
te125m	1.66E-05	1.43E-05	1.16E-05	9.38E-06	7.59E-06	6.14E-06	4.97E-06
sn126	4.36E+00	4.36E+00	4.36E+00	4.36E+00	4.36E+00	4.36E+00	4.36E+00
te126	1.82E-01	1.82E-01	1.82E-01	1.82E-01	1.82E-01	1.82E-01	1.82E-01
i127	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01
te128	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01
xe128	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03
i129	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01
xe129	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02
te130	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02
xe130	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01
xe131	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02
xe132	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 118
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
ba132	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06
cs133	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02
xe134	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02
cs134	1.88E-03	1.42E-03	1.07E-03	8.10E-04	6.12E-04	4.62E-04	3.49E-04
ba134	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00
cs135	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02
ba135	8.75E-01	8.75E-01	8.76E-01	8.76E-01	8.76E-01	8.76E-01	8.76E-01
xe136	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02
ba136	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00
cs137	2.45E+00	2.40E+00	2.35E+00	2.31E+00	2.27E+00	2.22E+00	2.18E+00
ba137	5.62E+02	5.62E+02	5.62E+02	5.62E+02	5.62E+02	5.62E+02	5.62E+02
ba138	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02
la138	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03
la139	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02
ce140	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02
pr141	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02
ce142	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02
nd142	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01
nd143	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02
ce144	5.57E-02	2.65E-02	1.27E-02	6.04E-03	2.88E-03	1.37E-03	6.55E-04
nd144	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02
nd145	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02
nd146	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02
sm146	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04

pm147	8.14E-02	6.60E-02	5.30E-02	4.25E-02	3.41E-02	2.74E-02	2.20E-02
sm147	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02
nd148	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02
sm148	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00
sm149	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00
nd150	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01
sm150	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01
sm151	6.13E-01	6.09E-01	6.05E-01	6.01E-01	5.97E-01	5.93E-01	5.89E-01
eu151	2.77E+01	2.77E+01	2.77E+01	2.77E+01	2.77E+01	2.77E+01	2.77E+01
sm152	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01
eu152	3.64E-02	3.49E-02	3.34E-02	3.20E-02	3.06E-02	2.93E-02	2.81E-02
gd152	7.10E+00	7.10E+00	7.10E+00	7.10E+00	7.10E+00	7.10E+00	7.10E+00
eu153	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01
sm154	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00
eu154	1.53E-03	1.43E-03	1.34E-03	1.25E-03	1.17E-03	1.10E-03	1.02E-03
gd154	5.95E-01	5.95E-01	5.95E-01	5.96E-01	5.96E-01	5.96E-01	5.96E-01
eu155	3.36E-03	2.97E-03	2.63E-03	2.32E-03	2.05E-03	1.81E-03	1.60E-03
gd155	8.59E-01	8.59E-01	8.60E-01	8.60E-01	8.60E-01	8.60E-01	8.61E-01
gd156	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00
gd157	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02
gd158	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00
tb159	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01
gd160	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02
dy160	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04
dy161	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02
dy162	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02
dy163	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03
dy164	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 119
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
ho165	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03
ho166m	6.34E-07	6.34E-07	6.34E-07	6.33E-07	6.33E-07	6.33E-07	6.32E-07
er166	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04
total	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 120
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	3.81E-01	3.64E-01	3.47E-01	3.31E-01	3.16E-01	3.01E-01	2.88E-01
be 10	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06
c 14	3.08E-05	3.08E-05	3.08E-05	3.08E-05	3.08E-05	3.08E-05	3.08E-05
se 79	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02
kr 85	8.31E+00	7.88E+00	7.46E+00	7.07E+00	6.70E+00	6.35E+00	6.02E+00
rb 87	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05
sr 90	1.82E+02	1.79E+02	1.75E+02	1.71E+02	1.68E+02	1.65E+02	1.61E+02
y 90	1.82E+02	1.79E+02	1.75E+02	1.72E+02	1.68E+02	1.65E+02	1.61E+02
y 91	1.86E+02	5.08E+00	1.38E-01	3.75E-03	1.02E-04	2.77E-06	7.51E-08
zr 93	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01
nb 93m	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01
nb 94	2.74E-05	2.74E-05	2.74E-05	2.74E-05	2.74E-05	2.74E-05	2.74E-05
zr 95	2.12E+02	7.84E+00	2.90E-01	1.08E-02	3.98E-04	1.48E-05	5.47E-07
nb 95	2.11E+02	1.67E+01	6.38E-01	2.37E-02	8.77E-04	3.25E-05	1.20E-06
tc 99	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.62E+00
rh102	1.61E-05	1.32E-05	1.08E-05	8.87E-06	7.27E-06	5.96E-06	4.88E-06

ru106	2.95E+01	1.67E+01	9.47E+00	5.37E+00	3.04E+00	1.72E+00	9.78E-01
rh106	2.95E+01	1.67E+01	9.47E+00	5.37E+00	3.04E+00	1.72E+00	9.78E-01
pd107	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02
ag110	1.78E-01	4.17E-05	1.79E-05	7.70E-06	3.31E-06	1.42E-06	6.11E-07
ag110m	7.14E-03	3.07E-03	1.32E-03	5.67E-04	2.43E-04	1.05E-04	4.49E-05
cd113m	1.26E-02	1.21E-02	1.16E-02	1.11E-02	1.07E-02	1.02E-02	9.82E-03
sn119m	1.95E-03	9.49E-04	4.62E-04	2.25E-04	1.10E-04	5.33E-05	2.59E-05
sn121	5.57E-01	3.60E-03	3.56E-03	3.53E-03	3.49E-03	3.45E-03	3.42E-03
sn121m	4.69E-03	4.64E-03	4.59E-03	4.54E-03	4.50E-03	4.45E-03	4.40E-03
sn123	6.29E-02	1.23E-02	2.40E-03	4.68E-04	9.14E-05	1.78E-05	3.49E-06
sb125	1.30E+00	1.06E+00	8.55E-01	6.92E-01	5.60E-01	4.53E-01	3.67E-01
te125m	3.00E-01	2.58E-01	2.09E-01	1.69E-01	1.37E-01	1.11E-01	8.96E-02
sn126	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01
sb126	2.73E-02	1.73E-02	1.73E-02	1.73E-02	1.73E-02	1.73E-02	1.73E-02
sb126m	1.37E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01
te127	5.45E+00	1.41E-01	2.03E-02	2.93E-03	4.23E-04	6.11E-05	8.82E-06
te127m	9.59E-01	1.44E-01	2.07E-02	2.99E-03	4.32E-04	6.23E-05	9.00E-06
i129	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02
cs134	2.43E+00	1.84E+00	1.39E+00	1.05E+00	7.92E-01	5.98E-01	4.52E-01
cs135	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01
cs137	2.13E+02	2.09E+02	2.05E+02	2.01E+02	1.97E+02	1.93E+02	1.90E+02
ba137m	2.01E+02	1.97E+02	1.93E+02	1.90E+02	1.86E+02	1.83E+02	1.79E+02
ce142	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05
ce144	1.77E+02	8.45E+01	4.03E+01	1.92E+01	9.17E+00	4.37E+00	2.09E+00
pr144	1.77E+02	8.45E+01	4.03E+01	1.92E+01	9.17E+00	4.37E+00	2.09E+00
pr144m	2.48E+00	1.18E+00	5.64E-01	2.69E-01	1.28E-01	6.12E-02	2.92E-02
pm147	7.55E+01	6.12E+01	4.91E+01	3.94E+01	3.16E+01	2.54E+01	2.04E+01
sm147	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06
eu150	1.88E-06	1.85E-06	1.82E-06	1.79E-06	1.76E-06	1.73E-06	1.70E-06
sm151	1.61E+01	1.60E+01	1.59E+01	1.58E+01	1.57E+01	1.56E+01	1.55E+01
eu152	6.43E+00	6.16E+00	5.90E+00	5.65E+00	5.41E+00	5.18E+00	4.96E+00
gd153	6.24E-02	2.61E-02	1.09E-02	4.54E-03	1.90E-03	7.92E-04	3.31E-04
eu154	4.15E-01	3.88E-01	3.62E-01	3.39E-01	3.17E-01	2.96E-01	2.77E-01
eu155	1.66E+00	1.47E+00	1.30E+00	1.15E+00	1.01E+00	8.95E-01	7.91E-01
ho166m	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06
total	2.05E+04	1.11E+03	9.42E+02	8.64E+02	8.15E+02	7.82E+02	7.56E+02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 121
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0

element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h	1.29E-05	1.23E-05	1.17E-05	1.12E-05	1.07E-05	1.02E-05	9.70E-06
c	9.02E-09	9.02E-09	9.02E-09	9.02E-09	9.02E-09	9.02E-09	9.02E-09
se	3.07E+00	9.70E-06	9.70E-06	9.70E-06	9.70E-06	9.70E-06	9.70E-06
kr	1.19E+01	1.18E-02	1.12E-02	1.06E-02	1.00E-02	9.52E-03	9.02E-03
rb	2.35E+01	5.98E-09	5.73E-09	5.73E-09	5.73E-09	5.73E-09	5.73E-09
sr	1.91E+01	2.16E-01	2.03E-01	1.99E-01	1.95E-01	1.91E-01	1.87E-01
y	2.71E+01	1.01E+00	9.70E-01	9.50E-01	9.30E-01	9.12E-01	8.93E-01
zr	1.18E+01	3.96E-02	1.53E-03	1.25E-04	7.24E-05	7.05E-05	7.04E-05
nb	2.17E+01	8.01E-02	3.17E-03	2.21E-04	1.12E-04	1.08E-04	1.08E-04
tc	7.72E+00	3.32E-03	3.32E-03	3.32E-03	3.32E-03	3.32E-03	3.32E-03
ru	1.08E+00	2.84E-03	5.72E-04	3.19E-04	1.81E-04	1.03E-04	5.81E-05
rh	8.41E-01	1.60E-01	9.08E-02	5.15E-02	2.92E-02	1.65E-02	9.37E-03
pd	5.90E-02	7.20E-07	7.20E-07	7.20E-07	7.20E-07	7.20E-07	7.20E-07
ag	9.78E-02	5.15E-05	2.21E-05	9.50E-06	4.09E-06	1.76E-06	7.57E-07
cd	7.63E-02	1.38E-05	1.26E-05	1.21E-05	1.16E-05	1.11E-05	1.07E-05
sn	1.87E+00	2.35E-04	2.04E-04	1.98E-04	1.97E-04	1.96E-04	1.96E-04
sb	7.45E+00	5.26E-03	4.63E-03	4.11E-03	3.69E-03	3.36E-03	3.08E-03
te	9.06E+00	5.25E-04	2.15E-04	1.48E-04	1.16E-04	9.33E-05	7.54E-05

i	2.05E+01	5.58E-06	5.58E-06	5.58E-06	5.58E-06	5.58E-06	5.58E-06
cs	1.78E+01	2.51E-01	2.42E-01	2.34E-01	2.27E-01	2.21E-01	2.16E-01
ba	1.16E+01	7.75E-01	7.60E-01	7.46E-01	7.31E-01	7.18E-01	7.04E-01
ce	4.29E+00	5.57E-02	2.64E-02	1.26E-02	6.00E-03	2.86E-03	1.36E-03
pr	6.13E+00	6.21E-01	2.96E-01	1.41E-01	6.73E-02	3.21E-02	1.53E-02
pm	3.77E-01	2.25E-02	1.80E-02	1.45E-02	1.16E-02	9.32E-03	7.48E-03
sm	3.07E-02	1.88E-03	1.87E-03	1.86E-03	1.85E-03	1.84E-03	1.82E-03
eu	8.63E-02	5.17E-02	4.93E-02	4.71E-02	4.50E-02	4.29E-02	4.10E-02
gd	5.02E-04	2.29E-05	9.57E-06	3.99E-06	1.67E-06	6.96E-07	2.91E-07
ho	4.01E-07	1.20E-08	1.20E-08	1.20E-08	1.20E-08	1.19E-08	1.19E-08
totals	2.55E+02	3.31E+00	2.68E+00	2.42E+00	2.26E+00	2.16E+00	2.09E+00

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 122
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0
nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.10E-04	1.04E-04	9.86E-05	9.35E-05	8.86E-05	8.39E-05	7.95E-05
y 90	1.84E-06	1.80E-06	1.76E-06	1.73E-06	1.69E-06	1.66E-06	1.63E-06
nb 93m	6.97E-06	6.97E-06	6.97E-06	6.97E-06	6.97E-06	6.97E-06	6.97E-06
nb 94	2.55E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07
zr 95	9.18E-01	3.40E-02	1.26E-03	4.67E-05	1.73E-06	6.40E-08	2.37E-09
nb 95	9.58E-01	7.54E-02	2.89E-03	1.07E-04	3.98E-06	1.47E-07	5.45E-09
tc 99	2.43E-08	2.43E-08	2.43E-08	2.43E-08	2.43E-08	2.43E-08	2.43E-08
rh102	2.06E-07	1.69E-07	1.39E-07	1.14E-07	9.31E-08	7.63E-08	6.25E-08
rh106	3.60E-02	2.04E-02	1.16E-02	6.56E-03	3.72E-03	2.11E-03	1.19E-03
ag110m	1.16E-04	4.98E-05	2.14E-05	9.20E-06	3.95E-06	1.70E-06	7.30E-07
sn121m	1.39E-07	1.38E-07	1.36E-07	1.35E-07	1.33E-07	1.32E-07	1.31E-07
sb125	3.35E-03	2.72E-03	2.20E-03	1.78E-03	1.44E-03	1.17E-03	9.44E-04
te125m	6.32E-05	5.44E-05	4.41E-05	3.57E-05	2.89E-05	2.34E-05	1.89E-05
sn126	9.57E-05	9.57E-05	9.57E-05	9.57E-05	9.57E-05	9.57E-05	9.57E-05
sb126	4.45E-04	2.83E-04	2.83E-04	2.83E-04	2.83E-04	2.83E-04	2.83E-04
sb126m	1.27E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03
i129	1.74E-06	1.74E-06	1.74E-06	1.74E-06	1.74E-06	1.74E-06	1.74E-06
cs134	2.24E-02	1.69E-02	1.28E-02	9.66E-03	7.30E-03	5.52E-03	4.17E-03
ba137m	7.14E-01	7.00E-01	6.87E-01	6.74E-01	6.61E-01	6.48E-01	6.36E-01
ce144	2.00E-02	9.52E-03	4.54E-03	2.16E-03	1.03E-03	4.92E-04	2.35E-04
pr144	3.04E-02	1.45E-02	6.91E-03	3.29E-03	1.57E-03	7.49E-04	3.57E-04
pr144m	1.84E-04	8.77E-05	4.18E-05	1.99E-05	9.51E-06	4.54E-06	2.16E-06
pm147	1.96E-06	1.59E-06	1.28E-06	1.02E-06	8.21E-07	6.59E-07	5.29E-07
eu150	1.71E-08	1.68E-08	1.65E-08	1.63E-08	1.60E-08	1.58E-08	1.55E-08
sm151	1.36E-06	1.35E-06	1.34E-06	1.33E-06	1.32E-06	1.31E-06	1.31E-06
eu152	4.43E-02	4.24E-02	4.06E-02	3.89E-02	3.73E-02	3.57E-02	3.42E-02
gd153	3.98E-05	1.66E-05	6.94E-06	2.90E-06	1.21E-06	5.05E-07	2.11E-07
eu154	3.08E-03	2.88E-03	2.69E-03	2.52E-03	2.35E-03	2.20E-03	2.06E-03
eu155	6.36E-04	5.62E-04	4.97E-04	4.39E-04	3.88E-04	3.43E-04	3.03E-04
ho166m	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08
total	1.26E+02	9.23E-01	7.75E-01	7.41E-01	7.18E-01	6.98E-01	6.81E-01

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 123
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0
element gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr	6.21E+00	1.04E-04	9.86E-05	9.35E-05	8.86E-05	8.39E-05	7.95E-05
y	9.41E+00	1.11E-04	4.73E-06	1.81E-06	1.70E-06	1.66E-06	1.63E-06
zr	4.70E+00	3.40E-02	1.26E-03	4.67E-05	1.73E-06	6.40E-08	2.37E-09
nb	9.20E+00	7.55E-02	2.90E-03	1.15E-04	1.12E-05	7.37E-06	7.23E-06
tc	3.91E+00	2.49E-08	2.49E-08	2.49E-08	2.49E-08	2.49E-08	2.49E-08
rh	2.55E-01	2.04E-02	1.16E-02	6.56E-03	3.72E-03	2.11E-03	1.19E-03

ag	3.77E-02	4.98E-05	2.14E-05	9.20E-06	3.96E-06	1.70E-06	7.33E-07
sn	1.22E+00	9.64E-05	9.60E-05	9.59E-05	9.58E-05	9.58E-05	9.58E-05
sb	5.13E+00	4.14E-03	3.62E-03	3.20E-03	2.86E-03	2.59E-03	2.37E-03
te	5.43E+00	7.24E-05	4.60E-05	3.60E-05	2.89E-05	2.34E-05	1.89E-05
i	1.35E+01	1.74E-06	1.74E-06	1.74E-06	1.74E-06	1.74E-06	1.74E-06
cs	8.52E+00	1.69E-02	1.28E-02	9.66E-03	7.30E-03	5.52E-03	4.17E-03
ba	5.24E+00	7.00E-01	6.87E-01	6.74E-01	6.61E-01	6.48E-01	6.36E-01
ce	2.03E+00	9.65E-03	4.54E-03	2.16E-03	1.03E-03	4.92E-04	2.35E-04
pr	1.78E+00	1.46E-02	6.95E-03	3.31E-03	1.58E-03	7.54E-04	3.59E-04
pm	1.01E-01	1.66E-06	1.28E-06	1.02E-06	8.22E-07	6.59E-07	5.29E-07
sm	6.82E-03	1.35E-06	1.34E-06	1.33E-06	1.32E-06	1.31E-06	1.31E-06
eu	6.38E-02	4.59E-02	4.38E-02	4.19E-02	4.00E-02	3.82E-02	3.65E-02
gd	1.74E-04	1.66E-05	6.94E-06	2.90E-06	1.21E-06	5.05E-07	2.11E-07
ho	2.68E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08
totals	1.26E+02	9.23E-01	7.75E-01	7.41E-01	7.18E-01	6.98E-01	6.81E-01

1 page 124

photon spectrum as a function of time for light elements, cladding and structural materials

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 14610.mwd, flux= 2.71E+08 n**2-sec

0 spectrum of photon release rates, photons/sec
basis = single reactor assembly

0

emean	time after discharge						
(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	5.17E+11	5.79E+04	4.64E+04	3.71E+04	2.97E+04	2.38E+04	1.91E+04
3.00E-02	1.70E+11	1.84E+04	1.48E+04	1.18E+04	9.46E+03	7.58E+03	6.07E+03
5.50E-02	1.19E+11	1.24E+04	9.96E+03	7.98E+03	6.39E+03	5.12E+03	4.10E+03
8.50E-02	6.93E+10	7.00E+03	5.61E+03	4.49E+03	3.60E+03	2.88E+03	2.31E+03
1.20E-01	4.93E+10	4.79E+03	3.83E+03	3.07E+03	2.46E+03	1.97E+03	1.58E+03
1.70E-01	5.15E+10	4.70E+03	3.76E+03	3.01E+03	2.41E+03	1.93E+03	1.55E+03
3.00E-01	5.91E+10	4.68E+03	3.75E+03	3.00E+03	2.40E+03	1.92E+03	1.54E+03
6.50E-01	2.91E+10	2.50E+05	2.00E+05	1.60E+05	1.28E+05	1.03E+05	8.23E+04
1.13E+00	5.00E+09	1.99E+05	1.59E+05	1.28E+05	1.02E+05	8.19E+04	6.56E+04
1.58E+00	9.09E+11	4.99E-01	3.99E-01	3.20E-01	2.56E-01	2.05E-01	1.64E-01
2.00E+00	1.80E+08	4.44E-02	3.55E-02	2.85E-02	2.28E-02	1.83E-02	1.46E-02
2.40E+00	3.65E+07	9.94E-03	7.96E-03	6.38E-03	5.11E-03	4.09E-03	3.28E-03
2.80E+00	2.15E+11	1.56E-04	1.25E-04	9.99E-05	8.00E-05	6.41E-05	5.13E-05
3.25E+00	1.40E+04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
3.75E+00	1.40E+08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.25E+00	1.83E+06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.75E+00	6.05E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
5.50E+00	1.02E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0 total	2.19E+12	5.59E+05	4.48E+05	3.59E+05	2.87E+05	2.30E+05	1.84E+05
0 mev/sec	2.11E+12	3.92E+05	3.14E+05	2.51E+05	2.01E+05	1.61E+05	1.29E+05

0 spectrum of energy release rates, mev/watt-sec
basis = single reactor assembly

0

emean	time after discharge						
(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	1.29E+06	1.45E-01	1.16E-01	9.28E-02	7.44E-02	5.96E-02	4.77E-02
3.00E-02	1.28E+06	1.38E-01	1.11E-01	8.86E-02	7.10E-02	5.68E-02	4.55E-02
5.50E-02	1.63E+06	1.71E-01	1.37E-01	1.10E-01	8.79E-02	7.04E-02	5.64E-02
8.50E-02	1.47E+06	1.49E-01	1.19E-01	9.54E-02	7.64E-02	6.12E-02	4.90E-02
1.20E-01	1.48E+06	1.44E-01	1.15E-01	9.21E-02	7.38E-02	5.91E-02	4.73E-02
1.70E-01	2.19E+06	2.00E-01	1.60E-01	1.28E-01	1.03E-01	8.22E-02	6.58E-02
3.00E-01	4.43E+06	3.51E-01	2.81E-01	2.25E-01	1.80E-01	1.44E-01	1.16E-01
6.50E-01	4.73E+06	4.06E+01	3.25E+01	2.60E+01	2.09E+01	1.67E+01	1.34E+01
1.13E+00	1.41E+06	5.60E+01	4.49E+01	3.59E+01	2.88E+01	2.30E+01	1.85E+01
1.58E+00	3.58E+08	1.96E-04	1.57E-04	1.26E-04	1.01E-04	8.08E-05	6.47E-05

		2.00E+00	9.00E+04	2.22E-05	1.78E-05	1.42E-05	1.14E-05	9.13E-06	7.31E-06
		2.40E+00	2.19E+04	5.97E-06	4.78E-06	3.83E-06	3.07E-06	2.45E-06	1.97E-06
		2.80E+00	1.50E+08	1.09E-07	8.73E-08	6.99E-08	5.60E-08	4.48E-08	3.59E-08
		3.25E+00	1.14E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
		3.75E+00	1.31E+05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
		4.25E+00	1.94E+03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
		4.75E+00	7.19E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
		5.50E+00	1.40E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0		total	5.28E+08	9.79E+01	7.84E+01	6.28E+01	5.03E+01	4.03E+01	3.23E+01
0	gamma	watts	3.39E-01	6.28E-08	5.03E-08	4.03E-08	3.23E-08	2.58E-08	2.07E-08

1 page 125

photon spectrum as a function of time for fission products

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 14610.mwd, flux= 2.71E+08 n**2-sec

0 spectrum of photon release rates, photons/sec
basis = single reactor assembly

0

emean		time after discharge					
(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	2.55E+14	8.20E+12	6.52E+12	5.70E+12	5.24E+12	4.96E+12	4.78E+12
3.00E-02	1.12E+14	3.64E+12	2.89E+12	2.52E+12	2.31E+12	2.19E+12	2.10E+12
5.50E-02	5.95E+13	1.86E+12	1.46E+12	1.27E+12	1.16E+12	1.09E+12	1.05E+12
8.50E-02	4.11E+13	1.06E+12	8.10E+11	6.86E+11	6.18E+11	5.79E+11	5.53E+11
1.20E-01	3.36E+13	1.13E+12	7.75E+11	6.03E+11	5.15E+11	4.66E+11	4.37E+11
1.70E-01	5.39E+13	6.79E+11	5.18E+11	4.41E+11	3.99E+11	3.74E+11	3.58E+11
3.00E-01	1.10E+14	8.30E+11	6.45E+11	5.51E+11	5.00E+11	4.69E+11	4.48E+11
6.50E-01	2.28E+14	8.55E+12	7.16E+12	6.87E+12	6.66E+12	6.49E+12	6.34E+12
1.13E+00	7.64E+13	1.70E+11	1.44E+11	1.29E+11	1.18E+11	1.11E+11	1.05E+11
1.58E+00	3.95E+13	6.65E+10	5.52E+10	4.86E+10	4.44E+10	4.14E+10	3.91E+10
2.00E+00	1.19E+13	2.88E+10	1.39E+10	6.78E+09	3.34E+09	1.69E+09	8.89E+08
2.40E+00	1.02E+13	9.03E+08	4.89E+08	2.66E+08	1.45E+08	7.99E+07	4.41E+07
2.80E+00	4.10E+12	1.29E+08	7.15E+07	3.96E+07	2.20E+07	1.23E+07	6.87E+06
3.25E+00	2.35E+12	1.87E+07	1.06E+07	6.00E+06	3.40E+06	1.93E+06	1.09E+06
3.75E+00	1.18E+12	8.23E+03	4.66E+03	2.64E+03	1.50E+03	8.49E+02	4.82E+02
4.25E+00	1.29E+12	1.99E-05	1.99E-05	1.99E-05	1.99E-05	1.99E-05	1.99E-05
4.75E+00	3.77E+11	9.99E-06	9.99E-06	9.99E-06	9.99E-06	9.99E-06	9.99E-06
5.50E+00	2.82E+11	7.41E-06	7.41E-06	7.41E-06	7.41E-06	7.41E-06	7.41E-06
0 total	1.04E+15	2.62E+13	2.10E+13	1.88E+13	1.76E+13	1.68E+13	1.62E+13
0 mev/sec	4.36E+14	6.80E+12	5.61E+12	5.27E+12	5.06E+12	4.90E+12	4.77E+12

0 spectrum of energy release rates, mev/watt-sec
basis = single reactor assembly

0

emean		time after discharge					
(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	6.38E+08	2.05E+07	1.63E+07	1.43E+07	1.31E+07	1.24E+07	1.19E+07
3.00E-02	8.41E+08	2.73E+07	2.17E+07	1.89E+07	1.74E+07	1.64E+07	1.58E+07
5.50E-02	8.18E+08	2.55E+07	2.01E+07	1.74E+07	1.59E+07	1.50E+07	1.44E+07
8.50E-02	8.73E+08	2.26E+07	1.72E+07	1.46E+07	1.31E+07	1.23E+07	1.18E+07
1.20E-01	1.01E+09	3.38E+07	2.33E+07	1.81E+07	1.54E+07	1.40E+07	1.31E+07
1.70E-01	2.29E+09	2.89E+07	2.20E+07	1.87E+07	1.69E+07	1.59E+07	1.52E+07
3.00E-01	8.23E+09	6.22E+07	4.83E+07	4.14E+07	3.75E+07	3.51E+07	3.36E+07
6.50E-01	3.71E+10	1.39E+09	1.16E+09	1.12E+09	1.08E+09	1.06E+09	1.03E+09
1.13E+00	2.15E+10	4.80E+07	4.05E+07	3.62E+07	3.33E+07	3.12E+07	2.95E+07
1.58E+00	1.55E+10	2.62E+07	2.17E+07	1.91E+07	1.75E+07	1.63E+07	1.54E+07
2.00E+00	5.96E+09	1.44E+07	6.96E+06	3.39E+06	1.67E+06	8.44E+05	4.44E+05
2.40E+00	6.13E+09	5.42E+05	2.93E+05	1.60E+05	8.72E+04	4.80E+04	2.65E+04
2.80E+00	2.87E+09	9.06E+04	5.01E+04	2.77E+04	1.54E+04	8.60E+03	4.81E+03
3.25E+00	1.91E+09	1.52E+04	8.60E+03	4.87E+03	2.76E+03	1.57E+03	8.87E+02
3.75E+00	1.11E+09	7.71E+00	4.37E+00	2.48E+00	1.40E+00	7.96E-01	4.51E-01

	4.25E+00	1.37E+09	2.12E-08	2.12E-08	2.12E-08	2.12E-08	2.12E-08	2.12E-08
	4.75E+00	4.47E+08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08
	5.50E+00	3.87E+08	1.02E-08	1.02E-08	1.02E-08	1.02E-08	1.02E-08	1.02E-08
0	total	1.09E+11	1.70E+09	1.40E+09	1.32E+09	1.26E+09	1.22E+09	1.19E+09
0	gamma watts	6.99E+01	1.09E+00	8.99E-01	8.45E-01	8.11E-01	7.85E-01	7.64E-01

1

0 principal photon sources in group 1, photons/sec

mean energy = .0100 mev. nuclides exceeding 1.0E-03 of total group release rate (4.96E+12) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	time after discharge 1217.5 d	1521.9 d	1826.3 d
kr 85	4.39E+10	4.16E+10	3.94E+10	3.73E+10	3.54E+10	3.35E+10	3.17E+10
sr 90	7.43E+11	7.28E+11	7.13E+11	6.99E+11	6.85E+11	6.71E+11	6.57E+11
y 90	3.65E+12	3.58E+12	3.51E+12	3.43E+12	3.36E+12	3.30E+12	3.23E+12
tc 99	1.10E+10	1.10E+10	1.10E+10	1.10E+10	1.10E+10	1.10E+10	1.10E+10
rh106	8.77E+11	4.97E+11	2.82E+11	1.60E+11	9.06E+10	5.13E+10	2.91E+10
cs137	7.51E+11	7.37E+11	7.23E+11	7.09E+11	6.96E+11	6.82E+11	6.69E+11
ba137m	3.52E+10	3.46E+10	3.39E+10	3.33E+10	3.26E+10	3.20E+10	3.14E+10
ce144	3.41E+11	1.63E+11	7.76E+10	3.70E+10	1.76E+10	8.42E+09	4.01E+09
pr144	4.52E+12	2.16E+12	1.03E+12	4.90E+11	2.34E+11	1.12E+11	5.32E+10
pm147	8.77E+10	7.12E+10	5.71E+10	4.58E+10	3.68E+10	2.95E+10	2.37E+10
eu152	2.37E+10	2.27E+10	2.17E+10	2.08E+10	1.99E+10	1.91E+10	1.83E+10

0 principal photon sources in group 2, photons/sec

mean energy = .0300 mev. nuclides exceeding 1.0E-03 of total group release rate (2.19E+12) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	time after discharge 1217.5 d	1521.9 d	1826.3 d
kr 85	1.28E+10	1.21E+10	1.15E+10	1.09E+10	1.03E+10	9.76E+09	9.25E+09
sr 90	2.10E+11	2.06E+11	2.02E+11	1.97E+11	1.93E+11	1.90E+11	1.86E+11
y 90	1.19E+12	1.17E+12	1.14E+12	1.12E+12	1.10E+12	1.07E+12	1.05E+12
tc 99	2.65E+09	2.65E+09	2.65E+09	2.65E+09	2.65E+09	2.65E+09	2.65E+09
rh106	2.93E+11	1.66E+11	9.41E+10	5.34E+10	3.02E+10	1.71E+10	9.72E+09
sb125	2.39E+10	1.94E+10	1.57E+10	1.27E+10	1.03E+10	8.32E+09	6.73E+09
te125m	1.28E+10	1.10E+10	8.94E+09	7.23E+09	5.85E+09	4.74E+09	3.83E+09
cs137	2.09E+11	2.05E+11	2.01E+11	1.98E+11	1.94E+11	1.90E+11	1.87E+11
ba137m	6.06E+11	5.94E+11	5.83E+11	5.71E+11	5.61E+11	5.50E+11	5.39E+11
ce144	7.92E+11	3.78E+11	1.80E+11	8.59E+10	4.10E+10	1.95E+10	9.32E+09
pr144	1.50E+12	7.13E+11	3.40E+11	1.62E+11	7.74E+10	3.69E+10	1.76E+10
pm147	1.93E+10	1.56E+10	1.26E+10	1.01E+10	8.08E+09	6.49E+09	5.20E+09
eu152	9.40E+10	9.00E+10	8.62E+10	8.25E+10	7.90E+10	7.57E+10	7.25E+10

0 principal photon sources in group 3, photons/sec

mean energy = .0550 mev. nuclides exceeding 1.0E-03 of total group release rate (1.09E+12) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	time after discharge 1217.5 d	1521.9 d	1826.3 d
kr 85	7.84E+09	7.43E+09	7.04E+09	6.67E+09	6.32E+09	5.99E+09	5.67E+09
sr 90	1.24E+11	1.22E+11	1.19E+11	1.17E+11	1.14E+11	1.12E+11	1.10E+11
y 90	8.22E+11	8.06E+11	7.89E+11	7.73E+11	7.58E+11	7.42E+11	7.27E+11
tc 99	1.28E+09	1.28E+09	1.28E+09	1.28E+09	1.28E+09	1.28E+09	1.28E+09
rh106	2.08E+11	1.18E+11	6.67E+10	3.78E+10	2.14E+10	1.21E+10	6.88E+09
cs137	1.22E+11	1.20E+11	1.17E+11	1.15E+11	1.13E+11	1.11E+11	1.09E+11
ce144	1.15E+11	5.46E+10	2.61E+10	1.24E+10	5.93E+09	2.83E+09	1.35E+09
pr144	1.05E+12	5.01E+11	2.39E+11	1.14E+11	5.43E+10	2.59E+10	1.24E+10
pm147	8.10E+09	6.57E+09	5.28E+09	4.23E+09	3.40E+09	2.73E+09	2.19E+09
eu152	8.17E+10	7.82E+10	7.49E+10	7.17E+10	6.87E+10	6.58E+10	6.30E+10
eu154	3.50E+09	3.27E+09	3.06E+09	2.86E+09	2.67E+09	2.50E+09	2.34E+09
eu155	1.28E+10	1.13E+10	9.99E+09	8.83E+09	7.80E+09	6.90E+09	6.10E+09

1

0 principal photon sources in group 4, photons/sec

mean energy = .0850 mev. nuclides exceeding 1.0E-03 of total group release rate (5.79E+11) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	time after discharge 1217.5 d	1521.9 d	1826.3 d
kr 85	3.92E+09	3.72E+09	3.52E+09	3.34E+09	3.16E+09	3.00E+09	2.84E+09

sr 90	5.92E+10	5.80E+10	5.68E+10	5.56E+10	5.45E+10	5.34E+10	5.23E+10
y 90	4.76E+11	4.66E+11	4.57E+11	4.47E+11	4.38E+11	4.29E+11	4.21E+11
rh106	1.23E+11	6.99E+10	3.96E+10	2.25E+10	1.27E+10	7.21E+09	4.09E+09
sn126	2.17E+09	2.17E+09	2.17E+09	2.17E+09	2.17E+09	2.17E+09	2.17E+09
cs137	5.71E+10	5.60E+10	5.49E+10	5.39E+10	5.28E+10	5.18E+10	5.08E+10
ce144	1.62E+11	7.72E+10	3.68E+10	1.76E+10	8.37E+09	3.99E+09	1.90E+09
pr144	6.18E+11	2.95E+11	1.41E+11	6.70E+10	3.20E+10	1.52E+10	7.27E+09
pm147	2.30E+09	1.87E+09	1.50E+09	1.20E+09	9.66E+08	7.75E+08	6.22E+08
eu155	1.94E+10	1.72E+10	1.52E+10	1.34E+10	1.18E+10	1.05E+10	9.26E+09

0 principal photon sources in group 5, photons/sec
mean energy = .1200 mev. nuclides exceeding 1.0E-03 of total group release rate (4.66E+11) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	2.37E+09	2.24E+09	2.12E+09	2.01E+09	1.91E+09	1.81E+09	1.71E+09
sr 90	3.37E+10	3.30E+10	3.23E+10	3.17E+10	3.10E+10	3.04E+10	2.98E+10
y 90	3.35E+11	3.28E+11	3.21E+11	3.15E+11	3.08E+11	3.02E+11	2.96E+11
rh106	8.91E+10	5.05E+10	2.86E+10	1.62E+10	9.19E+09	5.21E+09	2.95E+09
cs137	3.20E+10	3.14E+10	3.08E+10	3.02E+10	2.96E+10	2.90E+10	2.85E+10
ce144	7.93E+11	3.78E+11	1.80E+11	8.61E+10	4.10E+10	1.96E+10	9.34E+09
pr144	4.42E+11	2.11E+11	1.01E+11	4.80E+10	2.29E+10	1.09E+10	5.20E+09
eu152	6.88E+10	6.59E+10	6.31E+10	6.04E+10	5.78E+10	5.54E+10	5.30E+10
eu154	6.50E+09	6.08E+09	5.68E+09	5.31E+09	4.97E+09	4.65E+09	4.34E+09
eu155	1.11E+10	9.80E+09	8.66E+09	7.65E+09	6.76E+09	5.98E+09	5.29E+09

0 principal photon sources in group 6, photons/sec
mean energy = .1700 mev. nuclides exceeding 1.0E-03 of total group release rate (3.74E+11) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.88E+09	1.78E+09	1.69E+09	1.60E+09	1.51E+09	1.44E+09	1.36E+09
sr 90	2.40E+10	2.35E+10	2.31E+10	2.26E+10	2.21E+10	2.17E+10	2.12E+10
y 90	3.45E+11	3.38E+11	3.31E+11	3.24E+11	3.18E+11	3.11E+11	3.05E+11
rh106	9.55E+10	5.41E+10	3.07E+10	1.74E+10	9.86E+09	5.59E+09	3.17E+09
sb125	3.60E+09	2.92E+09	2.36E+09	1.91E+09	1.55E+09	1.25E+09	1.01E+09
cs137	2.26E+10	2.22E+10	2.17E+10	2.13E+10	2.09E+10	2.05E+10	2.01E+10
pr144	4.67E+11	2.23E+11	1.06E+11	5.07E+10	2.42E+10	1.15E+10	5.50E+09

1 page 128

0 principal photon sources in group 7, photons/sec
mean energy = .3000 mev. nuclides exceeding 1.0E-03 of total group release rate (4.69E+11) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.13E+09	1.08E+09	1.02E+09	9.65E+08	9.15E+08	8.67E+08	8.21E+08
sr 90	1.09E+10	1.07E+10	1.05E+10	1.02E+10	1.00E+10	9.83E+09	9.63E+09
y 90	3.83E+11	3.75E+11	3.68E+11	3.60E+11	3.53E+11	3.46E+11	3.39E+11
rh106	1.15E+11	6.53E+10	3.70E+10	2.10E+10	1.19E+10	6.74E+09	3.82E+09
sb125	1.36E+09	1.11E+09	8.95E+08	7.24E+08	5.86E+08	4.74E+08	3.84E+08
sb126m	3.13E+09	2.82E+09	2.82E+09	2.82E+09	2.82E+09	2.82E+09	2.82E+09
cs137	1.14E+10	1.12E+10	1.10E+10	1.08E+10	1.06E+10	1.04E+10	1.02E+10
pr144	5.47E+11	2.61E+11	1.24E+11	5.94E+10	2.83E+10	1.35E+10	6.44E+09
eu152	9.54E+10	9.13E+10	8.74E+10	8.37E+10	8.02E+10	7.68E+10	7.35E+10
eu154	9.94E+08	9.29E+08	8.69E+08	8.12E+08	7.59E+08	7.10E+08	6.64E+08

0 principal photon sources in group 8, photons/sec
mean energy = .6500 mev. nuclides exceeding 1.0E-03 of total group release rate (6.49E+12) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	1.62E+11	1.59E+11	1.55E+11	1.52E+11	1.49E+11	1.46E+11	1.43E+11
rh106	3.56E+11	2.02E+11	1.14E+11	6.48E+10	3.67E+10	2.08E+10	1.18E+10
sb125	2.92E+10	2.37E+10	1.92E+10	1.55E+10	1.26E+10	1.02E+10	8.24E+09
sb126m	1.04E+10	9.39E+09	9.39E+09	9.39E+09	9.39E+09	9.39E+09	9.39E+09
cs134	2.05E+11	1.55E+11	1.17E+11	8.84E+10	6.68E+10	5.05E+10	3.81E+10
ba137m	6.81E+12	6.68E+12	6.55E+12	6.42E+12	6.30E+12	6.18E+12	6.06E+12
pr144	3.74E+11	1.78E+11	8.50E+10	4.05E+10	1.93E+10	9.22E+09	4.40E+09

```
    eu152   6.73E+10  6.45E+10  6.17E+10  5.91E+10  5.66E+10  5.42E+10  5.19E+10
0                  principal photon sources in group  9, photons/sec
     mean energy = 1.1250 mev.  nuclides exceeding  1.0E-03 of total group release rate (1.11E+11) at  1521.9 d
nuclide                                          time after discharge
            initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
  y 90   2.11E+10  2.07E+10  2.03E+10  1.99E+10  1.95E+10  1.91E+10  1.87E+10
 rh106   3.31E+10  1.88E+10  1.06E+10  6.03E+09  3.42E+09  1.94E+09  1.10E+09
 sb126m  1.65E+08  1.49E+08  1.49E+08  1.49E+08  1.49E+08  1.49E+08  1.49E+08
 cs134   2.51E+09  1.90E+09  1.43E+09  1.08E+09  8.18E+08  6.18E+08  4.67E+08
 pr144   4.78E+10  2.28E+10  1.09E+10  5.18E+09  2.47E+09  1.18E+09  5.62E+08
 eu152   1.00E+11  9.57E+10  9.17E+10  8.78E+10  8.40E+10  8.05E+10  7.71E+10
 eu154   1.03E+10  9.65E+09  9.02E+09  8.43E+09  7.89E+09  7.37E+09  6.89E+09
0                  principal photon sources in group 10, photons/sec
     mean energy = 1.5750 mev.  nuclides exceeding  1.0E-03 of total group release rate (4.14E+10) at  1521.9 d
nuclide                                          time after discharge
            initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
  y 90   2.70E+09  2.64E+09  2.59E+09  2.54E+09  2.48E+09  2.43E+09  2.38E+09
 rh106   6.25E+09  3.54E+09  2.01E+09  1.14E+09  6.45E+08  3.66E+08  2.07E+08
 cs134   2.37E+09  1.79E+09  1.35E+09  1.02E+09  7.72E+08  5.83E+08  4.41E+08
 pr144   2.97E+10  1.42E+10  6.76E+09  3.23E+09  1.54E+09  7.34E+08  3.50E+08
 eu152   4.59E+10  4.40E+10  4.21E+10  4.03E+10  3.86E+10  3.70E+10  3.54E+10
 eu154   3.73E+08  3.49E+08  3.26E+08  3.05E+08  2.85E+08  2.67E+08  2.49E+08
1                                                                              page 129
0                  principal photon sources in group 11, photons/sec
     mean energy = 2.0000 mev.  nuclides exceeding  1.0E-03 of total group release rate (1.69E+09) at  1521.9 d
nuclide                                          time after discharge
            initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
  y 90   1.61E+08  1.58E+08  1.55E+08  1.52E+08  1.49E+08  1.46E+08  1.43E+08
 rh106   2.03E+09  1.15E+09  6.52E+08  3.70E+08  2.10E+08  1.19E+08  6.73E+07
 pr144   5.77E+10  2.75E+10  1.31E+10  6.26E+09  2.98E+09  1.42E+09  6.79E+08
0                  principal photon sources in group 12, photons/sec
     mean energy = 2.4000 mev.  nuclides exceeding  1.0E-03 of total group release rate (7.99E+07) at  1521.9 d
nuclide                                          time after discharge
            initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
  y 90   9.41E+04  9.22E+04  9.04E+04  8.85E+04  8.67E+04  8.50E+04  8.32E+04
 rh106   1.13E+09  6.43E+08  3.65E+08  2.07E+08  1.17E+08  6.64E+07  3.76E+07
 pr144   5.45E+08  2.60E+08  1.24E+08  5.91E+07  2.82E+07  1.34E+07  6.41E+06
0                  principal photon sources in group 13, photons/sec
     mean energy = 2.8000 mev.  nuclides exceeding  1.0E-03 of total group release rate (1.23E+07) at  1521.9 d
nuclide                                          time after discharge
            initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
 rh106   1.91E+08  1.09E+08  6.15E+07  3.49E+07  1.98E+07  1.12E+07  6.35E+06
 pr144   4.39E+07  2.09E+07  9.98E+06  4.76E+06  2.27E+06  1.08E+06  5.16E+05
0                  principal photon sources in group 14, photons/sec
     mean energy = 3.2500 mev.  nuclides exceeding  1.0E-03 of total group release rate (1.93E+06) at  1521.9 d
nuclide                                          time after discharge
            initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
 rh106   3.29E+07  1.87E+07  1.06E+07  6.00E+06  3.40E+06  1.93E+06  1.09E+06
0                  principal photon sources in group 15, photons/sec
     mean energy = 3.7500 mev.  nuclides exceeding  1.0E-03 of total group release rate (8.49E+02) at  1521.9 d
nuclide                                          time after discharge
            initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
 rh106   1.45E+04  8.23E+03  4.66E+03  2.64E+03  1.50E+03  8.49E+02  4.82E+02
0                  principal photon sources in group 16, photons/sec
     mean energy = 4.2500 mev.  nuclides exceeding  1.0E-03 of total group release rate (1.99E-05) at  1521.9 d
nuclide                                          time after discharge
            initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
 ce142   1.44E-05  1.44E-05  1.44E-05  1.44E-05  1.44E-05  1.44E-05  1.44E-05
 sm147   5.48E-06  5.48E-06  5.48E-06  5.48E-06  5.48E-06  5.48E-06  5.48E-06
1                                                                              page 130
```

0 principal photon sources in group 17, photons/sec
mean energy = 4.7500 mev. nuclides exceeding 1.0E-03 of total group release rate (9.99E-06) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
ce142	7.24E-06	7.24E-06	7.24E-06	7.24E-06	7.24E-06	7.24E-06	7.24E-06
sm147	2.75E-06	2.75E-06	2.75E-06	2.75E-06	2.75E-06	2.75E-06	2.75E-06

0 principal photon sources in group 18, photons/sec
mean energy = 5.5000 mev. nuclides exceeding 1.0E-03 of total group release rate (7.41E-06) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
ce142	5.37E-06	5.37E-06	5.37E-06	5.37E-06	5.37E-06	5.37E-06	5.37E-06
sm147	2.04E-06	2.04E-06	2.04E-06	2.04E-06	2.04E-06	2.04E-06	2.04E-06

1 page 131

photon spectrum as a function of time for heavy metals and their daughters

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 14610.mwd, flux= 2.71E+08 n**2-sec

0 actinide photon release rates, photons/sec
basis = single reactor assembly

0

emean	time after discharge						
(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	1.35E+14	2.83E+12	2.83E+12	2.82E+12	2.82E+12	2.82E+12	2.81E+12
3.00E-02	8.47E+12	6.75E+10	6.75E+10	6.75E+10	6.75E+10	6.75E+10	6.75E+10
5.50E-02	1.11E+13	2.10E+11	2.10E+11	2.10E+11	2.10E+11	2.10E+11	2.10E+11
8.50E-02	5.26E+13	1.64E+11	1.64E+11	1.64E+11	1.64E+11	1.64E+11	1.64E+11
1.20E-01	5.42E+13	3.35E+10	3.35E+10	3.35E+10	3.35E+10	3.35E+10	3.35E+10
1.70E-01	1.72E+12	2.23E+10	2.23E+10	2.23E+10	2.23E+10	2.23E+10	2.23E+10
3.00E-01	2.87E+13	1.60E+11	1.60E+11	1.60E+11	1.60E+11	1.60E+11	1.60E+11
6.50E-01	1.47E+12	2.91E+10	2.91E+10	2.91E+10	2.91E+10	2.91E+10	2.91E+10
1.13E+00	1.82E+12	1.16E+10	1.16E+10	1.16E+10	1.16E+10	1.16E+10	1.16E+10
1.58E+00	1.24E+10	1.24E+10	1.24E+10	1.24E+10	1.24E+10	1.24E+10	1.25E+10
2.00E+00	2.61E+09	2.61E+09	2.61E+09	2.61E+09	2.61E+09	2.61E+09	2.61E+09
2.40E+00	1.52E+09	1.52E+09	1.52E+09	1.52E+09	1.52E+09	1.52E+09	1.53E+09
2.80E+00	2.00E+08	2.00E+08	2.00E+08	1.99E+08	1.98E+08	1.98E+08	1.97E+08
3.25E+00	1.22E+07	1.22E+07	1.22E+07	1.22E+07	1.22E+07	1.22E+07	1.22E+07
3.75E+00	2.25E+04	2.25E+04	2.25E+04	2.24E+04	2.24E+04	2.24E+04	2.24E+04
4.25E+00	1.29E+04	1.29E+04	1.29E+04	1.29E+04	1.29E+04	1.29E+04	1.29E+04
4.75E+00	7.41E+03	7.41E+03	7.40E+03	7.40E+03	7.40E+03	7.40E+03	7.39E+03
5.50E+00	6.64E+03	6.63E+03	6.63E+03	6.63E+03	6.62E+03	6.62E+03	6.62E+03
0 total	2.95E+14	3.55E+12	3.54E+12	3.54E+12	3.54E+12	3.53E+12	3.53E+12
0 mev/sec	2.51E+13	1.73E+11	1.73E+11	1.73E+11	1.73E+11	1.73E+11	1.73E+11

0 actinide energy release rates, mev/watt-sec
basis = single reactor assembly

0

emean	time after discharge						
(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	3.38E+08	7.08E+06	7.07E+06	7.06E+06	7.05E+06	7.04E+06	7.03E+06
3.00E-02	6.35E+07	5.06E+05	5.06E+05	5.06E+05	5.06E+05	5.06E+05	5.06E+05
5.50E-02	1.53E+08	2.89E+06	2.89E+06	2.89E+06	2.89E+06	2.89E+06	2.89E+06
8.50E-02	1.12E+09	3.49E+06	3.49E+06	3.49E+06	3.49E+06	3.49E+06	3.49E+06
1.20E-01	1.63E+09	1.00E+06	1.00E+06	1.00E+06	1.00E+06	1.00E+06	1.00E+06
1.70E-01	7.33E+07	9.47E+05	9.47E+05	9.47E+05	9.47E+05	9.47E+05	9.47E+05
3.00E-01	2.15E+09	1.20E+07	1.20E+07	1.20E+07	1.20E+07	1.20E+07	1.20E+07
6.50E-01	2.39E+08	4.73E+06	4.73E+06	4.73E+06	4.73E+06	4.73E+06	4.73E+06
1.13E+00	5.12E+08	3.27E+06	3.27E+06	3.27E+06	3.27E+06	3.27E+06	3.27E+06
1.58E+00	4.90E+06	4.90E+06	4.90E+06	4.90E+06	4.90E+06	4.90E+06	4.90E+06
2.00E+00	1.31E+06	1.31E+06	1.31E+06	1.31E+06	1.31E+06	1.31E+06	1.31E+06
2.40E+00	9.14E+05	9.15E+05	9.15E+05	9.15E+05	9.15E+05	9.15E+05	9.15E+05
2.80E+00	1.40E+05	1.40E+05	1.40E+05	1.39E+05	1.39E+05	1.38E+05	1.38E+05

	3.25E+00	9.91E+03	9.91E+03	9.92E+03	9.92E+03	9.92E+03	9.92E+03	9.92E+03
	3.75E+00	2.11E+01	2.11E+01	2.10E+01	2.10E+01	2.10E+01	2.10E+01	2.10E+01
	4.25E+00	1.37E+01	1.37E+01	1.37E+01	1.37E+01	1.37E+01	1.37E+01	1.37E+01
	4.75E+00	8.80E+00	8.80E+00	8.79E+00	8.79E+00	8.79E+00	8.78E+00	8.78E+00
	5.50E+00	9.13E+00	9.12E+00	9.12E+00	9.11E+00	9.11E+00	9.11E+00	9.10E+00
0	total	6.28E+09	4.32E+07	4.32E+07	4.32E+07	4.32E+07	4.32E+07	4.32E+07
0	gamma watts	4.03E+00	2.77E-02	2.77E-02	2.77E-02	2.77E-02	2.77E-02	2.77E-02

1 page 132

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pb210	2.31E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06
bi210	5.88E-04	5.89E-04	5.89E-04	5.89E-04	5.89E-04	5.89E-04	5.89E-04
bi211	1.28E+02	1.28E+02	1.28E+02	1.28E+02	1.28E+02	1.28E+02	1.28E+02
bi212	5.41E+00	5.42E+00	5.40E+00	5.38E+00	5.35E+00	5.32E+00	5.28E+00
bi213	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00
bi214	2.67E-01	2.67E-01	2.67E-01	2.67E-01	2.67E-01	2.67E-01	2.67E-01
po210	7.25E+02	7.18E+02	7.16E+02	7.16E+02	7.16E+02	7.16E+02	7.16E+02
po211	5.05E-01	5.07E-01	5.07E-01	5.07E-01	5.07E-01	5.07E-01	5.07E-01
po212	2.77E+01	2.78E+01	2.77E+01	2.75E+01	2.74E+01	2.72E+01	2.70E+01
po213	2.97E+02	2.97E+02	2.97E+02	2.97E+02	2.97E+02	2.97E+02	2.97E+02
po214	2.38E+03	2.38E+03	2.38E+03	2.38E+03	2.38E+03	2.38E+03	2.38E+03
po215	1.80E+02	1.81E+02	1.81E+02	1.81E+02	1.81E+02	1.81E+02	1.81E+02
po216	2.16E+01	2.17E+01	2.16E+01	2.15E+01	2.14E+01	2.12E+01	2.11E+01
po218	1.13E+03	1.13E+03	1.13E+03	1.13E+03	1.13E+03	1.13E+03	1.13E+03
at217	1.93E+02	1.93E+02	1.93E+02	1.93E+02	1.93E+02	1.93E+02	1.93E+02
rn218	4.03E-10	1.59E-14	6.23E-19	2.45E-23	9.25E-28	.00E+00	.00E+00
rn219	1.43E+02	1.44E+02	1.44E+02	1.44E+02	1.44E+02	1.44E+02	1.44E+02
rn220	1.71E+01	1.72E+01	1.71E+01	1.70E+01	1.69E+01	1.68E+01	1.67E+01
rn222	8.26E+02	8.26E+02	8.27E+02	8.27E+02	8.27E+02	8.27E+02	8.27E+02
fr221	1.41E+02	1.41E+02	1.41E+02	1.41E+02	1.41E+02	1.41E+02	1.41E+02
fr223	5.44E-05	5.44E-05	5.44E-05	5.44E-05	5.44E-05	5.44E-05	5.44E-05
ra222	3.11E-10	1.23E-14	4.82E-19	1.90E-23	7.51E-28	.00E+00	.00E+00
ra223	8.31E+01	8.32E+01	8.32E+01	8.32E+01	8.32E+01	8.32E+01	8.32E+01
ra224	1.21E+01	1.21E+01	1.21E+01	1.20E+01	1.20E+01	1.19E+01	1.18E+01
ra226	4.83E+02	4.83E+02	4.83E+02	4.83E+02	4.83E+02	4.83E+02	4.83E+02
ac225	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02
ac227	6.12E-01	6.12E-01	6.12E-01	6.12E-01	6.12E-01	6.12E-01	6.12E-01
ac228	2.36E-11	2.37E-11	2.37E-11	2.37E-11	2.37E-11	2.37E-11	2.37E-11
th226	2.81E-10	1.11E-14	4.35E-19	1.71E-23	6.78E-28	.00E+00	.00E+00
th227	9.16E+01	9.18E+01	9.18E+01	9.18E+01	9.18E+01	9.18E+01	9.18E+01
th228	1.02E+01	1.02E+01	1.02E+01	1.01E+01	1.01E+01	9.99E+00	9.93E+00
th229	5.90E+01	5.90E+01	5.90E+01	5.90E+01	5.91E+01	5.91E+01	5.91E+01
th230	5.79E+02	5.79E+02	5.79E+02	5.79E+02	5.79E+02	5.80E+02	5.80E+02
th232	3.01E-04	3.01E-04	3.01E-04	3.01E-04	3.01E-04	3.02E-04	3.02E-04
pa231	4.88E+01	4.88E+01	4.88E+01	4.88E+01	4.88E+01	4.88E+01	4.88E+01
u230	2.21E-10	8.71E-15	3.42E-19	1.35E-23	5.34E-28	.00E+00	.00E+00
u231	1.41E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	9.50E+00	9.42E+00	9.35E+00	9.27E+00	9.20E+00	9.12E+00	9.05E+00
u233	1.51E+02	1.51E+02	1.51E+02	1.51E+02	1.51E+02	1.51E+02	1.51E+02
u234	7.61E+03	7.61E+03	7.61E+03	7.61E+03	7.61E+03	7.61E+03	7.61E+03
u235	1.25E+02	1.25E+02	1.25E+02	1.25E+02	1.25E+02	1.25E+02	1.25E+02
u236	1.11E+03	1.11E+03	1.11E+03	1.11E+03	1.11E+03	1.11E+03	1.11E+03
u238	8.31E+02	8.31E+02	8.31E+02	8.31E+02	8.31E+02	8.31E+02	8.31E+02
np235	2.46E-08	1.45E-08	8.50E-09	4.99E-09	2.93E-09	1.72E-09	1.01E-09

np237	3.30E+03	3.30E+03	3.30E+03	3.30E+03	3.30E+03	3.30E+03	3.30E+03
pu236	1.45E-01	1.19E-01	9.74E-02	7.99E-02	6.56E-02	5.38E-02	4.42E-02
pu237	5.51E-08	5.16E-10	4.84E-12	4.53E-14	4.25E-16	3.98E-18	3.73E-20
pu238	8.06E+04	8.01E+04	7.96E+04	7.90E+04	7.85E+04	7.80E+04	7.75E+04

1 page 133

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pu239	3.82E+05	3.82E+05	3.82E+05	3.82E+05	3.82E+05	3.82E+05	3.82E+05
pu240	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
pu241	1.81E-01	1.74E-01	1.67E-01	1.60E-01	1.54E-01	1.48E-01	1.42E-01
pu242	8.46E-02	8.46E-02	8.46E-02	8.46E-02	8.46E-02	8.46E-02	8.46E-02
pu244	3.95E-24	3.95E-24	3.96E-24	3.96E-24	3.96E-24	3.97E-24	3.97E-24
am239	1.13E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	1.78E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	1.04E+04	1.05E+04	1.05E+04	1.05E+04	1.05E+04	1.05E+04	1.04E+04
am242m	5.79E-02	5.77E-02	5.74E-02	5.72E-02	5.70E-02	5.67E-02	5.65E-02
am243	5.18E-02	5.18E-02	5.18E-02	5.18E-02	5.18E-02	5.18E-02	5.18E-02
cm241	1.58E-12	2.54E-15	4.09E-18	6.59E-21	1.06E-23	1.71E-26	2.74E-29
cm242	1.16E+02	4.48E+01	2.52E+01	1.98E+01	1.82E+01	1.78E+01	1.76E+01
cm243	1.28E-09	1.25E-09	1.23E-09	1.20E-09	1.18E-09	1.16E-09	1.13E-09
cm244	3.54E-03	3.43E-03	3.33E-03	3.22E-03	3.12E-03	3.02E-03	2.93E-03
cm245	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08
cm246	1.82E-10	1.82E-10	1.82E-10	1.82E-10	1.82E-10	1.82E-10	1.82E-10
cm247	6.96E-18	6.96E-18	6.96E-18	6.96E-18	6.96E-18	6.96E-18	6.96E-18
cm248	5.64E-19	5.64E-19	5.64E-19	5.64E-19	5.64E-19	5.64E-19	5.64E-19
bk249	9.66E-25	5.00E-25	2.58E-25	1.34E-25	6.91E-26	3.58E-26	1.85E-26
cf249	6.63E-20	6.63E-20	6.62E-20	6.61E-20	6.60E-20	6.59E-20	6.58E-20
cf250	2.44E-22	2.33E-22	2.23E-22	2.13E-22	2.04E-22	1.95E-22	1.87E-22
cf251	6.64E-26	6.63E-26	6.63E-26	6.63E-26	6.62E-26	6.62E-26	6.61E-26
cf252	4.18E-27	3.37E-27	2.69E-27	2.16E-27	1.74E-27	1.40E-27	1.12E-27
0 total	5.44E+05	5.43E+05	5.43E+05	5.42E+05	5.41E+05	5.41E+05	5.40E+05

1 page 134

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
th230	1.49E-02	1.49E-02	1.49E-02	1.49E-02	1.49E-02	1.49E-02	1.49E-02
pa231	6.11E-03	6.12E-03	6.12E-03	6.12E-03	6.12E-03	6.12E-03	6.12E-03
u232	5.84E-04	5.79E-04	5.74E-04	5.70E-04	5.65E-04	5.60E-04	5.56E-04
u234	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01
u235	1.53E+00	1.53E+00	1.53E+00	1.53E+00	1.53E+00	1.53E+00	1.53E+00
u236	1.67E+02	1.67E+02	1.67E+02	1.67E+02	1.67E+02	1.67E+02	1.67E+02
u237	1.29E-09	6.37E-15	6.12E-15	5.88E-15	5.64E-15	5.42E-15	5.21E-15
u238	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05
u239	9.65E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	7.21E-08	7.21E-08	7.21E-08	7.21E-08	7.21E-08	7.21E-08	7.21E-08
np238	1.96E-08	1.69E-14	1.69E-14	1.68E-14	1.67E-14	1.66E-14	1.66E-14
np239	1.97E-05	5.37E-13	5.37E-13	5.37E-13	5.37E-13	5.37E-13	5.37E-13
pu236	9.79E-03	8.04E-03	6.59E-03	5.41E-03	4.44E-03	3.64E-03	2.99E-03
pu238	1.49E+04	1.48E+04	1.47E+04	1.46E+04	1.45E+04	1.44E+04	1.43E+04

pu239	2.04E+02	2.04E+02	2.04E+02	2.04E+02	2.04E+02	2.04E+02	2.04E+02
pu240	3.32E+05	3.32E+05	3.32E+05	3.32E+05	3.32E+05	3.32E+05	3.32E+05
pu241	6.51E-03	6.26E-03	6.01E-03	5.77E-03	5.55E-03	5.33E-03	5.12E-03
pu242	6.59E+01	6.59E+01	6.59E+01	6.59E+01	6.59E+01	6.59E+01	6.59E+01
pu243	5.37E-12	3.01E-28	3.01E-28	3.01E-28	3.01E-28	3.01E-28	3.01E-28
pu244	9.45E-19	9.46E-19	9.46E-19	9.47E-19	9.48E-19	9.48E-19	9.49E-19
am241	4.02E+00	4.02E+00	4.02E+00	4.02E+00	4.02E+00	4.02E+00	4.02E+00
am242m	2.75E-01	2.74E-01	2.73E-01	2.72E-01	2.71E-01	2.70E-01	2.68E-01
am242	1.93E-03	2.98E-04	2.96E-04	2.95E-04	2.94E-04	2.93E-04	2.92E-04
am243	2.39E-04	2.39E-04	2.38E-04	2.38E-04	2.38E-04	2.38E-04	2.38E-04
am244	4.81E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm242	5.78E+02	2.24E+02	1.26E+02	9.87E+01	9.10E+01	8.86E+01	8.77E+01
cm243	2.78E-11	2.72E-11	2.67E-11	2.62E-11	2.56E-11	2.51E-11	2.46E-11
cm244	4.62E-01	4.48E-01	4.34E-01	4.20E-01	4.07E-01	3.94E-01	3.82E-01
cm245	3.23E-09	3.23E-09	3.23E-09	3.23E-09	3.23E-09	3.23E-09	3.23E-09
cm246	6.56E-06	6.56E-06	6.55E-06	6.55E-06	6.55E-06	6.55E-06	6.55E-06
cm248	9.23E-12	9.23E-12	9.23E-12	9.23E-12	9.23E-12	9.23E-12	9.23E-12
cm250	2.07E-24	2.07E-24	2.07E-24	2.07E-24	2.07E-24	2.07E-24	2.07E-24
bk249	5.32E-21	2.75E-21	1.42E-21	7.37E-22	3.81E-22	1.97E-22	1.02E-22
cf249	4.03E-20	4.03E-20	4.03E-20	4.02E-20	4.02E-20	4.01E-20	4.00E-20
cf250	2.04E-17	1.95E-17	1.87E-17	1.79E-17	1.71E-17	1.64E-17	1.56E-17
cf252	1.46E-20	1.18E-20	9.45E-21	7.60E-21	6.11E-21	4.91E-21	3.95E-21
0 total	4.65E+05	4.65E+05	4.64E+05	4.64E+05	4.64E+05	4.64E+05	4.64E+05
0 total	1.01E+06	1.01E+06	1.01E+06	1.01E+06	1.01E+06	1.00E+06	1.00E+06

1 page 135

alpha-n neutron source spectrum as a function of time
(using reaction spectra for uranium dioxide)

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
2	3.00E+00 - 6.43E+00	1.055E+05	1.052E+05	1.051E+05	1.050E+05	1.049E+05	1.047E+05	1.046E+05
3	1.85E+00 - 3.00E+00	2.981E+05	2.978E+05	2.975E+05	2.972E+05	2.969E+05	2.966E+05	2.964E+05
4	1.40E+00 - 1.85E+00	8.002E+04	7.997E+04	7.990E+04	7.982E+04	7.974E+04	7.967E+04	7.959E+04
5	9.00E-01 - 1.40E+00	4.500E+04	4.498E+04	4.494E+04	4.490E+04	4.485E+04	4.481E+04	4.477E+04
6	4.00E-01 - 9.00E-01	1.307E+04	1.306E+04	1.305E+04	1.304E+04	1.303E+04	1.302E+04	1.300E+04
7	1.00E-01 - 4.00E-01	2.042E+03	2.042E+03	2.040E+03	2.038E+03	2.036E+03	2.034E+03	2.032E+03
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00

26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		5.437E+05	5.431E+05	5.425E+05	5.420E+05	5.414E+05	5.409E+05	5.404E+05

1 page 136

spontaneous fission neutron source spectrum as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	8.884E+03	8.874E+03	8.870E+03	8.867E+03	8.864E+03	8.862E+03	8.860E+03
2	3.00E+00 - 6.43E+00	9.737E+04	9.727E+04	9.722E+04	9.719E+04	9.716E+04	9.714E+04	9.711E+04
3	1.85E+00 - 3.00E+00	1.061E+05	1.060E+05	1.059E+05	1.059E+05	1.059E+05	1.059E+05	1.058E+05
4	1.40E+00 - 1.85E+00	6.013E+04	6.007E+04	6.004E+04	6.002E+04	6.000E+04	5.999E+04	5.997E+04
5	9.00E-01 - 1.40E+00	8.253E+04	8.245E+04	8.241E+04	8.238E+04	8.236E+04	8.234E+04	8.231E+04
6	4.00E-01 - 9.00E-01	9.196E+04	9.187E+04	9.182E+04	9.179E+04	9.176E+04	9.174E+04	9.172E+04
7	1.00E-01 - 4.00E-01	1.816E+04	1.814E+04	1.813E+04	1.812E+04	1.812E+04	1.811E+04	1.811E+04
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		4.651E+05	4.647E+05	4.644E+05	4.643E+05	4.642E+05	4.640E+05	4.639E+05

1 page 137

total (alpha-n plus spon. fission) neutron source spectrum as a function of time
(using reaction spectra for uranium dioxide)

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	8.884E+03	8.874E+03	8.870E+03	8.867E+03	8.864E+03	8.862E+03	8.860E+03
2	3.00E+00 - 6.43E+00	2.028E+05	2.025E+05	2.023E+05	2.022E+05	2.020E+05	2.019E+05	2.018E+05
3	1.85E+00 - 3.00E+00	4.042E+05	4.038E+05	4.035E+05	4.031E+05	4.028E+05	4.025E+05	4.022E+05
4	1.40E+00 - 1.85E+00	1.401E+05	1.400E+05	1.399E+05	1.398E+05	1.397E+05	1.397E+05	1.396E+05
5	9.00E-01 - 1.40E+00	1.275E+05	1.274E+05	1.273E+05	1.273E+05	1.272E+05	1.271E+05	1.271E+05
6	4.00E-01 - 9.00E-01	1.050E+05	1.049E+05	1.049E+05	1.048E+05	1.048E+05	1.048E+05	1.047E+05
7	1.00E-01 - 4.00E-01	2.020E+04	2.018E+04	2.017E+04	2.016E+04	2.015E+04	2.015E+04	2.014E+04
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00

11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		1.009E+06	1.008E+06	1.007E+06	1.006E+06	1.006E+06	1.005E+06	1.004E+06

1

1 * gamma sources determined *

0case applies the following photon data base
master photon library
in binary mode

0 the sources include photons of nuclides for...

light elements
actinides
fission products

1 gamma source spectrum for gamma lines (sas2)

0 1826.25 day time of the requested nuclides

0

energy interval in mev			photons / second	mev / second
1.0000E-02	to	5.0000E-02	4.8566E+12	1.4570E+11
5.0000E-02	to	1.0000E-01	1.3861E+12	1.0396E+11
1.0000E-01	to	2.0000E-01	8.0684E+11	1.2103E+11
2.0000E-01	to	3.0000E-01	2.6815E+11	6.7037E+10
3.0000E-01	to	4.0000E-01	3.2436E+11	1.1353E+11
4.0000E-01	to	6.0000E-01	1.6178E+11	8.0890E+10
6.0000E-01	to	8.0000E-01	5.7639E+12	4.0347E+12
8.0000E-01	to	1.0000E+00	7.2819E+10	6.5537E+10
1.0000E+00	to	1.3300E+00	7.9188E+10	9.2254E+10
1.3300E+00	to	1.6600E+00	4.5611E+10	6.8188E+10
1.6600E+00	to	2.0000E+00	8.4544E+09	1.5472E+10
2.0000E+00	to	2.5000E+00	3.6691E+09	8.2556E+09
2.5000E+00	to	3.0000E+00	2.0964E+08	5.7652E+08
3.0000E+00	to	4.0000E+00	1.2362E+07	4.3268E+07
4.0000E+00	to	5.0000E+00	1.9958E+04	8.9810E+04
5.0000E+00	to	6.5000E+00	7.8676E+03	4.5239E+04
6.5000E+00	to	8.0000E+00	1.5184E+03	1.1009E+04
8.0000E+00	to	1.0000E+01	3.1876E+02	2.8689E+03
0 totals			1.3778E+13	4.9172E+12

0

0 total energy from nuclides with spectrum data = 4.9172E+12

0 total energy from nuclides with no spectrum data = 1.3011E+06

1

0 .results on logical unit no. 71, position 2, for time step 6, subcase12. (run position 1, case position 2)
title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2

0 .terminated logical unit no. 71 with zero flag record.

1 * normal termination of execution *

```
1          primary module access and input record ( scale driver - 95/03/29 - 09:06:37 )
-    module sas2h     will be called
       SAS2H: Far-Field Crit based on B&W 15x15, 3.00wt%, 20gwd/mtu 40% H2O/ 8% UO2
       44group     latticecell
       '
       '  mixtures of tuff infinite slabs:
       arbm-ftuff  2.6344 14 0 0 0 1001 1.055 8016 40.755 11023 0.570 12000 0.354
                              13027 4.434 14000 20.193 19000 1.370 20000 1.439
                              26000 0.494 92235 0.567 92234 0.007 92236 0.136
                              92238 28.593 93237 0.033 1 1.0 538   end
       kr-83      1 0 1-20 538 end
       kr-85      1 0 1-20 538 end
       sr-90      1 0 1-20 538 end
        y-89      1 0 1-20 538 end
       mo-95      1 0 1-20 538 end
       zr-93      1 0 1-20 538 end
       zr-94      1 0 1-20 538 end
       zr-95      1 0 1-20 538 end
       nb-94      1 0 1-20 538 end
       tc-99      1 0 1-20 538 end
       rh-103     1 0 1-20 538 end
       rh-105     1 0 1-20 538 end
       ru-101     1 0 1-20 538 end
       ru-106     1 0 1-20 538 end
       pd-105     1 0 1-20 538 end
       pd-108     1 0 1-20 538 end
       ag-109     1 0 1-20 538 end
       sb-124     1 0 1-20 538 end
       xe-131     1 0 1-20 538 end
       xe-132     1 0 1-20 538 end
       xe-135     1 0 1-20 538 end
       xe-136     1 0 1-20 538 end
       cs-134     1 0 1-20 538 end
       cs-135     1 0 1-20 538 end
       cs-137     1 0 1-20 538 end
       ba-136     1 0 1-20 538 end
       la-139     1 0 1-20 538 end
       pr-141     1 0 1-20 538 end
       pr-143     1 0 1-20 538 end
       ce-144     1 0 1-20 538 end
       nd-143     1 0 1-20 538 end
       nd-145     1 0 1-20 538 end
       pm-147     1 0 1-20 538 end
       pm-148     1 0 1-20 538 end
       nd-147     1 0 1-20 538 end
       sm-147     1 0 1-20 538 end
       sm-149     1 0 1-20 538 end
       sm-150     1 0 1-20 538 end
       sm-151     1 0 1-20 538 end
       sm-152     1 0 1-20 538 end
       gd-155     1 0 1-20 538 end
       eu-153     1 0 1-20 538 end
       eu-154     1 0 1-20 538 end
       eu-155     1 0 1-20 538 end
       arbm-tuff1  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                              13027 6.130 14000 27.919 19000 1.894 20000 1.989
                              26000 0.683 2 1.0 323.    end
       arbm-tuff2  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                              13027 6.130 14000 27.919 19000 1.894 20000 1.989
                              26000 0.683 3 1.0 323.    end
```

```
      '
      ' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
      end comp
      '
      ' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
      '
      '  fuel-pin-cell geometry:
      '
      symmslabcell  340.  280. 1 3 281. 2 end
      '
      ' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
      '
      '
      '  assembly and cycle parameters:
      '
      npin/assm=1 fuelngth=280. ncycles=3 nlib/cyc=10 volfueltot=1.1494E7
      printlevel=6 inplevel=0 end
      power=1.468E-3 burn=9.13125e6 down=0 temkcyc=398
      power=9.79E-4 burn=9.13125e6 down=0. temkcyc=372
      power=4.89E-4 burn=9.13125e6 down=9.13125e6 temkcyc=346
         end
1   ooooooooooo    rrrrrrrrrrrr    iiiiiiiiiiii     gggggggggg    eeeeeeeeeeeee   nn          nn   sssssssssss
   oooooooooooo   rrrrrrrrrrrrr   iiiiiiiiiiii    gggggggggggg   eeeeeeeeeeeee   nnn         nn  sssssssssssss
   oo         oo   rr         rr        ii         gg         gg   ee              nnnn        nn  ss         ss
   oo         oo   rr         rr        ii         gg              ee              nn nn       nn  ss
   oo         oo   rr         rr        ii         gg              ee              nn   nn     nn  ss
   oo         oo   rrrrrrrrrrrrr        ii         gg    gggggg    eeeeeeeee       nn    nn    nn  sssssssssss
   oo         oo   rrrrrrrrrrrr         ii         gg    gggggg    eeeeeeeee       nn     nn   nn   sssssssssss
   oo         oo   rr       rr          ii         gg         gg   ee              nn      nn  nn             ss
   oo         oo   rr        rr         ii         gg         gg   ee              nn       nn nn             ss
   oo         oo   rr         rr        ii         gg         gg   ee              nn        nnnn  ss         ss
   oooooooooooo   rr          rr  iiiiiiiiiiii    gggggggggggg   eeeeeeeeeeeee   nn         nnn  sssssssssssss
    ooooooooooo   rr          rr  iiiiiiiiiiii     gggggggggg    eeeeeeeeeeeee   nn          nn   sssssssssss
0

   dddddddddddd      aaaaaaaaa     vv          vv  iiiiiiiiiiii     sssssssssss
   dddddddddddddd    aaaaaaaaaaa    vv          vv  iiiiiiiiiiii    sssssssssssss
   dd         dd   aa         aa   vv          vv       ii         ss         ss
   dd         dd   aa         aa   vv          vv       ii         ss
   dd         dd   aa         aa   vv          vv       ii         ss
   dd         dd   aaaaaaaaaaaaa   vv          vv       ii         sssssssssssss
   dd         dd   aaaaaaaaaaaaa    vv        vv        ii          sssssssssssss
   dd         dd   aa         aa      vv     vv         ii                     ss
   dd         dd   aa         aa       vv   vv          ii                     ss
   dd         dd   aa         aa        vv vv           ii         ss         ss
   dddddddddddddd   aa         aa         vvv       iiiiiiiiiiii    sssssssssssss
   dddddddddddd    aa         aa          v        iiiiiiiiiiii     sssssssssss
0

      0000000       88888888888                //   22222222222     99999999999                //   99999999999     666666666666
     000000000     8888888888888              //   2222222222222   9999999999999              //   9999999999999   6666666666666
    00       00    88         88             //   22         22   99         99             //   99         99   66
   00         00   88         88            //                22   99         99            //   99         99   66
   00         00   88         88           //                 22   99         99           //   99         99   66
   00         00    88888888888           //                22    9999999999999          //    9999999999999   666666666666
   00         00    88888888888          //               22      999999999999          //     999999999999   6666666666666
   00         00   88         88        //              22                   99        //                   99   66         66
   00         00   88         88       //             22                    99       //                   99   66         66
    00       00    88         88      //            22                      99      //                   99   66         66
     000000000     8888888888888    //            2222222222222   9999999999999    //            9999999999999   6666666666666
```



****
****
****
***** *****
***** program verification information *****
***** *****
***** code system: scale version: 4.3 *****
***** *****
****
****
***** *****
***** *****
***** program: o0o004 *****
***** *****
***** creation date: 03/13/96 *****
***** *****
***** library: /usr1/ornl/Scale/bin *****
***** *****
***** *****
***** test code: origens *****
***** *****
***** version: 3.0 *****
***** *****
***** jobname: davis *****
***** *****
***** date of execution: 08/29/96 *****
***** *****

```
                        *****    time of execution:  10:30:26                                    *****
                        *****                                                                    *****
                        *****                                                                    *****
                        ************************************************************************************
                        ************************************************************************************
                        ************************************************************************************
1
0       -1q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0         dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0             short-lived split test fraction, qxn =    9.1188E-04
0             half-norm of matrix used, axn =    7.0000E+00
0             4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
0        1q array has     20 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        4q array has      1 entries.
0       54q array has     12 entries.
1library information...

          cross-section data taken from position number  1 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *          made from modified card-image origen-s libraries of scale 4.2       *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *               photon libraries use an 18-energy-group structure              *
          *              the photon data are from the master photon data base,           *
          *               produced to include bremsstrahlung from uo2 matrix             *
          *                                                                              *
          *         see information above this box (if present) for later updates        *
          *                                                                              *
          ********************************************************************************
```

```
         *                                                                                *
0        ********************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/29/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ********************************************************************************
1
    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                light elements        page    1
0                                          nuclide concentrations, grams
                                           basis =single reactor assembly
             initial  1E-18 d
    na 23   1.73E+05  1.73E+05
    al 27   1.35E+06  1.35E+06
  total     1.52E+06  1.52E+06
1
    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page    2
0                                          nuclide concentrations, grams
                                           basis =single reactor assembly
             initial  1E-18 d
     u234   2.12E+03  2.12E+03
     u235   1.72E+05  1.72E+05
     u236   4.12E+04  4.12E+04
     u238   8.66E+06  8.66E+06
    np237   9.99E+03  9.99E+03
  total     8.88E+06  8.88E+06
1   sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page    3
        power=    .00mw, burnup=   1340.mwd, flux= 1.07E+08n/cm**2-sec
0                                         basis =
0   (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                  initial      228281. d      456563. d      684844. d      913125. d      913125. d
    productions   1.048802E+06   1.049862E+06   1.050874E+06   1.051840E+06   1.052761E+06   1.052761E+06
    absorptions   8.541503E+05   8.561003E+05   8.577262E+05   8.591095E+05   8.603048E+05   8.603048E+05
    k infinity    1.227889E+00   1.226330E+00   1.225186E+00   1.224337E+00   1.223707E+00   1.223707E+00
0                  initial      228281. d      456563. d      684844. d      913125. d      913125. d
    actinide
    absorptions   8.502696E+05   8.508874E+05   8.514795E+05   8.520488E+05   8.525959E+05   8.525959E+05
    non-actinide
    abs. fracs.   4.543424E-03   6.089091E-03   7.282853E-03   8.218706E-03   8.960545E-03   8.960545E-03
1   sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products        page    4
0                                fraction of total absorption rate
        power=    .00mw, burnup=   1340.mwd, flux= 1.07E+08n/cm**2-sec
0              initial 228281. d 456563. d 684844. d 913125. d 913125. d

    sm149      .00E+00  1.34E-03  2.35E-03  3.10E-03  3.67E-03  3.67E-03
    eu151      .00E+00  4.09E-05  9.12E-05  1.40E-04  1.88E-04  1.88E-04
    nd143      .00E+00  3.36E-05  6.71E-05  1.00E-04  1.34E-04  1.34E-04
    gd155      .00E+00  2.33E-05  4.39E-05  6.20E-05  7.78E-05  7.78E-05
    rh103      .00E+00  1.57E-05  3.13E-05  4.69E-05  6.26E-05  6.26E-05
    xe131      .00E+00  1.09E-05  2.18E-05  3.26E-05  4.34E-05  4.34E-05
    cd113      .00E+00  1.35E-05  2.49E-05  3.46E-05  4.29E-05  4.29E-05
    cs133      .00E+00  8.49E-06  1.69E-05  2.54E-05  3.38E-05  3.38E-05
    gd157      .00E+00  1.38E-05  2.27E-05  2.86E-05  3.25E-05  3.25E-05
    sm147      .00E+00  6.28E-06  1.26E-05  1.88E-05  2.51E-05  2.51E-05
    tc 99      .00E+00  6.26E-06  1.25E-05  1.87E-05  2.48E-05  2.48E-05
    nd145      .00E+00  4.79E-06  9.56E-06  1.43E-05  1.90E-05  1.90E-05
```

sm151	.00E+00	1.66E-05	1.67E-05	1.67E-05	1.68E-05	1.68E-05
mo 95	.00E+00	3.34E-06	6.66E-06	9.97E-06	1.33E-05	1.33E-05
sm152	.00E+00	2.60E-06	5.26E-06	7.96E-06	1.07E-05	1.07E-05
kr 83	.00E+00	2.05E-06	4.10E-06	6.13E-06	8.15E-06	8.15E-06
cs135	.00E+00	1.90E-06	3.79E-06	5.68E-06	7.56E-06	7.56E-06
ru101	.00E+00	1.50E-06	2.99E-06	4.48E-06	5.97E-06	5.97E-06
pr141	.00E+00	1.40E-06	2.79E-06	4.17E-06	5.55E-06	5.55E-06
eu153	.00E+00	1.31E-06	2.62E-06	3.94E-06	5.26E-06	5.26E-06
la139	.00E+00	1.14E-06	2.27E-06	3.41E-06	4.53E-06	4.53E-06
sm150	.00E+00	3.38E-07	1.24E-06	2.55E-06	4.18E-06	4.18E-06
ba137	.00E+00	5.04E-07	1.04E-06	1.58E-06	2.12E-06	2.12E-06
pd105	.00E+00	4.93E-07	9.89E-07	1.49E-06	1.99E-06	1.99E-06
zr 93	.00E+00	4.73E-07	9.43E-07	1.41E-06	1.88E-06	1.88E-06
i129	.00E+00	3.52E-07	7.04E-07	1.06E-06	1.41E-06	1.41E-06
nd144	.00E+00	3.40E-07	6.80E-07	1.02E-06	1.36E-06	1.36E-06
mo 97	.00E+00	2.59E-07	5.18E-07	7.75E-07	1.03E-06	1.03E-06
ag109	.00E+00	1.96E-07	4.14E-07	6.52E-07	9.11E-07	9.11E-07
xe135	.00E+00	8.36E-07	8.34E-07	8.33E-07	8.32E-07	8.14E-07
zr 91	.00E+00	1.22E-07	2.43E-07	3.64E-07	4.84E-07	4.84E-07
y 89	.00E+00	1.16E-07	2.32E-07	3.47E-07	4.62E-07	4.62E-07
ru102	.00E+00	1.05E-07	2.10E-07	3.15E-07	4.19E-07	4.19E-07
ce142	.00E+00	9.43E-08	1.88E-07	2.82E-07	3.75E-07	3.75E-07
nd148	.00E+00	9.16E-08	1.83E-07	2.74E-07	3.65E-07	3.65E-07
nd146	.00E+00	7.63E-08	1.52E-07	2.28E-07	3.04E-07	3.04E-07
pd108	.00E+00	6.53E-08	1.35E-07	2.08E-07	2.85E-07	2.85E-07
ba138	.00E+00	6.50E-08	1.30E-07	1.94E-07	2.58E-07	2.58E-07
in115	.00E+00	6.37E-08	1.27E-07	1.91E-07	2.55E-07	2.55E-07
ce140	.00E+00	6.08E-08	1.21E-07	1.82E-07	2.42E-07	2.42E-07
xe132	.00E+00	5.56E-08	1.11E-07	1.66E-07	2.22E-07	2.22E-07
pd107	.00E+00	3.74E-08	7.65E-08	1.17E-07	1.59E-07	1.59E-07
mo 98	.00E+00	3.89E-08	7.77E-08	1.16E-07	1.55E-07	1.55E-07
mo100	.00E+00	3.72E-08	7.43E-08	1.11E-07	1.48E-07	1.48E-07
xe134	.00E+00	3.60E-08	7.19E-08	1.08E-07	1.43E-07	1.43E-07
zr 92	.00E+00	2.93E-08	5.85E-08	8.75E-08	1.16E-07	1.16E-07
pm147	.00E+00	1.02E-07	1.02E-07	1.01E-07	1.01E-07	1.01E-07
i127	.00E+00	2.42E-08	4.85E-08	7.29E-08	9.74E-08	9.74E-08
zr 96	.00E+00	2.40E-08	4.79E-08	7.17E-08	9.54E-08	9.54E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 5
0 fraction of total absorption rate
power= .00mw, burnup= 1340.mwd, flux= 1.07E+08n/cm**2-sec
0 initial 228281. d 456563. d 684844. d 913125. d 913125. d

gd152	.00E+00	4.47E-09	2.16E-08	5.16E-08	9.42E-08	9.42E-08
ru104	.00E+00	2.29E-08	4.58E-08	6.87E-08	9.18E-08	9.18E-08
nd150	.00E+00	2.04E-08	4.08E-08	6.11E-08	8.14E-08	8.14E-08
xe136	.00E+00	1.95E-08	3.89E-08	5.82E-08	7.75E-08	7.75E-08
br 81	.00E+00	1.48E-08	2.96E-08	4.44E-08	5.90E-08	5.90E-08
rb 85	.00E+00	1.44E-08	2.88E-08	4.31E-08	5.74E-08	5.74E-08
eu155	.00E+00	5.57E-08	5.61E-08	5.65E-08	5.70E-08	5.70E-08
zr 94	.00E+00	1.27E-08	2.52E-08	3.78E-08	5.03E-08	5.03E-08
zr 90	.00E+00	1.08E-08	2.23E-08	3.37E-08	4.50E-08	4.50E-08
cd111	.00E+00	9.59E-09	1.95E-08	2.97E-08	4.01E-08	4.01E-08
te130	.00E+00	8.83E-09	1.76E-08	2.64E-08	3.52E-08	3.52E-08
sm154	.00E+00	8.64E-09	1.73E-08	2.60E-08	3.47E-08	3.47E-08
rb 87	.00E+00	8.38E-09	1.67E-08	2.50E-08	3.33E-08	3.33E-08
se 77	.00E+00	5.84E-09	1.17E-08	1.75E-08	2.32E-08	2.32E-08
eu152	.00E+00	3.89E-09	8.66E-09	1.33E-08	1.78E-08	1.78E-08
pd106	.00E+00	4.31E-09	8.70E-09	1.32E-08	1.77E-08	1.77E-08
ru 99	.00E+00	1.03E-09	4.05E-09	9.04E-09	1.60E-08	1.60E-08
kr 84	.00E+00	4.00E-09	7.98E-09	1.19E-08	1.59E-08	1.59E-08

se 79	.00E+00	2.99E-09	5.97E-09	8.93E-09	1.19E-08	1.19E-08
sb121	.00E+00	2.92E-09	5.85E-09	8.78E-09	1.17E-08	1.17E-08
gd156	.00E+00	1.78E-09	4.04E-09	6.70E-09	9.74E-09	9.74E-09
sb123	.00E+00	2.37E-09	4.75E-09	7.13E-09	9.51E-09	9.51E-09
kr 86	.00E+00	2.17E-09	4.33E-09	6.48E-09	8.62E-09	8.62E-09
te128	.00E+00	1.96E-09	3.92E-09	5.89E-09	7.85E-09	7.85E-09
sr 90	.00E+00	6.22E-09	6.20E-09	6.18E-09	6.16E-09	6.16E-09
dy161	.00E+00	1.28E-09	2.67E-09	4.18E-09	5.80E-09	5.80E-09
se 80	.00E+00	1.40E-09	2.79E-09	4.18E-09	5.57E-09	5.57E-09
te125	.00E+00	1.24E-09	2.48E-09	3.74E-09	4.99E-09	4.99E-09
tb159	.00E+00	8.55E-10	1.74E-09	2.66E-09	3.62E-09	3.62E-09
cd112	.00E+00	8.05E-10	1.62E-09	2.45E-09	3.29E-09	3.29E-09
gd154	.00E+00	2.01E-10	8.04E-10	1.81E-09	3.21E-09	3.21E-09
li 6	.00E+00	7.93E-10	1.58E-09	2.36E-09	3.14E-09	3.14E-09
rh105	.00E+00	3.06E-09	3.09E-09	3.12E-09	3.15E-09	3.13E-09
sn117	.00E+00	6.36E-10	1.28E-09	1.92E-09	2.57E-09	2.57E-09
gd158	.00E+00	3.80E-10	9.40E-10	1.62E-09	2.38E-09	2.38E-09
sn119	.00E+00	5.19E-10	1.04E-09	1.56E-09	2.08E-09	2.08E-09
sn115	.00E+00	4.74E-10	9.49E-10	1.42E-09	1.90E-09	1.90E-09
sr 88	.00E+00	4.00E-10	7.98E-10	1.19E-09	1.59E-09	1.59E-09
ba135	.00E+00	9.52E-11	3.80E-10	8.53E-10	1.51E-09	1.51E-09
cd114	.00E+00	3.11E-10	6.71E-10	1.07E-09	1.51E-09	1.51E-09
cs137	.00E+00	1.39E-09	1.39E-09	1.39E-09	1.38E-09	1.38E-09
pd110	.00E+00	2.97E-10	6.06E-10	9.27E-10	1.26E-09	1.26E-09
se 82	.00E+00	2.71E-10	5.41E-10	8.10E-10	1.08E-09	1.08E-09
ru100	.00E+00	6.65E-11	2.59E-10	5.77E-10	1.02E-09	1.02E-09
pr143	.00E+00	9.76E-10	9.73E-10	9.71E-10	9.69E-10	9.68E-10
dy162	.00E+00	1.75E-10	3.81E-10	6.16E-10	8.80E-10	8.80E-10
sn126	.00E+00	2.17E-10	4.35E-10	6.54E-10	8.75E-10	8.75E-10
dy164	.00E+00	1.62E-10	3.62E-10	5.98E-10	8.70E-10	8.70E-10
eu154	.00E+00	2.15E-10	4.27E-10	6.39E-10	8.52E-10	8.52E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 6
0 fraction of total absorption rate
power= .00mw, burnup= 1340.mwd, flux= 1.07E+08n/cm**2-sec
0 initial 228281. d 456563. d 684844. d 913125. d 913125. d

se 78	.00E+00	2.08E-10	4.15E-10	6.21E-10	8.28E-10	8.28E-10
xe133	.00E+00	7.32E-10	7.30E-10	7.29E-10	7.28E-10	7.28E-10
ba134	.00E+00	4.37E-11	1.74E-10	3.89E-10	6.90E-10	6.90E-10
nd142	.00E+00	4.34E-11	1.73E-10	3.89E-10	6.89E-10	6.89E-10
sn124	.00E+00	1.70E-10	3.41E-10	5.12E-10	6.83E-10	6.83E-10
sm148	.00E+00	4.08E-11	1.61E-10	3.59E-10	6.36E-10	6.36E-10
ce141	.00E+00	5.79E-10	5.78E-10	5.76E-10	5.75E-10	5.75E-10
as 75	.00E+00	1.24E-10	2.47E-10	3.70E-10	4.93E-10	4.93E-10
pd104	.00E+00	2.94E-11	1.17E-10	2.64E-10	4.68E-10	4.68E-10
in113	.00E+00	9.04E-11	1.84E-10	2.78E-10	3.73E-10	3.73E-10
pm149	.00E+00	3.54E-10	3.53E-10	3.53E-10	3.52E-10	3.49E-10
nd147	.00E+00	3.49E-10	3.48E-10	3.47E-10	3.46E-10	3.45E-10
ba136	.00E+00	6.98E-11	1.47E-10	2.30E-10	3.21E-10	3.21E-10
sn118	.00E+00	6.98E-11	1.40E-10	2.10E-10	2.80E-10	2.80E-10
nb 93	.00E+00	1.48E-11	6.01E-11	1.36E-10	2.42E-10	2.42E-10
cd116	.00E+00	5.88E-11	1.18E-10	1.77E-10	2.36E-10	2.36E-10
sn122	.00E+00	5.73E-11	1.15E-10	1.72E-10	2.30E-10	2.30E-10
ce144	.00E+00	2.20E-10	2.19E-10	2.19E-10	2.18E-10	2.18E-10
mo 96	.00E+00	2.55E-11	7.04E-11	1.35E-10	2.18E-10	2.18E-10
kr 85	.00E+00	2.09E-10	2.08E-10	2.07E-10	2.07E-10	2.07E-10
dy163	.00E+00	3.93E-11	8.67E-11	1.42E-10	2.05E-10	2.05E-10
kr 82	.00E+00	3.94E-11	8.58E-11	1.39E-10	1.99E-10	1.99E-10
sn120	.00E+00	4.32E-11	8.64E-11	1.30E-10	1.73E-10	1.73E-10
xe130	.00E+00	2.63E-11	6.13E-11	1.05E-10	1.57E-10	1.57E-10

ge 73	.00E+00	3.35E-11	6.69E-11	1.00E-10	1.34E-10	1.34E-10
ru103	.00E+00	1.31E-10	1.31E-10	1.32E-10	1.32E-10	1.32E-10
br 79	.00E+00	7.73E-12	3.09E-11	6.93E-11	1.23E-10	1.23E-10
cs134	.00E+00	2.32E-11	4.60E-11	6.88E-11	9.15E-11	9.15E-11
cd110	.00E+00	4.04E-12	1.66E-11	3.86E-11	7.08E-11	7.08E-11
xe129	.00E+00	4.38E-12	1.75E-11	3.94E-11	6.99E-11	6.99E-11
ag107	.00E+00	4.12E-12	1.67E-11	3.81E-11	6.87E-11	6.87E-11
te126	.00E+00	8.30E-12	2.13E-11	3.90E-11	6.15E-11	6.15E-11
zr 95	.00E+00	6.17E-11	6.15E-11	6.14E-11	6.12E-11	6.12E-11
nb 95	.00E+00	5.64E-11	5.62E-11	5.61E-11	5.60E-11	5.60E-11
y 91	.00E+00	5.20E-11	5.18E-11	5.17E-11	5.15E-11	5.15E-11
ge 76	.00E+00	1.22E-11	2.44E-11	3.65E-11	4.86E-11	4.86E-11
pm151	.00E+00	4.00E-11	4.00E-11	4.01E-11	4.01E-11	3.82E-11
gd160	.00E+00	7.98E-12	1.64E-11	2.53E-11	3.46E-11	3.46E-11
ba140	.00E+00	1.73E-11	1.73E-11	1.73E-11	1.72E-11	1.71E-11
ho165	.00E+00	2.72E-12	6.04E-12	9.97E-12	1.45E-11	1.45E-11
sm153	.00E+00	1.40E-11	1.41E-11	1.42E-11	1.42E-11	1.38E-11
eu156	.00E+00	1.26E-11	1.28E-11	1.31E-11	1.33E-11	1.33E-11
sr 89	.00E+00	1.11E-11	1.11E-11	1.11E-11	1.10E-11	1.10E-11
ru106	.00E+00	9.69E-12	9.88E-12	1.01E-11	1.02E-11	1.02E-11
te124	.00E+00	1.45E-12	2.97E-12	4.56E-12	6.23E-12	6.23E-12
ce143	.00E+00	6.40E-12	6.38E-12	6.36E-12	6.35E-12	6.10E-12
y 90	.00E+00	5.91E-12	5.89E-12	5.87E-12	5.85E-12	5.85E-12
sr 87	.00E+00	1.40E-12	2.81E-12	4.23E-12	5.66E-12	5.66E-12
sb125	.00E+00	5.56E-12	5.59E-12	5.61E-12	5.64E-12	5.64E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 7
0 fraction of total absorption rate
power= .00mw, burnup= 1340.mwd, flux= 1.07E+08n/cm**2-sec
0 initial 228281. d 456563. d 684844. d 913125. d 913125. d

la140	.00E+00	5.67E-12	5.66E-12	5.65E-12	5.64E-12	5.64E-12
mo 99	.00E+00	4.85E-12	4.84E-12	4.83E-12	4.82E-12	4.71E-12
dy160	.00E+00	2.54E-13	9.18E-13	2.00E-12	3.52E-12	3.52E-12
nb 94	.00E+00	8.05E-13	1.60E-12	2.39E-12	3.19E-12	3.19E-12
sr 86	.00E+00	4.70E-13	1.09E-12	1.86E-12	2.78E-12	2.78E-12
te127m	.00E+00	2.73E-12	2.74E-12	2.76E-12	2.77E-12	2.77E-12
xe128	.00E+00	2.17E-13	7.41E-13	1.57E-12	2.71E-12	2.71E-12
ge 74	.00E+00	6.74E-13	1.35E-12	2.02E-12	2.69E-12	2.69E-12
i131	.00E+00	2.49E-12	2.49E-12	2.49E-12	2.48E-12	2.47E-12
kr 87	.00E+00	8.30E-12	8.27E-12	8.24E-12	8.22E-12	2.40E-12
ge 72	.00E+00	4.53E-13	9.08E-13	1.36E-12	1.82E-12	1.82E-12
se 76	.00E+00	2.80E-13	5.95E-13	9.46E-13	1.33E-12	1.33E-12
pm148m	.00E+00	1.30E-12	1.31E-12	1.31E-12	1.32E-12	1.31E-12
sn116	.00E+00	6.37E-14	2.53E-13	5.68E-13	1.01E-12	1.01E-12
te129m	.00E+00	6.56E-13	6.57E-13	6.57E-13	6.58E-13	6.58E-13
er166	.00E+00	8.39E-14	2.10E-13	3.76E-13	5.82E-13	5.82E-13
te122	.00E+00	2.84E-14	1.09E-13	2.41E-13	4.24E-13	4.24E-13
ag111	.00E+00	1.22E-13	1.26E-13	1.30E-13	1.33E-13	1.32E-13
eu157	.00E+00	1.11E-13	1.14E-13	1.16E-13	1.19E-13	1.08E-13
kr 80	.00E+00	1.96E-14	4.10E-14	6.49E-14	9.20E-14	9.20E-14
cd115m	.00E+00	8.70E-14	8.74E-14	8.77E-14	8.81E-14	8.80E-14
pm148	.00E+00	5.10E-14	5.10E-14	5.10E-14	5.10E-14	5.04E-14
cs136	.00E+00	2.29E-14	2.51E-14	2.72E-14	2.94E-14	2.93E-14
sn125	.00E+00	1.09E-14	1.09E-14	1.09E-14	1.10E-14	1.09E-14
ru105	.00E+00	1.12E-14	1.13E-14	1.14E-14	1.15E-14	8.29E-15
te123	.00E+00	1.49E-15	3.29E-15	5.50E-15	8.23E-15	8.23E-15
er167	.00E+00	5.97E-16	2.01E-15	4.40E-15	7.94E-15	7.94E-15
be 9	.00E+00	1.58E-15	3.15E-15	4.71E-15	6.27E-15	6.27E-15
sn123	.00E+00	3.82E-15	3.82E-15	3.82E-15	3.82E-15	3.82E-15
tb160	.00E+00	9.56E-16	1.83E-15	2.72E-15	3.64E-15	3.63E-15

te132	.00E+00	3.49E-15	3.49E-15	3.48E-15	3.48E-15	3.41E-15
rb 88	.00E+00	4.67E-15	4.65E-15	4.64E-15	4.62E-15	2.90E-15
i135	.00E+00	3.68E-15	3.67E-15	3.67E-15	3.66E-15	2.88E-15
li 7	.00E+00	6.11E-16	1.22E-15	1.83E-15	2.43E-15	2.43E-15
sb126	.00E+00	1.40E-15	1.69E-15	1.99E-15	2.29E-15	2.28E-15
pr142	.00E+00	5.77E-16	1.15E-15	1.72E-15	2.29E-15	2.11E-15
sb124	.00E+00	8.16E-16	8.58E-16	9.00E-16	9.41E-16	9.40E-16
in117m	.00E+00	7.66E-16	7.72E-16	7.78E-16	7.84E-16	6.59E-16
i130	.00E+00	3.65E-16	4.67E-16	5.69E-16	6.70E-16	5.92E-16
cd108	.00E+00	2.44E-17	9.59E-17	2.50E-16	5.26E-16	5.26E-16
sn114	.00E+00	1.47E-17	5.95E-17	1.34E-16	2.40E-16	2.40E-16
rb 86	.00E+00	1.22E-16	1.56E-16	1.90E-16	2.23E-16	2.22E-16
te134	.00E+00	2.12E-15	2.11E-15	2.11E-15	2.10E-15	2.18E-16
in117	.00E+00	2.25E-16	2.27E-16	2.29E-16	2.31E-16	1.97E-16
dy165	.00E+00	9.59E-17	1.15E-16	1.34E-16	1.53E-16	7.98E-17
ge 75	.00E+00	3.13E-17	3.12E-17	3.12E-17	3.11E-17	1.02E-17
cs134m	.00E+00	4.29E-18	8.56E-18	1.28E-17	1.70E-17	9.91E-18
cd118	.00E+00	4.39E-17	4.41E-17	4.42E-17	4.44E-17	6.77E-18
cd109	.00E+00	1.93E-19	3.12E-19	4.31E-19	5.49E-19	5.49E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 8
0 fraction of total absorption rate
power= .00mw, burnup= 1340.mwd, flux= 1.07E+08n/cm**2-sec
0 initial 228281. d 456563. d 684844. d 913125. d 913125. d

in119m	.00E+00	1.10E-17	1.10E-17	1.10E-17	1.11E-17	6.41E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 9
power= 1.468E-03mw, burnup=1.3405E+03mwd, flux= 1.07E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	228281. d	456563. d	684844. d	913125. d	913125. d
h 1	.00E+00	2.05E-05	4.09E-05	6.14E-05	8.18E-05	8.18E-05
h 2	.00E+00	6.08E-08	1.21E-07	1.82E-07	2.43E-07	2.43E-07
h 3	.00E+00	1.29E-11	1.31E-11	1.33E-11	1.36E-11	1.36E-11
h 4	.00E+00	1.89E-35	1.92E-35	1.95E-35	1.98E-35	.00E+00
he 3	.00E+00	4.41E-10	8.87E-10	1.33E-09	1.76E-09	1.76E-09
he 4	.00E+00	3.38E-06	6.77E-06	1.01E-05	1.35E-05	1.35E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	.00E+00	4.06E-07	8.13E-07	1.22E-06	1.62E-06	1.62E-06
ne 21	.00E+00	3.32E-12	1.33E-11	2.98E-11	5.30E-11	5.30E-11
ne 22	.00E+00	2.66E-09	5.33E-09	8.00E-09	1.07E-08	1.07E-08
ne 23	.00E+00	2.71E-15	2.71E-15	2.70E-15	2.70E-15	2.70E-30
na 22	.00E+00	1.60E-11	1.59E-11	1.59E-11	1.59E-11	1.59E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	.00E+00	1.34E-08	1.34E-08	1.34E-08	1.34E-08	1.21E-08
na 24m	.00E+00	2.21E-15	2.21E-15	2.21E-15	2.21E-15	2.21E-30
na 25	.00E+00	8.34E-27	2.36E-26	4.57E-26	7.47E-26	7.47E-41
mg 24	.00E+00	3.48E-03	6.97E-03	1.04E-02	1.39E-02	1.39E-02
mg 25	.00E+00	7.62E-10	2.16E-09	4.18E-09	6.83E-09	6.83E-09
mg 26	.00E+00	6.07E-08	1.21E-07	1.82E-07	2.43E-07	2.43E-07
mg 27	.00E+00	8.09E-13	8.08E-13	8.08E-13	8.07E-13	3.66E-17
mg 28	.00E+00	5.94E-25	5.94E-25	5.93E-25	5.92E-25	5.49E-25
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	.00E+00	9.97E-11	9.97E-11	9.96E-11	9.96E-11	1.01E-25
al 29	.00E+00	2.89E-25	1.15E-24	2.60E-24	4.61E-24	2.54E-30
al 30	.00E+00	1.20E-36	9.61E-36	3.24E-35	7.67E-35	.00E+00
si 28	.00E+00	1.01E-02	2.03E-02	3.04E-02	4.05E-02	4.05E-02
si 29	.00E+00	2.95E-09	1.18E-08	2.65E-08	4.71E-08	4.71E-08
si 30	.00E+00	9.18E-16	7.34E-15	2.48E-14	5.86E-14	5.86E-14
si 31	.00E+00	2.38E-28	1.90E-27	6.42E-27	1.52E-26	8.32E-27

	si 32	.00E+00	6.21E-35	7.19E-34	2.83E-33	7.29E-33	7.29E-33
	totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0	flux		1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E-07
1							

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 10
power= 1.468E-03mw, burnup=1.3405E+03mwd, flux= 1.07E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	228281. d	456563. d	684844. d	913125. d	913125. d
	he 4	.00E+00	7.58E-02	1.80E-01	3.05E-01	4.49E-01	4.49E-01
	pb206	.00E+00	3.69E-06	2.83E-05	9.05E-05	2.03E-04	2.03E-04
	pb207	.00E+00	2.82E-06	1.15E-05	2.61E-05	4.65E-05	4.65E-05
	pb208	.00E+00	1.77E-07	6.93E-07	1.54E-06	2.73E-06	2.73E-06
	pb209	.00E+00	5.36E-13	2.10E-12	4.63E-12	8.08E-12	8.13E-12
	pb210	.00E+00	5.84E-07	2.14E-06	4.45E-06	7.31E-06	7.31E-06
	pb211	.00E+00	9.38E-13	1.87E-12	2.80E-12	3.71E-12	3.71E-12
	pb212	.00E+00	9.71E-13	1.91E-12	2.84E-12	3.76E-12	3.76E-12
	pb214	.00E+00	1.34E-12	4.90E-12	1.02E-11	1.67E-11	1.62E-11
	bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	bi209	.00E+00	2.09E-07	1.65E-06	5.49E-06	1.28E-05	1.28E-05
	bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	bi210	.00E+00	3.60E-10	1.32E-09	2.74E-09	4.50E-09	4.50E-09
	bi211	.00E+00	5.56E-14	1.11E-13	1.66E-13	2.20E-13	2.21E-13
	bi212	.00E+00	9.21E-14	1.81E-13	2.69E-13	3.57E-13	3.57E-13
	bi213	.00E+00	1.25E-13	4.91E-13	1.08E-12	1.89E-12	1.83E-12
	bi214	.00E+00	9.91E-13	3.64E-12	7.55E-12	1.24E-11	1.22E-11
	po210	.00E+00	9.93E-09	3.65E-08	7.56E-08	1.24E-07	1.24E-07
	po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	po211	.00E+00	6.15E-19	1.23E-18	1.83E-18	2.43E-18	2.44E-18
	po212	.00E+00	4.84E-24	9.51E-24	1.41E-23	1.87E-23	1.88E-23
	po213	.00E+00	1.88E-22	7.38E-22	1.63E-21	2.84E-21	2.75E-21
	po214	.00E+00	1.36E-19	5.01E-19	1.04E-18	1.71E-18	1.67E-18
	po215	.00E+00	7.71E-19	1.54E-18	2.30E-18	3.05E-18	3.05E-18
	po216	.00E+00	3.68E-18	7.23E-18	1.07E-17	1.42E-17	1.42E-17
	po218	.00E+00	1.54E-13	5.67E-13	1.18E-12	1.93E-12	1.93E-12
	rn218	.00E+00	5.40E-30	1.06E-29	1.58E-29	2.09E-29	2.08E-29
	rn219	.00E+00	1.72E-15	3.42E-15	5.11E-15	6.79E-15	6.79E-15
	rn220	.00E+00	1.41E-15	2.77E-15	4.12E-15	5.46E-15	5.46E-15
	rn222	.00E+00	2.74E-10	1.01E-09	2.09E-09	3.43E-09	3.43E-09
	ra222	.00E+00	5.86E-27	1.15E-26	1.71E-26	2.27E-26	2.26E-26
	ra223	.00E+00	4.28E-10	8.53E-10	1.28E-09	1.69E-09	1.69E-09
	ra224	.00E+00	8.02E-12	1.58E-11	2.34E-11	3.11E-11	3.11E-11
	ra225	.00E+00	5.85E-11	2.29E-10	5.06E-10	8.83E-10	8.83E-10
	ra226	.00E+00	4.19E-05	1.54E-04	3.19E-04	5.25E-04	5.25E-04
	ra228	.00E+00	1.32E-12	2.64E-12	3.97E-12	5.30E-12	5.30E-12
	ac225	.00E+00	3.95E-11	1.55E-10	3.42E-10	5.96E-10	5.96E-10
	ac227	.00E+00	2.98E-07	5.93E-07	8.87E-07	1.18E-06	1.18E-06
	ac228	.00E+00	1.61E-16	3.23E-16	4.84E-16	6.46E-16	6.46E-16
	th226	.00E+00	2.86E-25	5.62E-25	8.35E-25	1.11E-24	1.10E-24
	th227	.00E+00	6.91E-10	1.38E-09	2.06E-09	2.74E-09	2.74E-09
	th228	.00E+00	1.53E-09	3.01E-09	4.47E-09	5.93E-09	5.93E-09
	th229	.00E+00	1.14E-05	4.46E-05	9.84E-05	1.72E-04	1.72E-04
	th230	.00E+00	1.59E-02	3.18E-02	4.76E-02	6.34E-02	6.34E-02
	th231	.00E+00	3.04E-09	3.06E-09	3.08E-09	3.10E-09	3.09E-09
	th232	.00E+00	3.23E-03	6.46E-03	9.70E-03	1.29E-02	1.29E-02
	th233	.00E+00	1.09E-14	2.17E-14	3.26E-14	4.34E-14	6.23E-16
	th234	.00E+00	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
	pa231	.00E+00	4.48E-04	8.93E-04	1.33E-03	1.77E-03	1.77E-03
	pa232	.00E+00	2.79E-12	5.56E-12	8.30E-12	1.10E-11	1.05E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 11
power= 1.468E-03mw, burnup=1.3405E+03mwd, flux= 1.07E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	228281. d	456563. d	684844. d	913125. d	913125. d
pa233	.00E+00	1.46E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	.00E+00	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	.00E+00	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	2.77E-22	5.45E-22	8.09E-22	1.07E-21	1.07E-21
u231	.00E+00	2.47E-18	4.92E-18	7.36E-18	9.78E-18	9.62E-18
u232	.00E+00	5.58E-08	1.10E-07	1.63E-07	2.16E-07	2.16E-07
u233	.00E+00	8.51E-03	1.70E-02	2.54E-02	3.38E-02	3.38E-02
u234	9.06E+00	9.07E+00	9.10E+00	9.12E+00	9.14E+00	9.14E+00
u235	7.30E+02	7.29E+02	7.27E+02	7.25E+02	7.24E+02	7.24E+02
u236	1.74E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	.00E+00	1.18E-06	1.18E-06	1.18E-06	1.18E-06	1.17E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	.00E+00	1.16E-07	1.16E-07	1.16E-07	1.16E-07	2.06E-09
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	1.40E-45
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	3.30E-12	3.30E-12	3.29E-12	3.29E-12	3.29E-12
np236m	.00E+00	7.85E-13	7.84E-13	7.83E-13	7.82E-13	7.29E-13
np236	.00E+00	4.65E-08	9.27E-08	1.39E-07	1.85E-07	1.85E-07
np237	4.22E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	.00E+00	5.67E-07	5.66E-07	5.65E-07	5.65E-07	5.48E-07
np239	.00E+00	1.68E-05	1.68E-05	1.68E-05	1.68E-05	1.64E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	.00E+00	1.25E-15	1.25E-15	1.25E-15	1.25E-15	2.70E-16
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	.00E+00	4.26E-10	4.25E-10	4.25E-10	4.25E-10	4.25E-10
pu237	.00E+00	3.51E-14	3.88E-14	4.23E-14	4.56E-14	4.55E-14
pu238	.00E+00	8.51E-03	8.57E-03	8.56E-03	8.55E-03	8.55E-03
pu239	.00E+00	1.12E+00	2.21E+00	3.27E+00	4.31E+00	4.31E+00
pu240	.00E+00	1.01E-03	3.92E-03	8.56E-03	1.47E-02	1.47E-02
pu241	.00E+00	1.55E-07	6.01E-07	1.31E-06	2.26E-06	2.26E-06
pu242	.00E+00	2.44E-10	2.94E-09	1.22E-08	3.25E-08	3.25E-08
pu243	.00E+00	1.95E-19	2.34E-18	9.69E-18	2.59E-17	1.88E-17
pu244	.00E+00	8.66E-40	6.78E-37	3.00E-35	4.22E-34	4.22E-34
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	1.26E-22	8.08E-22	2.23E-21	4.41E-21	3.86E-21
am240	.00E+00	5.77E-20	3.70E-19	1.02E-18	2.02E-18	1.96E-18
am241	.00E+00	1.20E-06	7.72E-06	2.13E-05	4.22E-05	4.22E-05
am242m	.00E+00	9.98E-11	9.07E-10	2.87E-09	6.09E-09	6.09E-09
am242	.00E+00	1.53E-14	1.02E-13	2.86E-13	5.71E-13	5.25E-13
am243	.00E+00	1.61E-13	3.32E-12	1.75E-11	5.41E-11	5.41E-11
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	4.58E-22	9.44E-21	4.96E-20	1.54E-19	1.31E-19
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	3.41E-25	2.26E-24	6.35E-24	1.27E-23	1.26E-23
cm242	.00E+00	3.10E-12	2.06E-11	5.77E-11	1.15E-10	1.15E-10
cm243	.00E+00	2.64E-17	1.75E-16	4.91E-16	9.79E-16	9.79E-16
cm244	.00E+00	7.20E-18	1.48E-16	7.79E-16	2.41E-15	2.41E-15

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 12
power= 1.468E-03mw, burnup=1.3405E+03mwd, flux= 1.07E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

```
              charge 228281. d 456563. d 684844. d 913125. d 913125. d
     cm245    .00E+00  3.16E-22  1.36E-20  1.11E-19  4.67E-19  4.67E-19
     cm246    .00E+00  6.24E-26  5.57E-24  6.93E-23  3.92E-22  3.92E-22
     cm247    .00E+00  2.12E-31  3.92E-29  7.50E-28  5.76E-27  5.76E-27
     cm248    .00E+00  7.12E-36  2.72E-33  7.92E-32  8.23E-31  8.23E-31
     cm249    .00E+00   .00E+00   .00E+00   .00E+00  7.78E-42  1.78E-42
     cm250    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              1.07E+08  1.07E+08  1.07E+08  1.07E+08  1.07E-07
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number  2 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *        see information above this box (if present) for later updates         *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                  8/29/1996    date library was produced
0                       1697    total number of nuclides in library
                         689    number of light-element nuclides
```

```
                      129    number of actinide nuclides
                      879    number of fission product nuclides
0                    7993    number of nonzero off-diagonal matrix elements
0       ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                  page   13
        power=    .00mw, burnup=   2681.mwd, flux= 9.84E+07n/cm**2-sec
0                                  basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.147176E+06   1.148034E+06   1.148847E+06   1.149617E+06   1.150344E+06   1.150344E+06
     absorptions   9.285851E+05   9.296731E+05   9.306356E+05   9.314987E+05   9.322818E+05   9.322817E+05
     k infinity    1.235402E+00   1.234879E+00   1.234476E+00   1.234158E+00   1.233901E+00   1.233902E+00
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   9.209394E+05   9.214599E+05   9.219582E+05   9.224346E+05   9.228896E+05   9.228896E+05
     non-actinide
     abs. fracs.   8.233726E-03   8.834422E-03   9.324193E-03   9.730697E-03   1.007444E-02   1.007432E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              fission products          page   14
0                              fraction of total absorption rate
        power=    .00mw, burnup=   2681.mwd, flux= 9.84E+07n/cm**2-sec
0               initial ******* d ******* d ******* d ******* d ******* d

     sm149     3.72E-03  4.14E-03  4.46E-03  4.71E-03  4.89E-03  4.89E-03
     eu151     1.90E-04  2.38E-04  2.84E-04  3.29E-04  3.74E-04  3.74E-04
     nd143     1.35E-04  1.68E-04  2.02E-04  2.35E-04  2.68E-04  2.68E-04
     gd155     7.90E-05  9.30E-05  1.05E-04  1.16E-04  1.26E-04  1.26E-04
     rh103     6.24E-05  7.79E-05  9.35E-05  1.09E-04  1.25E-04  1.25E-04
     xe131     4.31E-05  5.38E-05  6.45E-05  7.51E-05  8.58E-05  8.58E-05
     cs133     3.35E-05  4.18E-05  5.01E-05  5.84E-05  6.67E-05  6.67E-05
     cd113     4.35E-05  5.06E-05  5.66E-05  6.18E-05  6.63E-05  6.63E-05
     sm147     2.48E-05  3.10E-05  3.72E-05  4.33E-05  4.94E-05  4.94E-05
     tc 99     2.46E-05  3.06E-05  3.67E-05  4.27E-05  4.87E-05  4.87E-05
     gd157     3.30E-05  3.57E-05  3.76E-05  3.91E-05  4.04E-05  4.04E-05
     nd145     1.90E-05  2.37E-05  2.84E-05  3.31E-05  3.78E-05  3.78E-05
     mo 95     1.32E-05  1.65E-05  1.97E-05  2.30E-05  2.62E-05  2.62E-05
     sm152     1.06E-05  1.34E-05  1.62E-05  1.90E-05  2.19E-05  2.19E-05
     sm151     1.70E-05  1.70E-05  1.70E-05  1.71E-05  1.71E-05  1.71E-05
     kr 83     8.23E-06  1.03E-05  1.23E-05  1.43E-05  1.63E-05  1.63E-05
     cs135     7.52E-06  9.39E-06  1.13E-05  1.31E-05  1.50E-05  1.50E-05
     sm150     4.19E-06  6.06E-06  8.10E-06  1.03E-05  1.26E-05  1.26E-05
     ru101     5.87E-06  7.33E-06  8.79E-06  1.02E-05  1.17E-05  1.17E-05
     pr141     5.59E-06  6.97E-06  8.36E-06  9.74E-06  1.11E-05  1.11E-05
     eu153     5.25E-06  6.57E-06  7.89E-06  9.22E-06  1.06E-05  1.06E-05
     la139     4.57E-06  5.70E-06  6.83E-06  7.96E-06  9.09E-06  9.09E-06
     ba137     2.14E-06  2.69E-06  3.23E-06  3.77E-06  4.31E-06  4.31E-06
     pd105     1.98E-06  2.49E-06  3.00E-06  3.51E-06  4.02E-06  4.02E-06
     zr 93     1.86E-06  2.32E-06  2.78E-06  3.24E-06  3.69E-06  3.69E-06
      i129     1.42E-06  1.78E-06  2.13E-06  2.49E-06  2.85E-06  2.85E-06
     nd144     1.37E-06  1.71E-06  2.05E-06  2.39E-06  2.73E-06  2.73E-06
     ag109     9.01E-07  1.18E-06  1.47E-06  1.78E-06  2.11E-06  2.11E-06
     mo 97     1.04E-06  1.29E-06  1.55E-06  1.81E-06  2.06E-06  2.06E-06
     zr 91     4.87E-07  6.08E-07  7.28E-07  8.48E-07  9.68E-07  9.68E-07
      y 89     4.66E-07  5.82E-07  6.97E-07  8.12E-07  9.26E-07  9.26E-07
     ru102     4.23E-07  5.28E-07  6.33E-07  7.39E-07  8.44E-07  8.44E-07
     xe135     8.26E-07  8.44E-07  8.43E-07  8.43E-07  8.42E-07  7.83E-07
     ce142     3.79E-07  4.74E-07  5.68E-07  6.62E-07  7.55E-07  7.55E-07
     nd148     3.66E-07  4.57E-07  5.48E-07  6.38E-07  7.29E-07  7.29E-07
     pd108     2.81E-07  3.61E-07  4.44E-07  5.30E-07  6.20E-07  6.20E-07
     nd146     3.06E-07  3.83E-07  4.59E-07  5.34E-07  6.10E-07  6.10E-07
     ba138     2.62E-07  3.26E-07  3.91E-07  4.56E-07  5.21E-07  5.21E-07
```

in115	2.55E-07	3.19E-07	3.84E-07	4.48E-07	5.13E-07	5.13E-07
ce140	2.45E-07	3.06E-07	3.67E-07	4.27E-07	4.88E-07	4.88E-07
xe132	2.21E-07	2.76E-07	3.31E-07	3.86E-07	4.41E-07	4.41E-07
gd152	9.55E-08	1.51E-07	2.19E-07	2.99E-07	3.90E-07	3.90E-07
pd107	1.60E-07	2.04E-07	2.50E-07	2.96E-07	3.45E-07	3.45E-07
mo 98	1.53E-07	1.91E-07	2.29E-07	2.67E-07	3.05E-07	3.05E-07
mo100	1.48E-07	1.84E-07	2.21E-07	2.57E-07	2.94E-07	2.94E-07
xe134	1.45E-07	1.81E-07	2.17E-07	2.52E-07	2.88E-07	2.88E-07
zr 92	1.17E-07	1.46E-07	1.75E-07	2.04E-07	2.33E-07	2.33E-07
i127	9.70E-08	1.22E-07	1.46E-07	1.71E-07	1.96E-07	1.96E-07
zr 96	9.33E-08	1.16E-07	1.40E-07	1.63E-07	1.86E-07	1.86E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 15
0 fraction of total absorption rate
power= .00mw, burnup= 2681.mwd, flux= 9.84E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

ru104	9.16E-08	1.15E-07	1.38E-07	1.61E-07	1.84E-07	1.84E-07
nd150	8.14E-08	1.02E-07	1.22E-07	1.42E-07	1.62E-07	1.62E-07
xe136	7.82E-08	9.76E-08	1.17E-07	1.36E-07	1.56E-07	1.56E-07
br 81	5.89E-08	7.35E-08	8.81E-08	1.03E-07	1.17E-07	1.17E-07
rb 85	5.73E-08	7.16E-08	8.57E-08	9.99E-08	1.14E-07	1.14E-07
pm147	1.00E-07	1.00E-07	1.00E-07	1.00E-07	9.99E-08	9.99E-08
zr 94	4.99E-08	6.23E-08	7.46E-08	8.69E-08	9.92E-08	9.92E-08
zr 90	4.53E-08	5.67E-08	6.81E-08	7.95E-08	9.08E-08	9.08E-08
cd111	4.05E-08	5.14E-08	6.25E-08	7.39E-08	8.55E-08	8.55E-08
te130	3.56E-08	4.44E-08	5.33E-08	6.21E-08	7.10E-08	7.10E-08
sm154	3.49E-08	4.38E-08	5.26E-08	6.15E-08	7.04E-08	7.04E-08
rb 87	3.32E-08	4.14E-08	4.96E-08	5.78E-08	6.59E-08	6.59E-08
ru 99	1.59E-08	2.48E-08	3.56E-08	4.83E-08	6.30E-08	6.30E-08
eu155	5.68E-08	5.71E-08	5.75E-08	5.79E-08	5.84E-08	5.83E-08
se 77	2.35E-08	2.94E-08	3.52E-08	4.10E-08	4.68E-08	4.68E-08
pd106	1.76E-08	2.22E-08	2.68E-08	3.16E-08	3.64E-08	3.64E-08
eu152	1.80E-08	2.26E-08	2.70E-08	3.12E-08	3.54E-08	3.54E-08
kr 84	1.57E-08	1.96E-08	2.35E-08	2.74E-08	3.13E-08	3.13E-08
gd156	9.59E-09	1.29E-08	1.65E-08	2.03E-08	2.44E-08	2.44E-08
se 79	1.20E-08	1.50E-08	1.80E-08	2.10E-08	2.39E-08	2.39E-08
sb121	1.17E-08	1.46E-08	1.75E-08	2.04E-08	2.34E-08	2.34E-08
sb123	9.46E-09	1.18E-08	1.42E-08	1.66E-08	1.90E-08	1.90E-08
kr 86	8.70E-09	1.09E-08	1.30E-08	1.52E-08	1.73E-08	1.73E-08
te128	7.85E-09	9.81E-09	1.18E-08	1.37E-08	1.57E-08	1.57E-08
dy161	5.87E-09	7.61E-09	9.45E-09	1.14E-08	1.34E-08	1.34E-08
gd154	3.25E-09	5.05E-09	7.26E-09	9.87E-09	1.29E-08	1.29E-08
se 80	5.62E-09	7.02E-09	8.42E-09	9.81E-09	1.12E-08	1.12E-08
te125	4.99E-09	6.25E-09	7.52E-09	8.79E-09	1.01E-08	1.01E-08
tb159	3.61E-09	4.59E-09	5.60E-09	6.63E-09	7.70E-09	7.70E-09
cd112	3.31E-09	4.16E-09	5.03E-09	5.90E-09	6.79E-09	6.79E-09
li 6	3.18E-09	3.96E-09	4.74E-09	5.52E-09	6.29E-09	6.29E-09
sr 90	6.22E-09	6.21E-09	6.19E-09	6.17E-09	6.16E-09	6.16E-09
ba135	1.51E-09	2.36E-09	3.39E-09	4.61E-09	6.02E-09	6.02E-09
gd158	2.37E-09	3.18E-09	4.03E-09	4.92E-09	5.83E-09	5.83E-09
sn117	2.58E-09	3.24E-09	3.90E-09	4.57E-09	5.24E-09	5.24E-09
sn119	2.11E-09	2.63E-09	3.17E-09	3.70E-09	4.23E-09	4.23E-09
ru100	1.03E-09	1.59E-09	2.28E-09	3.08E-09	4.01E-09	4.01E-09
sn115	1.93E-09	2.41E-09	2.90E-09	3.38E-09	3.87E-09	3.87E-09
cd114	1.49E-09	1.95E-09	2.44E-09	2.94E-09	3.47E-09	3.47E-09
rh105	3.16E-09	3.19E-09	3.22E-09	3.24E-09	3.27E-09	3.20E-09
sr 88	1.60E-09	2.00E-09	2.39E-09	2.79E-09	3.18E-09	3.18E-09
nd142	6.98E-10	1.09E-09	1.56E-09	2.12E-09	2.77E-09	2.77E-09
ba134	6.91E-10	1.07E-09	1.53E-09	2.08E-09	2.71E-09	2.71E-09
pd110	1.25E-09	1.59E-09	1.94E-09	2.30E-09	2.68E-09	2.68E-09

sm148	6.37E-10	9.86E-10	1.41E-09	1.91E-09	2.49E-09	2.49E-09
dy164	8.81E-10	1.19E-09	1.53E-09	1.90E-09	2.30E-09	2.30E-09
dy162	8.82E-10	1.17E-09	1.49E-09	1.83E-09	2.20E-09	2.20E-09
se 82	1.09E-09	1.36E-09	1.63E-09	1.89E-09	2.16E-09	2.16E-09
pd104	4.62E-10	7.19E-10	1.03E-09	1.40E-09	1.83E-09	1.83E-09

0 fraction of total absorption rate

power= .00mw, burnup= 2681.mwd, flux= 9.84E+07n/cm**2-sec

	initial ******* d	******* d	******* d	******* d	******* d
sn126	8.85E-10	1.11E-09	1.34E-09	1.56E-09	1.79E-09	1.79E-09
eu154	8.59E-10	1.06E-09	1.28E-09	1.49E-09	1.70E-09	1.70E-09
se 78	8.29E-10	1.04E-09	1.24E-09	1.45E-09	1.65E-09	1.65E-09
cs137	1.38E-09	1.38E-09	1.38E-09	1.38E-09	1.38E-09	1.38E-09
sn124	6.75E-10	8.45E-10	1.02E-09	1.19E-09	1.36E-09	1.36E-09
as 75	4.93E-10	6.16E-10	7.39E-10	8.61E-10	9.83E-10	9.83E-10
nb 93	2.43E-10	3.79E-10	5.46E-10	7.43E-10	9.69E-10	9.69E-10
pr143	9.73E-10	9.72E-10	9.71E-10	9.69E-10	9.67E-10	9.67E-10
in113	3.72E-10	4.67E-10	5.63E-10	6.58E-10	7.55E-10	7.55E-10
ba136	3.20E-10	4.17E-10	5.21E-10	6.31E-10	7.48E-10	7.48E-10
mo 96	2.17E-10	3.18E-10	4.38E-10	5.77E-10	7.34E-10	7.34E-10
xe133	7.36E-10	7.36E-10	7.35E-10	7.34E-10	7.33E-10	7.32E-10
ce141	5.82E-10	5.82E-10	5.81E-10	5.80E-10	5.80E-10	5.79E-10
sn118	2.76E-10	3.45E-10	4.15E-10	4.85E-10	5.55E-10	5.55E-10
dy163	2.06E-10	2.76E-10	3.53E-10	4.37E-10	5.29E-10	5.29E-10
kr 82	2.00E-10	2.67E-10	3.39E-10	4.19E-10	5.04E-10	5.04E-10
br 79	1.23E-10	1.92E-10	2.76E-10	3.76E-10	4.90E-10	4.90E-10
cd116	2.33E-10	2.92E-10	3.51E-10	4.10E-10	4.69E-10	4.69E-10
sn122	2.32E-10	2.90E-10	3.49E-10	4.07E-10	4.66E-10	4.66E-10
xe130	1.59E-10	2.21E-10	2.92E-10	3.71E-10	4.59E-10	4.59E-10
sn120	1.73E-10	2.17E-10	2.61E-10	3.04E-10	3.48E-10	3.48E-10
pm149	3.53E-10	3.56E-10	3.56E-10	3.56E-10	3.55E-10	3.45E-10
nd147	3.41E-10	3.43E-10	3.42E-10	3.42E-10	3.41E-10	3.38E-10
cd110	7.14E-11	1.14E-10	1.68E-10	2.35E-10	3.15E-10	3.15E-10
ag107	6.94E-11	1.10E-10	1.60E-10	2.21E-10	2.92E-10	2.92E-10
xe129	7.01E-11	1.09E-10	1.58E-10	2.14E-10	2.80E-10	2.80E-10
ge 73	1.35E-10	1.69E-10	2.02E-10	2.36E-10	2.70E-10	2.70E-10
ce144	2.19E-10	2.19E-10	2.18E-10	2.18E-10	2.18E-10	2.18E-10
kr 85	2.08E-10	2.08E-10	2.07E-10	2.07E-10	2.07E-10	2.07E-10
te126	6.16E-11	8.89E-11	1.21E-10	1.58E-10	1.99E-10	1.99E-10
cs134	9.22E-11	1.13E-10	1.35E-10	1.58E-10	1.80E-10	1.80E-10
ru103	1.32E-10	1.33E-10	1.33E-10	1.33E-10	1.33E-10	1.33E-10
ge 76	4.88E-11	6.09E-11	7.29E-11	8.50E-11	9.70E-11	9.70E-11
gd160	3.46E-11	4.43E-11	5.44E-11	6.49E-11	7.58E-11	7.58E-11
zr 95	6.05E-11	6.05E-11	6.04E-11	6.03E-11	6.02E-11	6.01E-11
nb 95	5.59E-11	5.58E-11	5.57E-11	5.56E-11	5.56E-11	5.56E-11
y 91	5.21E-11	5.20E-11	5.19E-11	5.18E-11	5.16E-11	5.16E-11
ho165	1.45E-11	1.96E-11	2.53E-11	3.16E-11	3.84E-11	3.84E-11
pm151	3.86E-11	4.05E-11	4.05E-11	4.06E-11	4.06E-11	3.66E-11
ba140	1.72E-11	1.73E-11	1.73E-11	1.72E-11	1.72E-11	1.70E-11
eu156	1.34E-11	1.35E-11	1.37E-11	1.39E-11	1.41E-11	1.41E-11
dy160	3.50E-12	5.43E-12	7.81E-12	1.06E-11	1.39E-11	1.39E-11
te124	6.30E-12	8.05E-12	9.88E-12	1.18E-11	1.38E-11	1.38E-11
sm153	1.39E-11	1.43E-11	1.44E-11	1.45E-11	1.46E-11	1.36E-11
sr 87	5.70E-12	7.15E-12	8.60E-12	1.01E-11	1.15E-11	1.15E-11
sr 89	1.11E-11	1.11E-11	1.11E-11	1.11E-11	1.10E-11	1.10E-11
ru106	1.01E-11	1.03E-11	1.04E-11	1.06E-11	1.07E-11	1.07E-11
xe128	2.74E-12	4.18E-12	5.93E-12	7.99E-12	1.04E-11	1.04E-11
sr 86	2.80E-12	3.88E-12	5.09E-12	6.46E-12	7.97E-12	7.97E-12

0 fraction of total absorption rate
power= .00mw, burnup= 2681.mwd, flux= 9.84E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

nb 94	3.17E-12	3.96E-12	4.75E-12	5.55E-12	6.37E-12	6.37E-12
y 90	5.91E-12	5.90E-12	5.89E-12	5.87E-12	5.86E-12	5.86E-12
ce143	6.13E-12	6.37E-12	6.36E-12	6.35E-12	6.34E-12	5.81E-12
sb125	5.63E-12	5.65E-12	5.68E-12	5.71E-12	5.74E-12	5.74E-12
la140	5.61E-12	5.61E-12	5.60E-12	5.59E-12	5.58E-12	5.58E-12
ge 74	2.72E-12	3.40E-12	4.07E-12	4.75E-12	5.43E-12	5.43E-12
mo 99	4.70E-12	4.81E-12	4.80E-12	4.80E-12	4.79E-12	4.57E-12
sn116	9.92E-13	1.54E-12	2.22E-12	3.02E-12	3.94E-12	3.94E-12
ge 72	1.84E-12	2.31E-12	2.78E-12	3.25E-12	3.72E-12	3.72E-12
se 76	1.35E-12	1.78E-12	2.24E-12	2.74E-12	3.27E-12	3.27E-12
te127m	2.80E-12	2.81E-12	2.83E-12	2.84E-12	2.86E-12	2.86E-12
i131	2.48E-12	2.49E-12	2.48E-12	2.48E-12	2.48E-12	2.46E-12
er166	5.87E-13	8.33E-13	1.12E-12	1.44E-12	1.79E-12	1.79E-12
te122	4.22E-13	6.53E-13	9.34E-13	1.27E-12	1.65E-12	1.65E-12
pm148m	1.33E-12	1.31E-12	1.32E-12	1.33E-12	1.33E-12	1.33E-12
kr 87	2.43E-12	8.31E-12	8.29E-12	8.27E-12	8.25E-12	6.98E-13
te129m	6.62E-13	6.63E-13	6.64E-13	6.65E-13	6.66E-13	6.65E-13
kr 80	9.27E-14	1.24E-13	1.60E-13	2.02E-13	2.49E-13	2.49E-13
ag111	1.31E-13	1.35E-13	1.39E-13	1.42E-13	1.45E-13	1.43E-13
eu157	1.09E-13	1.21E-13	1.23E-13	1.26E-13	1.28E-13	1.05E-13
cd115m	8.85E-14	8.88E-14	8.92E-14	8.96E-14	8.99E-14	8.97E-14
pm148	4.98E-14	4.95E-14	4.96E-14	4.96E-14	4.96E-14	4.85E-14
cs136	2.91E-14	3.12E-14	3.33E-14	3.54E-14	3.74E-14	3.70E-14
er167	8.01E-15	1.29E-14	1.92E-14	2.71E-14	3.68E-14	3.68E-14
te123	8.24E-15	1.16E-14	1.56E-14	2.04E-14	2.61E-14	2.61E-14
be 9	6.15E-15	7.68E-15	9.21E-15	1.07E-14	1.23E-14	1.23E-14
sn125	1.08E-14	1.09E-14	1.10E-14	1.10E-14	1.10E-14	1.09E-14
tb160	3.67E-15	4.57E-15	5.53E-15	6.50E-15	7.50E-15	7.48E-15
ru105	8.20E-15	1.14E-14	1.15E-14	1.16E-14	1.17E-14	5.92E-15
li 7	2.46E-15	3.08E-15	3.69E-15	4.30E-15	4.91E-15	4.91E-15
pr142	2.12E-15	2.87E-15	3.43E-15	4.00E-15	4.57E-15	3.87E-15
sn123	3.76E-15	3.76E-15	3.77E-15	3.77E-15	3.77E-15	3.77E-15
cd108	5.29E-16	9.66E-16	1.60E-15	2.48E-15	3.65E-15	3.65E-15
sb126	2.29E-15	2.60E-15	2.90E-15	3.20E-15	3.50E-15	3.49E-15
te132	3.43E-15	3.50E-15	3.50E-15	3.50E-15	3.49E-15	3.36E-15
i135	2.91E-15	3.70E-15	3.70E-15	3.69E-15	3.69E-15	2.28E-15
rb 88	2.94E-15	4.67E-15	4.66E-15	4.65E-15	4.64E-15	1.67E-15
sb124	9.40E-16	9.80E-16	1.02E-15	1.06E-15	1.10E-15	1.10E-15
sn114	2.43E-16	3.79E-16	5.45E-16	7.42E-16	9.69E-16	9.69E-16
i130	5.94E-16	7.74E-16	8.74E-16	9.74E-16	1.07E-15	8.36E-16
in117m	6.68E-16	7.99E-16	8.05E-16	8.10E-16	8.16E-16	4.76E-16
rb 86	2.24E-16	2.57E-16	2.90E-16	3.23E-16	3.56E-16	3.53E-16
in117	2.00E-16	2.36E-16	2.38E-16	2.39E-16	2.41E-16	1.46E-16
dy165	8.08E-17	1.73E-16	1.92E-16	2.10E-16	2.29E-16	6.05E-17
te134	2.21E-16	2.13E-15	2.12E-15	2.12E-15	2.11E-15	2.28E-17
cs134m	1.00E-17	2.12E-17	2.54E-17	2.95E-17	3.37E-17	1.14E-17
ge 75	1.03E-17	3.16E-17	3.15E-17	3.15E-17	3.15E-17	3.29E-18
cd118	6.86E-18	4.51E-17	4.52E-17	4.54E-17	4.56E-17	1.06E-18
cd109	5.55E-19	6.65E-19	7.85E-19	9.04E-19	1.01E-18	1.01E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 18
0 fraction of total absorption rate
power= .00mw, burnup= 2681.mwd, flux= 9.84E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 19

power= 1.468E-03mw, burnup=2.6809E+03mwd, flux= 9.84E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
h 1	8.18E-05	1.02E-04	1.21E-04	1.41E-04	1.61E-04	1.61E-04
h 2	2.43E-07	3.02E-07	3.61E-07	4.20E-07	4.79E-07	4.79E-07
h 3	1.36E-11	1.34E-11	1.36E-11	1.38E-11	1.40E-11	1.40E-11
h 4	.00E+00	1.97E-35	2.00E-35	2.03E-35	2.06E-35	.00E+00
he 3	1.76E-09	2.17E-09	2.57E-09	2.96E-09	3.35E-09	3.35E-09
he 4	1.35E-05	1.68E-05	2.01E-05	2.34E-05	2.66E-05	2.66E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.62E-06	2.02E-06	2.41E-06	2.81E-06	3.20E-06	3.20E-06
ne 21	5.30E-11	8.12E-11	1.15E-10	1.53E-10	1.97E-10	1.97E-10
ne 22	1.07E-08	1.33E-08	1.59E-08	1.84E-08	2.10E-08	2.10E-08
ne 23	2.70E-30	2.62E-15	2.62E-15	2.62E-15	2.62E-15	2.62E-30
na 22	1.59E-11	1.55E-11	1.55E-11	1.55E-11	1.55E-11	1.55E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	1.21E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	8.85E-09
na 24m	2.21E-30	1.81E-15	1.81E-15	1.80E-15	1.80E-15	1.80E-30
na 25	7.47E-41	1.06E-25	1.46E-25	1.90E-25	2.41E-25	2.40E-40
mg 24	1.39E-02	1.68E-02	1.96E-02	2.25E-02	2.53E-02	2.53E-02
mg 25	6.83E-09	1.01E-08	1.38E-08	1.80E-08	2.28E-08	2.28E-08
mg 26	2.43E-07	3.02E-07	3.61E-07	4.20E-07	4.78E-07	4.78E-07
mg 27	3.66E-17	7.84E-13	7.83E-13	7.83E-13	7.83E-13	1.61E-21
mg 28	5.49E-25	5.77E-25	5.77E-25	5.76E-25	5.76E-25	4.95E-25
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	1.01E-25	8.15E-11	8.15E-11	8.14E-11	8.14E-11	8.23E-26
al 29	2.54E-30	6.91E-24	9.82E-24	1.32E-23	1.70E-23	5.17E-36
al 30	.00E+00	1.45E-34	2.49E-34	3.92E-34	5.80E-34	.00E+00
si 28	4.05E-02	4.88E-02	5.71E-02	6.54E-02	7.37E-02	7.37E-02
si 29	4.71E-08	7.31E-08	1.04E-07	1.40E-07	1.80E-07	1.80E-07
si 30	5.86E-14	1.14E-13	1.97E-13	3.10E-13	4.59E-13	4.59E-13
si 31	8.32E-27	2.97E-26	5.11E-26	8.05E-26	1.19E-25	3.58E-26
si 32	7.29E-33	1.51E-32	2.69E-32	4.36E-32	6.58E-32	6.58E-32
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		9.84E+07	9.84E+07	9.83E+07	9.83E+07	9.83E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 20

power= 1.468E-03mw, burnup=2.6809E+03mwd, flux= 9.84E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	4.49E-01	6.12E-01	7.93E-01	9.93E-01	1.21E+00	1.21E+00
pb206	2.03E-04	3.76E-04	6.16E-04	9.29E-04	1.32E-03	1.32E-03
pb207	4.65E-05	7.27E-05	1.05E-04	1.42E-04	1.85E-04	1.85E-04
pb208	2.73E-06	4.24E-06	6.07E-06	8.23E-06	1.07E-05	1.07E-05
pb209	8.13E-12	1.24E-11	1.75E-11	2.34E-11	2.99E-11	2.99E-11
pb210	7.31E-06	1.06E-05	1.42E-05	1.81E-05	2.21E-05	2.21E-05
pb211	3.71E-12	4.63E-12	5.53E-12	6.43E-12	7.32E-12	7.32E-12
pb212	3.76E-12	4.67E-12	5.58E-12	6.48E-12	7.37E-12	7.37E-12
pb214	1.62E-11	2.42E-11	3.25E-11	4.13E-11	5.05E-11	5.06E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.28E-05	2.47E-05	4.20E-05	6.58E-05	9.68E-05	9.68E-05
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	4.50E-09	6.52E-09	8.74E-09	1.11E-08	1.36E-08	1.36E-08
bi211	2.21E-13	2.74E-13	3.28E-13	3.81E-13	4.34E-13	4.34E-13
bi212	3.57E-13	4.43E-13	5.29E-13	6.14E-13	6.99E-13	6.99E-13
bi213	1.83E-12	2.89E-12	4.08E-12	5.45E-12	6.99E-12	6.83E-12
bi214	1.22E-11	1.80E-11	2.41E-11	3.06E-11	3.75E-11	3.76E-11
po210	1.24E-07	1.80E-07	2.41E-07	3.07E-07	3.75E-07	3.75E-07

po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.44E-18	3.03E-18	3.62E-18	4.21E-18	4.80E-18	4.80E-18
po212	1.88E-23	2.33E-23	2.78E-23	3.23E-23	3.67E-23	3.67E-23
po213	2.75E-21	4.35E-21	6.14E-21	8.20E-21	1.05E-20	1.03E-20
po214	1.67E-18	2.47E-18	3.32E-18	4.22E-18	5.16E-18	5.18E-18
po215	3.05E-18	3.80E-18	4.55E-18	5.28E-18	6.02E-18	6.02E-18
po216	1.42E-17	1.77E-17	2.11E-17	2.45E-17	2.79E-17	2.79E-17
po218	1.93E-12	2.80E-12	3.76E-12	4.77E-12	5.84E-12	5.84E-12
rn218	2.08E-29	2.50E-29	2.99E-29	3.47E-29	3.95E-29	3.93E-29
rn219	6.79E-15	8.46E-15	1.01E-14	1.18E-14	1.34E-14	1.34E-14
rn220	5.46E-15	6.78E-15	8.10E-15	9.40E-15	1.07E-14	1.07E-14
rn222	3.43E-09	4.98E-09	6.67E-09	8.48E-09	1.04E-08	1.04E-08
ra222	2.26E-26	2.72E-26	3.25E-26	3.77E-26	4.29E-26	4.26E-26
ra223	1.69E-09	2.11E-09	2.52E-09	2.93E-09	3.34E-09	3.34E-09
ra224	3.11E-11	3.86E-11	4.60E-11	5.35E-11	6.08E-11	6.08E-11
ra225	8.83E-10	1.35E-09	1.91E-09	2.55E-09	3.27E-09	3.27E-09
ra226	5.25E-04	7.61E-04	1.02E-03	1.30E-03	1.59E-03	1.59E-03
ra228	5.30E-12	6.62E-12	7.95E-12	9.29E-12	1.06E-11	1.06E-11
ac225	5.96E-10	9.14E-10	1.29E-09	1.72E-09	2.21E-09	2.21E-09
ac227	1.18E-06	1.47E-06	1.75E-06	2.04E-06	2.32E-06	2.32E-06
ac228	6.46E-16	8.08E-16	9.71E-16	1.13E-15	1.30E-15	1.30E-15
th226	1.10E-24	1.33E-24	1.58E-24	1.84E-24	2.09E-24	2.08E-24
th227	2.74E-09	3.41E-09	4.07E-09	4.73E-09	5.39E-09	5.39E-09
th228	5.93E-09	7.36E-09	8.79E-09	1.02E-08	1.16E-08	1.16E-08
th229	1.72E-04	2.63E-04	3.71E-04	4.96E-04	6.36E-04	6.36E-04
th230	6.34E-02	7.91E-02	9.48E-02	1.10E-01	1.26E-01	1.26E-01
th231	3.09E-09	3.12E-09	3.14E-09	3.16E-09	3.18E-09	3.15E-09
th232	1.29E-02	1.62E-02	1.94E-02	2.27E-02	2.60E-02	2.60E-02
th233	6.23E-16	5.39E-14	6.47E-14	7.55E-14	8.63E-14	1.78E-17
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	1.77E-03	2.21E-03	2.64E-03	3.07E-03	3.49E-03	3.49E-03
pa232	1.05E-11	1.37E-11	1.64E-11	1.91E-11	2.17E-11	1.96E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 21
power= 1.468E-03mw, burnup=2.6809E+03mwd, flux= 9.84E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.07E-21	1.29E-21	1.53E-21	1.78E-21	2.03E-21	2.01E-21
u231	9.62E-18	1.18E-17	1.41E-17	1.64E-17	1.87E-17	1.81E-17
u232	2.16E-07	2.68E-07	3.21E-07	3.72E-07	4.24E-07	4.24E-07
u233	3.38E-02	4.21E-02	5.04E-02	5.86E-02	6.68E-02	6.68E-02
u234	9.14E+00	9.17E+00	9.19E+00	9.22E+00	9.24E+00	9.24E+00
u235	7.24E+02	7.22E+02	7.20E+02	7.19E+02	7.17E+02	7.17E+02
u236	1.75E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02
u237	1.17E-06	1.15E-06	1.15E-06	1.15E-06	1.15E-06	1.13E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	2.06E-09	1.14E-07	1.14E-07	1.13E-07	1.13E-07	3.56E-11
u240	1.40E-45	.00E+00	.00E+00	.00E+00	.00E+00	7.88E-43
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	3.29E-12	3.19E-12	3.18E-12	3.18E-12	3.18E-12	3.18E-12
np236m	7.29E-13	7.58E-13	7.57E-13	7.56E-13	7.56E-13	6.57E-13
np236	1.85E-07	2.29E-07	2.73E-07	3.16E-07	3.60E-07	3.60E-07
np237	4.21E+01	4.20E+01	4.20E+01	4.20E+01	4.20E+01	4.20E+01
np238	5.48E-07	5.59E-07	5.58E-07	5.57E-07	5.57E-07	5.23E-07
np239	1.64E-05	1.64E-05	1.64E-05	1.64E-05	1.64E-05	1.56E-05

```
      np240m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      np240    2.70E-16  1.21E-15  1.21E-15  1.21E-15  1.21E-15  5.68E-17
      np241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      pu236    4.25E-10  4.11E-10  4.11E-10  4.11E-10  4.11E-10  4.11E-10
      pu237    4.55E-14  4.70E-14  5.00E-14  5.30E-14  5.59E-14  5.57E-14
      pu238    8.55E-03  8.45E-03  8.44E-03  8.43E-03  8.43E-03  8.43E-03
      pu239    4.31E+00  5.30E+00  6.26E+00  7.21E+00  8.13E+00  8.13E+00
      pu240    1.47E-02  2.23E-02  3.10E-02  4.08E-02  5.16E-02  5.16E-02
      pu241    2.26E-06  3.33E-06  4.63E-06  6.10E-06  7.71E-06  7.71E-06
      pu242    3.25E-08  6.76E-08  1.21E-07  1.97E-07  2.99E-07  2.99E-07
      pu243    1.88E-17  5.24E-17  9.40E-17  1.53E-16  2.31E-16  1.22E-16
      pu244    4.22E-34  3.15E-33  1.59E-32  6.13E-32  1.96E-31  1.96E-31
      pu245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am239    3.86E-21  6.95E-21  1.03E-20  1.41E-20  1.85E-20  1.42E-20
      am240    1.96E-18  3.18E-18  4.70E-18  6.47E-18  8.46E-18  7.95E-18
      am241    4.22E-05  6.87E-05  1.01E-04  1.40E-04  1.83E-04  1.83E-04
      am242m   6.09E-09  1.03E-08  1.55E-08  2.18E-08  2.89E-08  2.89E-08
      am242    5.25E-13  9.25E-13  1.37E-12  1.89E-12  2.48E-12  2.10E-12
      am243    5.41E-11  1.25E-10  2.45E-10  4.27E-10  6.88E-10  6.88E-10
      am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am244    1.31E-19  3.48E-19  6.79E-19  1.19E-18  1.91E-18  1.40E-18
      am245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   4.48E-44
      am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      cm241    1.26E-23  1.99E-23  2.95E-23  4.06E-23  5.33E-23  5.31E-23
      cm242    1.15E-10  1.87E-10  2.77E-10  3.82E-10  5.01E-10  5.01E-10
      cm243    9.79E-16  1.56E-15  2.31E-15  3.19E-15  4.18E-15  4.18E-15
      cm244    2.41E-15  5.46E-15  1.07E-14  1.86E-14  3.00E-14  3.00E-14
1
      sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                actinides        page   22
        power= 1.468E-03mw, burnup=2.6809E+03mwd, flux= 9.84E+07n/cm**2-sec
0                                                nuclide concentrations, gram atoms
                                                 basis = single reactor assembly
               charge ******* d ******* d ******* d ******* d ******* d
      cm245    4.67E-19  1.33E-18  3.12E-18  6.36E-18  1.17E-17  1.17E-17
      cm246    3.92E-22  1.43E-21  4.03E-21  9.52E-21  1.99E-20  1.99E-20
      cm247    5.76E-27  2.64E-26  9.00E-26  2.51E-25  6.04E-25  6.04E-25
      cm248    8.23E-31  4.81E-30  1.99E-29  6.53E-29  1.81E-28  1.81E-28
      cm249    1.78E-42  5.45E-41  2.33E-40  7.55E-40  2.09E-39  1.09E-40
      cm250    .00E+00   .00E+00   1.40E-45  5.61E-45  1.82E-44  1.82E-44
      cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
    totals     3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0     flux                9.84E+07  9.84E+07  9.83E+07  9.83E+07  9.83E-08
0         1q array has       20 entries.
0         3q array has        1 entries.
0         3q array has        1 entries.
0         3q array has        1 entries.
0         4q array has        1 entries.
0        54q array has       12 entries.
1library information...

          cross-section data taken from position number  3 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
```

```
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ******************************************************************************
          *                                                                            *
          *            prelim lwr origen-s binary working library--id = 1143            *
          *         made from modified card-image origen-s libraries of scale 4.2       *
          *      data from the light element, actinide, and fission product libraries   *
          *        decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                            *
          *      neutron flux spectrum factors and cross sections were produced from    *
          *     the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                            *
          *                  fission product yields are from endf/b-v                  *
          *                                                                            *
          *              photon libraries use an 18-energy-group structure             *
          *             the photon data are from the master photon data base,          *
          *              produced to include bremsstrahlung from uo2 matrix            *
          *                                                                            *
          *        see information above this box (if present) for later updates       *
          *                                                                            *
          ******************************************************************************
          *                                                                            *
0         ******************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                 8/29/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
                        879    number of fission product nuclides
0                      7993    number of nonzero off-diagonal matrix elements
0         ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   23
        power=    .00mw, burnup=   4021.mwd, flux= 9.45E+07n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.195375E+06   1.196047E+06   1.196678E+06   1.197269E+06   1.197821E+06   1.197820E+06
     absorptions   9.651504E+05   9.658723E+05   9.665383E+05   9.671569E+05   9.677351E+05   9.677341E+05
     k infinity    1.238537E+00   1.238308E+00   1.238108E+00   1.237927E+00   1.237757E+00   1.237758E+00
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   9.556894E+05   9.561186E+05   9.565269E+05   9.569147E+05   9.572821E+05   9.572820E+05
     non-actinide
     abs. fracs.   9.802699E-03   1.009834E-02   1.035804E-02   1.059002E-02   1.080143E-02   1.080060E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products        page   24
0                                 fraction of total absorption rate
        power=    .00mw, burnup=   4021.mwd, flux= 9.45E+07n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     4.91E-03  5.05E-03  5.15E-03  5.22E-03  5.28E-03  5.28E-03
     eu151     3.75E-04  4.19E-04  4.62E-04  5.03E-04  5.44E-04  5.44E-04
     nd143     2.69E-04  3.02E-04  3.36E-04  3.68E-04  4.01E-04  4.01E-04
     rh103     1.25E-04  1.40E-04  1.56E-04  1.71E-04  1.87E-04  1.87E-04
     gd155     1.27E-04  1.35E-04  1.43E-04  1.49E-04  1.55E-04  1.55E-04
```

xe131	8.55E-05	9.61E-05	1.07E-04	1.17E-04	1.28E-04	1.28E-04
cs133	6.64E-05	7.47E-05	8.29E-05	9.11E-05	9.93E-05	9.93E-05
cd113	6.66E-05	7.05E-05	7.38E-05	7.66E-05	7.91E-05	7.91E-05
sm147	4.92E-05	5.53E-05	6.14E-05	6.75E-05	7.36E-05	7.36E-05
tc 99	4.85E-05	5.44E-05	6.04E-05	6.63E-05	7.22E-05	7.22E-05
nd145	3.77E-05	4.24E-05	4.71E-05	5.17E-05	5.64E-05	5.64E-05
gd157	4.06E-05	4.16E-05	4.25E-05	4.33E-05	4.41E-05	4.41E-05
mo 95	2.62E-05	2.94E-05	3.26E-05	3.59E-05	3.91E-05	3.91E-05
sm152	2.19E-05	2.48E-05	2.78E-05	3.08E-05	3.39E-05	3.39E-05
kr 83	1.64E-05	1.84E-05	2.04E-05	2.24E-05	2.44E-05	2.44E-05
cs135	1.50E-05	1.68E-05	1.87E-05	2.05E-05	2.24E-05	2.24E-05
sm150	1.26E-05	1.49E-05	1.73E-05	1.98E-05	2.22E-05	2.22E-05
ru101	1.16E-05	1.31E-05	1.45E-05	1.60E-05	1.74E-05	1.74E-05
sm151	1.72E-05	1.72E-05	1.73E-05	1.73E-05	1.73E-05	1.72E-05
pr141	1.11E-05	1.25E-05	1.39E-05	1.53E-05	1.67E-05	1.67E-05
eu153	1.05E-05	1.19E-05	1.32E-05	1.46E-05	1.59E-05	1.59E-05
la139	9.12E-06	1.02E-05	1.14E-05	1.25E-05	1.36E-05	1.36E-05
ba137	4.33E-06	4.88E-06	5.42E-06	5.96E-06	6.50E-06	6.50E-06
pd105	4.02E-06	4.53E-06	5.06E-06	5.58E-06	6.11E-06	6.11E-06
zr 93	3.68E-06	4.14E-06	4.59E-06	5.04E-06	5.49E-06	5.49E-06
i129	2.86E-06	3.22E-06	3.58E-06	3.94E-06	4.30E-06	4.30E-06
nd144	2.75E-06	3.09E-06	3.43E-06	3.77E-06	4.11E-06	4.11E-06
ag109	2.10E-06	2.44E-06	2.80E-06	3.18E-06	3.57E-06	3.57E-06
mo 97	2.07E-06	2.33E-06	2.58E-06	2.84E-06	3.09E-06	3.09E-06
zr 91	9.70E-07	1.09E-06	1.21E-06	1.33E-06	1.45E-06	1.45E-06
y 89	9.30E-07	1.04E-06	1.16E-06	1.27E-06	1.39E-06	1.39E-06
ru102	8.47E-07	9.52E-07	1.06E-06	1.16E-06	1.27E-06	1.27E-06
ce142	7.59E-07	8.53E-07	9.47E-07	1.04E-06	1.13E-06	1.13E-06
nd148	7.30E-07	8.21E-07	9.11E-07	1.00E-06	1.09E-06	1.09E-06
pd108	6.17E-07	7.10E-07	8.06E-07	9.04E-07	1.01E-06	1.01E-06
nd146	6.12E-07	6.88E-07	7.64E-07	8.40E-07	9.16E-07	9.16E-07
gd152	3.92E-07	4.95E-07	6.10E-07	7.35E-07	8.71E-07	8.71E-07
ba138	5.23E-07	5.88E-07	6.53E-07	7.18E-07	7.82E-07	7.82E-07
in115	5.13E-07	5.77E-07	6.42E-07	7.07E-07	7.72E-07	7.72E-07
ce140	4.90E-07	5.51E-07	6.11E-07	6.72E-07	7.33E-07	7.33E-07
xe132	4.41E-07	4.96E-07	5.51E-07	6.06E-07	6.61E-07	6.61E-07
pd107	3.45E-07	3.95E-07	4.46E-07	4.98E-07	5.52E-07	5.52E-07
mo 98	3.03E-07	3.41E-07	3.78E-07	4.16E-07	4.54E-07	4.54E-07
mo100	2.94E-07	3.30E-07	3.67E-07	4.03E-07	4.39E-07	4.39E-07
xe134	2.89E-07	3.25E-07	3.61E-07	3.97E-07	4.33E-07	4.33E-07
zr 92	2.34E-07	2.63E-07	2.92E-07	3.20E-07	3.49E-07	3.49E-07
i127	1.96E-07	2.21E-07	2.46E-07	2.71E-07	2.96E-07	2.96E-07
ru104	1.84E-07	2.07E-07	2.31E-07	2.54E-07	2.78E-07	2.78E-07
zr 96	1.84E-07	2.07E-07	2.30E-07	2.52E-07	2.75E-07	2.75E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 25
0 fraction of total absorption rate
power= .00mw, burnup= 4021.mwd, flux= 9.45E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

nd150	1.62E-07	1.83E-07	2.03E-07	2.23E-07	2.43E-07	2.43E-07
xe136	1.56E-07	1.76E-07	1.95E-07	2.15E-07	2.34E-07	2.34E-07
br 81	1.17E-07	1.32E-07	1.46E-07	1.61E-07	1.75E-07	1.75E-07
rb 85	1.14E-07	1.28E-07	1.42E-07	1.56E-07	1.70E-07	1.70E-07
zr 94	9.89E-08	1.11E-07	1.23E-07	1.36E-07	1.48E-07	1.48E-07
ru 99	6.28E-08	7.94E-08	9.78E-08	1.18E-07	1.40E-07	1.40E-07
zr 90	9.10E-08	1.02E-07	1.14E-07	1.25E-07	1.36E-07	1.36E-07
cd111	8.58E-08	9.78E-08	1.10E-07	1.22E-07	1.35E-07	1.35E-07
te130	7.13E-08	8.02E-08	8.91E-08	9.79E-08	1.07E-07	1.07E-07
sm154	7.06E-08	7.96E-08	8.86E-08	9.76E-08	1.07E-07	1.07E-07
rb 87	6.59E-08	7.40E-08	8.21E-08	9.02E-08	9.82E-08	9.82E-08

pm147	9.96E-08	9.95E-08	9.94E-08	9.93E-08	9.92E-08	8.23E-08
se 77	4.70E-08	5.29E-08	5.87E-08	6.45E-08	7.03E-08	7.03E-08
pd106	3.62E-08	4.11E-08	4.60E-08	5.10E-08	5.61E-08	5.61E-08
eu155	5.83E-08	5.86E-08	5.90E-08	5.94E-08	5.98E-08	5.35E-08
eu152	3.56E-08	3.97E-08	4.38E-08	4.77E-08	5.15E-08	4.96E-08
kr 84	3.11E-08	3.50E-08	3.88E-08	4.26E-08	4.65E-08	4.65E-08
gd156	2.42E-08	2.85E-08	3.29E-08	3.75E-08	4.22E-08	4.22E-08
se 79	2.40E-08	2.70E-08	3.00E-08	3.29E-08	3.59E-08	3.59E-08
sb121	2.33E-08	2.63E-08	2.92E-08	3.22E-08	3.52E-08	3.52E-08
gd154	1.29E-08	1.64E-08	2.02E-08	2.44E-08	2.91E-08	2.91E-08
sb123	1.89E-08	2.13E-08	2.37E-08	2.61E-08	2.85E-08	2.85E-08
kr 86	1.74E-08	1.95E-08	2.16E-08	2.38E-08	2.59E-08	2.59E-08
te128	1.57E-08	1.77E-08	1.97E-08	2.16E-08	2.36E-08	2.36E-08
dy161	1.35E-08	1.57E-08	1.79E-08	2.02E-08	2.27E-08	2.27E-08
se 80	1.12E-08	1.26E-08	1.40E-08	1.54E-08	1.68E-08	1.68E-08
te125	1.01E-08	1.14E-08	1.26E-08	1.39E-08	1.52E-08	1.52E-08
ba135	6.02E-09	7.61E-09	9.39E-09	1.14E-08	1.35E-08	1.35E-08
tb159	7.69E-09	8.79E-09	9.90E-09	1.10E-08	1.22E-08	1.22E-08
cd112	6.81E-09	7.71E-09	8.62E-09	9.54E-09	1.05E-08	1.05E-08
gd158	5.82E-09	6.75E-09	7.70E-09	8.67E-09	9.66E-09	9.66E-09
li 6	6.33E-09	7.10E-09	7.87E-09	8.64E-09	9.40E-09	9.40E-09
ru100	4.02E-09	5.07E-09	6.23E-09	7.51E-09	8.91E-09	8.91E-09
sn117	5.25E-09	5.93E-09	6.61E-09	7.29E-09	7.98E-09	7.98E-09
sn119	4.25E-09	4.79E-09	5.33E-09	5.87E-09	6.41E-09	6.41E-09
nd142	2.78E-09	3.52E-09	4.34E-09	5.24E-09	6.23E-09	6.23E-09
ba134	2.71E-09	3.42E-09	4.21E-09	5.08E-09	6.03E-09	6.03E-09
sr 90	6.18E-09	6.17E-09	6.16E-09	6.14E-09	6.13E-09	6.02E-09
sn115	3.89E-09	4.38E-09	4.88E-09	5.38E-09	5.87E-09	5.87E-09
cd114	3.45E-09	4.00E-09	4.55E-09	5.12E-09	5.70E-09	5.70E-09
sm148	2.49E-09	3.14E-09	3.87E-09	4.67E-09	5.54E-09	5.54E-09
sr 88	3.19E-09	3.58E-09	3.97E-09	4.37E-09	4.76E-09	4.76E-09
pd110	2.67E-09	3.05E-09	3.44E-09	3.84E-09	4.25E-09	4.25E-09
dy164	2.31E-09	2.74E-09	3.20E-09	3.69E-09	4.20E-09	4.20E-09
pd104	1.82E-09	2.30E-09	2.83E-09	3.42E-09	4.07E-09	4.07E-09
dy162	2.21E-09	2.60E-09	3.02E-09	3.46E-09	3.93E-09	3.93E-09
se 82	2.17E-09	2.44E-09	2.70E-09	2.97E-09	3.24E-09	3.24E-09
sn126	1.80E-09	2.03E-09	2.26E-09	2.49E-09	2.72E-09	2.72E-09
se 78	1.65E-09	1.86E-09	2.07E-09	2.27E-09	2.48E-09	2.48E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 26
0 fraction of total absorption rate
power= .00mw, burnup= 4021.mwd, flux= 9.45E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

eu154	1.71E-09	1.92E-09	2.13E-09	2.35E-09	2.56E-09	2.41E-09
nb 93	9.71E-10	1.23E-09	1.51E-09	1.83E-09	2.18E-09	2.18E-09
sn124	1.35E-09	1.53E-09	1.70E-09	1.87E-09	2.04E-09	2.04E-09
mo 96	7.33E-10	9.07E-10	1.10E-09	1.31E-09	1.54E-09	1.54E-09
as 75	9.83E-10	1.11E-09	1.23E-09	1.35E-09	1.47E-09	1.47E-09
cs137	1.38E-09	1.38E-09	1.37E-09	1.37E-09	1.37E-09	1.35E-09
ba136	7.47E-10	8.70E-10	9.99E-10	1.14E-09	1.28E-09	1.28E-09
in113	7.54E-10	8.51E-10	9.48E-10	1.05E-09	1.14E-09	1.14E-09
br 79	4.90E-10	6.20E-10	7.64E-10	9.24E-10	1.10E-09	1.10E-09
dy163	5.29E-10	6.27E-10	7.31E-10	8.42E-10	9.58E-10	9.58E-10
kr 82	5.05E-10	5.96E-10	6.93E-10	7.96E-10	9.04E-10	9.04E-10
xe130	4.61E-10	5.58E-10	6.63E-10	7.77E-10	9.00E-10	9.00E-10
sn118	5.51E-10	6.21E-10	6.91E-10	7.61E-10	8.32E-10	8.32E-10
cd110	3.16E-10	4.09E-10	5.17E-10	6.39E-10	7.78E-10	7.78E-10
sn122	4.67E-10	5.27E-10	5.86E-10	6.46E-10	7.06E-10	7.06E-10
cd116	4.67E-10	5.26E-10	5.85E-10	6.44E-10	7.04E-10	7.04E-10
ag107	2.93E-10	3.75E-10	4.69E-10	5.74E-10	6.91E-10	6.91E-10

xe129	2.80E-10	3.55E-10	4.38E-10	5.30E-10	6.30E-10	6.31E-10
sn120	3.49E-10	3.93E-10	4.37E-10	4.81E-10	5.26E-10	5.26E-10
te126	2.00E-10	2.46E-10	2.98E-10	3.54E-10	4.15E-10	4.15E-10
ge 73	2.71E-10	3.05E-10	3.39E-10	3.73E-10	4.07E-10	4.07E-10
cs134	1.80E-10	2.01E-10	2.23E-10	2.45E-10	2.67E-10	2.08E-10
kr 85	2.07E-10	2.07E-10	2.06E-10	2.06E-10	2.06E-10	1.96E-10
ge 76	9.71E-11	1.09E-10	1.21E-10	1.33E-10	1.45E-10	1.45E-10
gd160	7.58E-11	8.70E-11	9.86E-11	1.11E-10	1.23E-10	1.23E-10
ce144	2.18E-10	2.18E-10	2.17E-10	2.17E-10	2.17E-10	1.11E-10
ho165	3.84E-11	4.58E-11	5.38E-11	6.23E-11	7.13E-11	7.13E-11
dy160	1.39E-11	1.76E-11	2.18E-11	2.65E-11	3.17E-11	3.17E-11
xe128	1.04E-11	1.31E-11	1.61E-11	1.94E-11	2.30E-11	2.30E-11
te124	1.38E-11	1.59E-11	1.80E-11	2.02E-11	2.25E-11	2.25E-11
sr 87	1.16E-11	1.31E-11	1.46E-11	1.61E-11	1.76E-11	1.76E-11
sr 86	8.00E-12	9.66E-12	1.15E-11	1.34E-11	1.55E-11	1.55E-11
nb 94	6.35E-12	7.17E-12	8.01E-12	8.87E-12	9.74E-12	9.74E-12
sn116	3.91E-12	4.94E-12	6.10E-12	7.38E-12	8.78E-12	8.78E-12
ge 74	5.46E-12	6.14E-12	6.82E-12	7.51E-12	8.19E-12	8.19E-12
ru106	1.07E-11	1.08E-11	1.10E-11	1.11E-11	1.13E-11	6.77E-12
nb 95	5.55E-11	5.55E-11	5.54E-11	5.53E-11	5.53E-11	5.98E-12
se 76	3.29E-12	3.86E-12	4.47E-12	5.11E-12	5.79E-12	5.79E-12
y 90	5.88E-12	5.87E-12	5.86E-12	5.85E-12	5.83E-12	5.73E-12
ge 72	3.74E-12	4.22E-12	4.70E-12	5.18E-12	5.66E-12	5.66E-12
sb125	5.73E-12	5.76E-12	5.78E-12	5.81E-12	5.84E-12	4.84E-12
te122	1.65E-12	2.08E-12	2.56E-12	3.09E-12	3.68E-12	3.68E-12
er166	1.80E-12	2.19E-12	2.61E-12	3.07E-12	3.56E-12	3.56E-12
zr 95	5.99E-11	5.99E-11	5.98E-11	5.97E-11	5.97E-11	3.07E-12
y 91	5.19E-11	5.18E-11	5.17E-11	5.16E-11	5.15E-11	2.02E-12
ce141	5.82E-10	5.82E-10	5.81E-10	5.81E-10	5.80E-10	1.69E-12
ru103	1.33E-10	1.34E-10	1.34E-10	1.34E-10	1.34E-10	1.06E-12
te127m	2.87E-12	2.88E-12	2.90E-12	2.91E-12	2.93E-12	5.31E-13
kr 80	2.50E-13	3.05E-13	3.67E-13	4.38E-13	5.18E-13	5.18E-13

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 27

0 fraction of total absorption rate

power= .00mw, burnup= 4021.mwd, flux= 9.45E+07n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

sr 89	1.11E-11	1.11E-11	1.10E-11	1.10E-11	1.10E-11	2.57E-13
er167	3.69E-14	4.85E-14	6.21E-14	7.79E-14	9.59E-14	9.59E-14
te123	2.62E-14	3.29E-14	4.06E-14	4.96E-14	5.98E-14	5.98E-14
be 9	1.22E-14	1.37E-14	1.52E-14	1.67E-14	1.82E-14	1.82E-14
pm148m	1.33E-12	1.33E-12	1.34E-12	1.34E-12	1.35E-12	1.36E-14
cd108	3.66E-15	5.16E-15	7.03E-15	9.33E-15	1.21E-14	1.21E-14
li 7	4.93E-15	5.55E-15	6.16E-15	6.77E-15	7.38E-15	7.38E-15
sb126	3.49E-15	3.80E-15	4.11E-15	4.41E-15	4.71E-15	3.14E-15
te129m	6.67E-13	6.69E-13	6.70E-13	6.71E-13	6.72E-13	2.37E-15
sn114	9.75E-16	1.23E-15	1.52E-15	1.84E-15	2.20E-15	2.20E-15
cd115m	8.99E-14	9.04E-14	9.08E-14	9.11E-14	9.15E-14	1.29E-15
pr143	9.69E-10	9.68E-10	9.67E-10	9.66E-10	9.65E-10	8.91E-16
sn123	3.74E-15	3.75E-15	3.75E-15	3.76E-15	3.76E-15	8.65E-16
tb160	7.52E-15	8.52E-15	9.55E-15	1.06E-14	1.17E-14	8.44E-16
eu156	1.41E-11	1.43E-11	1.45E-11	1.47E-11	1.48E-11	5.63E-17
sb124	1.10E-15	1.14E-15	1.18E-15	1.22E-15	1.26E-15	5.37E-17
pm148	4.82E-14	4.91E-14	4.91E-14	4.92E-14	4.92E-14	2.34E-17
nd147	3.36E-10	3.40E-10	3.39E-10	3.39E-10	3.39E-10	1.04E-17
ba140	1.71E-11	1.72E-11	1.72E-11	1.72E-11	1.72E-11	5.85E-18
la140	5.57E-12	5.57E-12	5.56E-12	5.56E-12	5.55E-12	2.18E-18
cd109	1.02E-18	1.14E-18	1.26E-18	1.39E-18	1.51E-18	1.01E-18
cs136	3.69E-14	3.92E-14	4.12E-14	4.32E-14	4.52E-14	2.77E-20
rb 86	3.54E-16	3.89E-16	4.21E-16	4.54E-16	4.86E-16	1.85E-20

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 28
power= 1.468E-03mw, burnup=4.0214E+03mwd, flux= 9.45E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
h 1	1.61E-04	1.81E-04	2.00E-04	2.20E-04	2.40E-04	2.40E-04
h 2	4.79E-07	5.37E-07	5.96E-07	6.54E-07	7.13E-07	7.13E-07
h 3	1.40E-11	1.42E-11	1.43E-11	1.45E-11	1.47E-11	1.41E-11
h 4	.00E+00	2.08E-35	2.11E-35	2.13E-35	2.16E-35	.00E+00
he 3	3.35E-09	3.73E-09	4.10E-09	4.47E-09	4.83E-09	4.83E-09
he 4	2.66E-05	2.99E-05	3.32E-05	3.64E-05	3.97E-05	3.97E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	3.20E-06	3.59E-06	3.98E-06	4.38E-06	4.77E-06	4.77E-06
ne 21	1.97E-10	2.45E-10	2.98E-10	3.56E-10	4.18E-10	4.18E-10
ne 22	2.10E-08	2.36E-08	2.62E-08	2.88E-08	3.13E-08	3.13E-08
ne 23	2.62E-30	2.60E-15	2.60E-15	2.60E-15	2.60E-15	2.60E-30
na 22	1.55E-11	1.54E-11	1.54E-11	1.54E-11	1.54E-11	1.26E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	8.85E-09	1.01E-08	1.00E-08	1.00E-08	1.00E-08	1.00E-23
na 24m	1.80E-30	1.65E-15	1.65E-15	1.65E-15	1.65E-15	1.65E-30
na 25	2.40E-40	2.92E-25	3.52E-25	4.16E-25	4.85E-25	4.85E-40
mg 24	2.53E-02	2.79E-02	3.05E-02	3.31E-02	3.57E-02	3.57E-02
mg 25	2.28E-08	2.81E-08	3.38E-08	4.00E-08	4.67E-08	4.67E-08
mg 26	4.78E-07	5.37E-07	5.96E-07	6.54E-07	7.13E-07	7.13E-07
mg 27	1.61E-21	7.78E-13	7.78E-13	7.77E-13	7.77E-13	7.77E-28
mg 28	4.95E-25	5.73E-25	5.73E-25	5.72E-25	5.72E-25	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	8.23E-26	7.45E-11	7.45E-11	7.45E-11	7.45E-11	7.45E-26
al 29	5.17E-36	2.10E-23	2.56E-23	3.06E-23	3.60E-23	3.60E-38
al 30	.00E+00	8.08E-34	1.10E-33	1.45E-33	1.86E-33	.00E+00
si 28	7.37E-02	8.13E-02	8.88E-02	9.64E-02	1.04E-01	1.04E-01
si 29	1.80E-07	2.25E-07	2.74E-07	3.28E-07	3.87E-07	3.87E-07
si 30	4.59E-13	6.49E-13	8.82E-13	1.16E-12	1.50E-12	1.50E-12
si 31	3.58E-26	1.68E-25	2.29E-25	3.02E-25	3.88E-25	3.82E-40
si 32	6.58E-32	9.45E-32	1.30E-31	1.73E-31	2.25E-31	2.24E-31
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		9.46E+07	9.46E+07	9.45E+07	9.45E+07	9.45E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 29
power= 1.468E-03mw, burnup=4.0214E+03mwd, flux= 9.45E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	1.21E+00	1.45E+00	1.70E+00	1.97E+00	2.25E+00	2.26E+00
pb206	1.32E-03	1.79E-03	2.34E-03	2.98E-03	3.70E-03	3.70E-03
pb207	1.85E-04	2.34E-04	2.89E-04	3.49E-04	4.14E-04	4.14E-04
pb208	1.07E-05	1.35E-05	1.66E-05	2.01E-05	2.38E-05	2.38E-05
pb209	2.99E-11	3.72E-11	4.50E-11	5.35E-11	6.25E-11	6.25E-11
pb210	2.21E-05	2.62E-05	3.05E-05	3.48E-05	3.92E-05	3.92E-05
pb211	7.32E-12	8.21E-12	9.08E-12	9.96E-12	1.08E-11	1.08E-11
pb212	7.37E-12	8.25E-12	9.13E-12	1.00E-11	1.09E-11	1.09E-11
pb214	5.06E-11	6.00E-11	6.97E-11	7.96E-11	8.97E-11	8.97E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	9.68E-05	1.36E-04	1.84E-04	2.41E-04	3.09E-04	3.09E-04
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.36E-08	1.62E-08	1.88E-08	2.14E-08	2.41E-08	2.42E-08
bi211	4.34E-13	4.86E-13	5.39E-13	5.90E-13	6.42E-13	6.43E-13
bi212	6.99E-13	7.83E-13	8.66E-13	9.49E-13	1.03E-12	1.03E-12
bi213	6.83E-12	8.68E-12	1.05E-11	1.25E-11	1.46E-11	1.46E-11

bi214	3.76E-11	4.45E-11	5.18E-11	5.91E-11	6.66E-11	6.66E-11
po210	3.75E-07	4.46E-07	5.19E-07	5.92E-07	6.67E-07	6.60E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	4.80E-18	5.38E-18	5.95E-18	6.52E-18	7.09E-18	7.11E-18
po212	3.67E-23	4.11E-23	4.55E-23	4.99E-23	5.42E-23	5.44E-23
po213	1.03E-20	1.31E-20	1.58E-20	1.88E-20	2.19E-20	2.19E-20
po214	5.18E-18	6.13E-18	7.12E-18	8.14E-18	9.16E-18	9.16E-18
po215	6.02E-18	6.74E-18	7.47E-18	8.18E-18	8.89E-18	8.91E-18
po216	2.79E-17	3.12E-17	3.46E-17	3.79E-17	4.12E-17	4.13E-17
po218	5.84E-12	6.94E-12	8.07E-12	9.21E-12	1.04E-11	1.04E-11
rn218	3.93E-29	4.36E-29	4.82E-29	5.28E-29	5.74E-29	6.21E-33
rn219	1.34E-14	1.50E-14	1.66E-14	1.82E-14	1.98E-14	1.98E-14
rn220	1.07E-14	1.20E-14	1.33E-14	1.45E-14	1.58E-14	1.58E-14
rn222	1.04E-08	1.23E-08	1.43E-08	1.64E-08	1.84E-08	1.84E-08
ra222	4.26E-26	4.73E-26	5.24E-26	5.74E-26	6.23E-26	6.75E-30
ra223	3.34E-09	3.74E-09	4.14E-09	4.54E-09	4.94E-09	4.95E-09
ra224	6.08E-11	6.81E-11	7.54E-11	8.26E-11	8.97E-11	9.00E-11
ra225	3.27E-09	4.06E-09	4.92E-09	5.84E-09	6.83E-09	6.83E-09
ra226	1.59E-03	1.88E-03	2.19E-03	2.50E-03	2.82E-03	2.82E-03
ra228	1.06E-11	1.20E-11	1.33E-11	1.46E-11	1.60E-11	1.60E-11
ac225	2.21E-09	2.74E-09	3.32E-09	3.95E-09	4.61E-09	4.61E-09
ac227	2.32E-06	2.60E-06	2.88E-06	3.16E-06	3.43E-06	3.43E-06
ac228	1.30E-15	1.46E-15	1.62E-15	1.79E-15	1.95E-15	1.95E-15
th226	2.08E-24	2.31E-24	2.56E-24	2.80E-24	3.04E-24	3.29E-28
th227	5.39E-09	6.04E-09	6.69E-09	7.33E-09	7.97E-09	7.99E-09
th228	1.16E-08	1.30E-08	1.44E-08	1.58E-08	1.71E-08	1.71E-08
th229	6.36E-04	7.89E-04	9.57E-04	1.14E-03	1.33E-03	1.33E-03
th230	1.26E-01	1.41E-01	1.57E-01	1.72E-01	1.88E-01	1.88E-01
th231	3.15E-09	3.19E-09	3.21E-09	3.23E-09	3.25E-09	2.94E-09
th232	2.60E-02	2.92E-02	3.25E-02	3.58E-02	3.90E-02	3.90E-02
th233	1.78E-17	9.69E-14	1.08E-13	1.19E-13	1.29E-13	1.29E-28
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	3.49E-03	3.91E-03	4.33E-03	4.75E-03	5.16E-03	5.16E-03
pa232	1.96E-11	2.43E-11	2.69E-11	2.95E-11	3.20E-11	3.20E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 30
power= 1.468E-03mw, burnup=4.0214E+03mwd, flux= 9.45E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.09E-12	8.09E-12	8.08E-12	8.08E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	2.01E-21	2.24E-21	2.48E-21	2.71E-21	2.95E-21	3.19E-25
u231	1.81E-17	2.07E-17	2.29E-17	2.51E-17	2.73E-17	2.73E-32
u232	4.24E-07	4.75E-07	5.25E-07	5.75E-07	6.25E-07	6.21E-07
u233	6.68E-02	7.50E-02	8.31E-02	9.12E-02	9.92E-02	9.92E-02
u234	9.24E+00	9.26E+00	9.29E+00	9.31E+00	9.33E+00	9.33E+00
u235	7.17E+02	7.16E+02	7.14E+02	7.13E+02	7.11E+02	7.11E+02
u236	1.76E+02	1.77E+02	1.77E+02	1.77E+02	1.77E+02	1.77E+02
u237	1.13E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	4.49E-13
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	3.56E-11	1.12E-07	1.12E-07	1.12E-07	1.12E-07	1.12E-22
u240	7.88E-43	.00E+00	.00E+00	1.03E-40	1.03E-40	1.03E-40
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	3.18E-12	3.14E-12	3.14E-12	3.14E-12	3.13E-12	1.94E-12
np236m	6.57E-13	7.46E-13	7.46E-13	7.45E-13	7.45E-13	7.45E-28
np236	3.60E-07	4.03E-07	4.45E-07	4.88E-07	5.30E-07	5.30E-07
np237	4.20E+01	4.19E+01	4.19E+01	4.19E+01	4.19E+01	4.19E+01

```
     np238   5.23E-07  5.54E-07  5.54E-07  5.53E-07  5.53E-07  1.17E-14
     np239   1.56E-05  1.62E-05  1.62E-05  1.62E-05  1.62E-05  2.44E-15
     np240m   .00E+00   .00E+00   .00E+00  8.76E-43  8.76E-43  8.76E-43
     np240   5.68E-17  1.19E-15  1.19E-15  1.19E-15  1.19E-15  1.80E-40
     np241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu236   4.11E-10  4.06E-10  4.05E-10  4.05E-10  4.05E-10  3.39E-10
     pu237   5.57E-14  5.79E-14  6.06E-14  6.32E-14  6.57E-14  9.81E-16
     pu238   8.43E-03  8.39E-03  8.38E-03  8.37E-03  8.37E-03  8.32E-03
     pu239   8.13E+00  9.02E+00  9.89E+00  1.07E+01  1.16E+01  1.16E+01
     pu240   5.16E-02  6.32E-02  7.56E-02  8.86E-02  1.02E-01  1.02E-01
     pu241   7.71E-06  9.35E-06  1.12E-05  1.31E-05  1.51E-05  1.46E-05
     pu242   2.99E-07  4.27E-07  5.86E-07  7.76E-07  1.00E-06  1.00E-06
     pu243   1.22E-16  3.27E-16  4.49E-16  5.94E-16  7.66E-16  7.66E-31
     pu244   1.96E-31  5.40E-31  1.33E-30  2.99E-30  6.23E-30  6.24E-30
     pu245    .00E+00   .00E+00   .00E+00  7.64E-41  7.64E-41   .00E+00
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239   1.42E-20  2.29E-20  2.79E-20  3.32E-20  3.89E-20  3.89E-35
     am240   7.95E-18  1.05E-17  1.28E-17  1.52E-17  1.78E-17  1.78E-32
     am241   1.83E-04  2.29E-04  2.79E-04  3.33E-04  3.89E-04  3.89E-04
     am242m  2.89E-08  3.65E-08  4.48E-08  5.38E-08  6.33E-08  6.31E-08
     am242   2.10E-12  3.10E-12  3.78E-12  4.51E-12  5.29E-12  8.14E-13
     am243   6.88E-10  1.04E-09  1.50E-09  2.08E-09  2.79E-09  2.79E-09
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   1.40E-18  2.86E-18  4.11E-18  5.70E-18  7.67E-18  7.67E-33
     am245   4.48E-44   .00E+00   .00E+00  1.49E-41  1.49E-41   .00E+00
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   5.31E-23  6.57E-23  8.02E-23  9.58E-23  1.12E-22  3.43E-25
     cm242   5.01E-10  6.25E-10  7.63E-10  9.11E-10  1.07E-09  4.47E-10
     cm243   4.18E-15  5.18E-15  6.33E-15  7.55E-15  8.85E-15  8.69E-15
     cm244   3.00E-14  4.49E-14  6.46E-14  8.96E-14  1.20E-13  1.17E-13
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides         page   31
       power= 1.468E-03mw, burnup=4.0214E+03mwd, flux= 9.45E+07n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
              charge ******* d ******* d ******* d ******* d ******* d
     cm245   1.17E-17  1.97E-17  3.14E-17  4.76E-17  6.95E-17  6.95E-17
     cm246   1.99E-20  3.77E-20  6.63E-20  1.10E-19  1.74E-19  1.74E-19
     cm247   6.04E-25  1.29E-24  2.54E-24  4.67E-24  8.10E-24  8.10E-24
     cm248   1.81E-28  4.40E-28  9.69E-28  1.97E-27  3.74E-27  3.74E-27
     cm249   1.09E-40  5.03E-39  1.10E-38  2.24E-38  4.27E-38   .00E+00
     cm250   1.82E-44  4.90E-44  1.19E-43  2.66E-43  5.52E-43  5.52E-43
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              9.46E+07  9.46E+07  9.45E+07  9.45E+07  9.45E-08
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number  4 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
```

```
          pass n applies mid time densities of nth library interval
        first library updated was...
        pass   1
        pass   0
        *scale-system control module sas2 library*
        used a time-dependent neutron spectrum, for each of the above passes
          pass 0 applies start-up fuel densiities
          pass n applies mid time densities of nth library interval
        first library updated was...
        ******************************************************************************
        *                                                                            *
        *            prelim lwr origen-s binary working library--id = 1143            *
        *         made from modified card-image origen-s libraries of scale 4.2      *
        *      data from the light element, actinide, and fission product libraries  *
        *        decay data, including gamma and total energy, are from endf/b-vi    *
        *                                                                            *
        *      neutron flux spectrum factors and cross sections were produced from   *
        *     the "presas2" case updating all nuclides on the scale "burnup" library *
        *                                                                            *
        *                  fission product yields are from endf/b-v                  *
        *                                                                            *
        *              photon libraries use an 18-energy-group structure             *
        *             the photon data are from the master photon data base,          *
        *              produced to include bremsstrahlung from uo2 matrix            *
        *                                                                            *
        *        see information above this box (if present) for later updates       *
        *                                                                            *
        ******************************************************************************
        *                                                                            *
0       ******************************************************************************
0                 .other identification and sizes of library.
0                  data set name:  ft33f001
0               8/29/1996    date library was produced
0                    1697    total number of nuclides in library
                      689    number of light-element nuclides
                      129    number of actinide nuclides
                      879    number of fission product nuclides
0                    7993    number of nonzero off-diagonal matrix elements
0       ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   32
        power=    .00mw, burnup=   5362.mwd, flux= 9.28E+07n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.220108E+06   1.220614E+06   1.221082E+06   1.221515E+06   1.221911E+06   1.221910E+06
     absorptions   9.842423E+05   9.847863E+05   9.852970E+05   9.857796E+05   9.862358E+05   9.862345E+05
     k infinity    1.239641E+00   1.239471E+00   1.239304E+00   1.239136E+00   1.238964E+00   1.238965E+00
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   9.737211E+05   9.740664E+05   9.743921E+05   9.746986E+05   9.749863E+05   9.749859E+05
     non-actinide
     abs. fracs.   1.068962E-02   1.088548E-02   1.106763E-02   1.124084E-02   1.140648E-02   1.140565E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products    page   33
0                                 fraction of total absorption rate
        power=    .00mw, burnup=   5362.mwd, flux= 9.28E+07n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.29E-03  5.33E-03  5.37E-03  5.39E-03  5.41E-03  5.41E-03
     eu151     5.45E-04  5.85E-04  6.24E-04  6.62E-04  7.00E-04  7.00E-04
     nd143     4.02E-04  4.35E-04  4.68E-04  5.01E-04  5.33E-04  5.33E-04
```

rh103	1.87E-04	2.02E-04	2.18E-04	2.34E-04	2.49E-04	2.49E-04
gd155	1.56E-04	1.61E-04	1.66E-04	1.70E-04	1.74E-04	1.74E-04
xe131	1.28E-04	1.38E-04	1.49E-04	1.59E-04	1.70E-04	1.70E-04
cs133	9.92E-05	1.07E-04	1.16E-04	1.24E-04	1.32E-04	1.32E-04
sm147	7.34E-05	7.95E-05	8.55E-05	9.16E-05	9.76E-05	9.76E-05
tc 99	7.20E-05	7.79E-05	8.37E-05	8.96E-05	9.54E-05	9.54E-05
cd113	7.93E-05	8.15E-05	8.34E-05	8.50E-05	8.65E-05	8.65E-05
nd145	5.64E-05	6.10E-05	6.56E-05	7.02E-05	7.49E-05	7.49E-05
mo 95	3.91E-05	4.23E-05	4.55E-05	4.87E-05	5.19E-05	5.19E-05
gd157	4.41E-05	4.49E-05	4.55E-05	4.62E-05	4.69E-05	4.69E-05
sm152	3.38E-05	3.69E-05	4.00E-05	4.32E-05	4.64E-05	4.64E-05
kr 83	2.45E-05	2.65E-05	2.85E-05	3.05E-05	3.24E-05	3.24E-05
sm150	2.22E-05	2.47E-05	2.72E-05	2.98E-05	3.23E-05	3.23E-05
cs135	2.24E-05	2.42E-05	2.61E-05	2.79E-05	2.98E-05	2.98E-05
ru101	1.73E-05	1.88E-05	2.02E-05	2.17E-05	2.31E-05	2.31E-05
pr141	1.67E-05	1.81E-05	1.94E-05	2.08E-05	2.22E-05	2.22E-05
eu153	1.59E-05	1.73E-05	1.86E-05	2.00E-05	2.14E-05	2.14E-05
la139	1.36E-05	1.48E-05	1.59E-05	1.70E-05	1.81E-05	1.81E-05
sm151	1.73E-05	1.74E-05	1.74E-05	1.75E-05	1.75E-05	1.74E-05
ba137	6.51E-06	7.06E-06	7.60E-06	8.14E-06	8.68E-06	8.68E-06
pd105	6.11E-06	6.64E-06	7.18E-06	7.71E-06	8.26E-06	8.26E-06
zr 93	5.48E-06	5.93E-06	6.38E-06	6.83E-06	7.28E-06	7.28E-06
i129	4.30E-06	4.66E-06	5.03E-06	5.39E-06	5.75E-06	5.75E-06
nd144	4.12E-06	4.46E-06	4.80E-06	5.15E-06	5.49E-06	5.49E-06
ag109	3.56E-06	3.97E-06	4.39E-06	4.82E-06	5.27E-06	5.27E-06
mo 97	3.10E-06	3.35E-06	3.61E-06	3.86E-06	4.12E-06	4.12E-06
zr 91	1.45E-06	1.57E-06	1.69E-06	1.81E-06	1.92E-06	1.92E-06
y 89	1.39E-06	1.50E-06	1.62E-06	1.73E-06	1.84E-06	1.84E-06
ru102	1.27E-06	1.38E-06	1.48E-06	1.59E-06	1.69E-06	1.69E-06
gd152	8.73E-07	1.02E-06	1.18E-06	1.34E-06	1.52E-06	1.52E-06
ce142	1.14E-06	1.23E-06	1.32E-06	1.42E-06	1.51E-06	1.51E-06
nd148	1.09E-06	1.18E-06	1.27E-06	1.36E-06	1.45E-06	1.45E-06
pd108	1.00E-06	1.11E-06	1.22E-06	1.33E-06	1.44E-06	1.44E-06
nd146	9.17E-07	9.93E-07	1.07E-06	1.14E-06	1.22E-06	1.22E-06
ba138	7.84E-07	8.49E-07	9.13E-07	9.78E-07	1.04E-06	1.04E-06
in115	7.72E-07	8.38E-07	9.03E-07	9.69E-07	1.03E-06	1.03E-06
ce140	7.34E-07	7.95E-07	8.55E-07	9.16E-07	9.76E-07	9.76E-07
xe132	6.61E-07	7.16E-07	7.71E-07	8.26E-07	8.81E-07	8.81E-07
pd107	5.53E-07	6.07E-07	6.64E-07	7.21E-07	7.80E-07	7.80E-07
mo 98	4.53E-07	4.90E-07	5.27E-07	5.65E-07	6.02E-07	6.02E-07
mo100	4.39E-07	4.75E-07	5.12E-07	5.48E-07	5.84E-07	5.84E-07
xe134	4.33E-07	4.69E-07	5.05E-07	5.41E-07	5.76E-07	5.76E-07
zr 92	3.49E-07	3.78E-07	4.07E-07	4.35E-07	4.64E-07	4.64E-07
i127	2.96E-07	3.22E-07	3.47E-07	3.73E-07	3.99E-07	3.99E-07
ru104	2.78E-07	3.01E-07	3.25E-07	3.49E-07	3.73E-07	3.73E-07
zr 96	2.74E-07	2.97E-07	3.19E-07	3.42E-07	3.64E-07	3.64E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 34
0 fraction of total absorption rate
power= .00mw, burnup= 5362.mwd, flux= 9.28E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

nd150	2.43E-07	2.64E-07	2.84E-07	3.04E-07	3.24E-07	3.24E-07
xe136	2.34E-07	2.54E-07	2.73E-07	2.92E-07	3.12E-07	3.12E-07
ru 99	1.40E-07	1.64E-07	1.90E-07	2.18E-07	2.48E-07	2.48E-07
br 81	1.75E-07	1.89E-07	2.04E-07	2.18E-07	2.33E-07	2.33E-07
rb 85	1.70E-07	1.84E-07	1.98E-07	2.12E-07	2.26E-07	2.26E-07
zr 94	1.48E-07	1.60E-07	1.72E-07	1.84E-07	1.96E-07	1.96E-07
cd111	1.35E-07	1.48E-07	1.61E-07	1.75E-07	1.88E-07	1.88E-07
zr 90	1.36E-07	1.47E-07	1.59E-07	1.70E-07	1.81E-07	1.81E-07
sm154	1.07E-07	1.16E-07	1.25E-07	1.34E-07	1.44E-07	1.44E-07

te130	1.07E-07	1.16E-07	1.25E-07	1.34E-07	1.43E-07	1.43E-07
rb 87	9.82E-08	1.06E-07	1.14E-07	1.22E-07	1.30E-07	1.30E-07
se 77	7.05E-08	7.63E-08	8.21E-08	8.79E-08	9.37E-08	9.37E-08
pd106	5.60E-08	6.11E-08	6.63E-08	7.15E-08	7.68E-08	7.68E-08
pm147	8.22E-08	9.90E-08	9.89E-08	9.88E-08	9.88E-08	7.67E-08
eu152	4.97E-08	5.54E-08	5.91E-08	6.27E-08	6.63E-08	6.29E-08
gd156	4.21E-08	4.69E-08	5.19E-08	5.69E-08	6.21E-08	6.21E-08
kr 84	4.64E-08	5.02E-08	5.40E-08	5.78E-08	6.16E-08	6.16E-08
eu155	5.34E-08	6.01E-08	6.04E-08	6.08E-08	6.11E-08	5.27E-08
gd154	2.91E-08	3.41E-08	3.96E-08	4.55E-08	5.18E-08	5.18E-08
se 79	3.60E-08	3.89E-08	4.19E-08	4.48E-08	4.77E-08	4.77E-08
sb121	3.51E-08	3.81E-08	4.11E-08	4.41E-08	4.71E-08	4.71E-08
sb123	2.85E-08	3.09E-08	3.33E-08	3.58E-08	3.82E-08	3.82E-08
kr 86	2.59E-08	2.80E-08	3.02E-08	3.23E-08	3.44E-08	3.44E-08
dy161	2.27E-08	2.52E-08	2.78E-08	3.05E-08	3.32E-08	3.32E-08
te128	2.36E-08	2.56E-08	2.76E-08	2.96E-08	3.16E-08	3.16E-08
ba135	1.35E-08	1.58E-08	1.84E-08	2.11E-08	2.40E-08	2.40E-08
se 80	1.68E-08	1.82E-08	1.96E-08	2.10E-08	2.24E-08	2.24E-08
te125	1.52E-08	1.65E-08	1.79E-08	1.92E-08	2.05E-08	2.05E-08
tb159	1.22E-08	1.34E-08	1.46E-08	1.59E-08	1.71E-08	1.71E-08
ru100	8.93E-09	1.04E-08	1.21E-08	1.38E-08	1.57E-08	1.57E-08
cd112	1.05E-08	1.14E-08	1.24E-08	1.33E-08	1.43E-08	1.43E-08
gd158	9.65E-09	1.07E-08	1.17E-08	1.27E-08	1.38E-08	1.38E-08
li 6	9.42E-09	1.02E-08	1.09E-08	1.17E-08	1.25E-08	1.25E-08
nd142	6.24E-09	7.32E-09	8.48E-09	9.73E-09	1.11E-08	1.11E-08
sn117	7.99E-09	8.69E-09	9.38E-09	1.01E-08	1.08E-08	1.08E-08
ba134	6.03E-09	7.07E-09	8.18E-09	9.38E-09	1.07E-08	1.07E-08
sm148	5.54E-09	6.49E-09	7.51E-09	8.60E-09	9.77E-09	9.77E-09
sn119	6.43E-09	6.97E-09	7.52E-09	8.07E-09	8.62E-09	8.62E-09
cd114	5.69E-09	6.28E-09	6.88E-09	7.48E-09	8.10E-09	8.10E-09
sn115	5.89E-09	6.39E-09	6.89E-09	7.39E-09	7.90E-09	7.90E-09
pd104	4.06E-09	4.76E-09	5.52E-09	6.33E-09	7.20E-09	7.20E-09
dy164	4.21E-09	4.75E-09	5.32E-09	5.90E-09	6.52E-09	6.52E-09
sr 88	4.76E-09	5.15E-09	5.54E-09	5.93E-09	6.32E-09	6.32E-09
dy162	3.93E-09	4.42E-09	4.94E-09	5.47E-09	6.03E-09	6.03E-09
pd110	4.24E-09	4.66E-09	5.09E-09	5.52E-09	5.97E-09	5.97E-09
sr 90	6.03E-09	6.13E-09	6.12E-09	6.11E-09	6.10E-09	5.95E-09
se 82	3.24E-09	3.51E-09	3.78E-09	4.04E-09	4.31E-09	4.31E-09
nb 93	2.18E-09	2.56E-09	2.96E-09	3.40E-09	3.86E-09	3.86E-09
sn126	2.73E-09	2.96E-09	3.20E-09	3.43E-09	3.67E-09	3.67E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 35
0 fraction of total absorption rate
power= .00mw, burnup= 5362.mwd, flux= 9.28E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

se 78	2.48E-09	2.69E-09	2.89E-09	3.10E-09	3.30E-09	3.30E-09
eu154	2.42E-09	2.78E-09	3.00E-09	3.22E-09	3.44E-09	3.17E-09
sn124	2.04E-09	2.21E-09	2.39E-09	2.56E-09	2.74E-09	2.74E-09
mo 96	1.54E-09	1.79E-09	2.05E-09	2.34E-09	2.64E-09	2.64E-09
as 75	1.47E-09	1.59E-09	1.72E-09	1.84E-09	1.96E-09	1.96E-09
br 79	1.10E-09	1.29E-09	1.49E-09	1.71E-09	1.95E-09	1.95E-09
ba136	1.28E-09	1.42E-09	1.58E-09	1.74E-09	1.91E-09	1.91E-09
in113	1.14E-09	1.24E-09	1.34E-09	1.44E-09	1.54E-09	1.54E-09
cd110	7.79E-10	9.33E-10	1.10E-09	1.29E-09	1.50E-09	1.50E-09
dy163	9.59E-10	1.08E-09	1.21E-09	1.34E-09	1.48E-09	1.48E-09
xe130	9.02E-10	1.03E-09	1.17E-09	1.32E-09	1.48E-09	1.48E-09
kr 82	9.05E-10	1.02E-09	1.14E-09	1.26E-09	1.39E-09	1.39E-09
cs137	1.35E-09	1.37E-09	1.37E-09	1.37E-09	1.37E-09	1.34E-09
ag107	6.92E-10	8.21E-10	9.62E-10	1.12E-09	1.28E-09	1.28E-09
xe129	6.31E-10	7.40E-10	8.59E-10	9.86E-10	1.12E-09	1.12E-09

sn118	8.29E-10	9.00E-10	9.71E-10	1.04E-09	1.11E-09	1.11E-09
sn122	7.07E-10	7.67E-10	8.27E-10	8.88E-10	9.48E-10	9.48E-10
cd116	7.02E-10	7.62E-10	8.22E-10	8.82E-10	9.42E-10	9.42E-10
te126	4.15E-10	4.81E-10	5.52E-10	6.28E-10	7.09E-10	7.09E-10
sn120	5.26E-10	5.70E-10	6.15E-10	6.60E-10	7.05E-10	7.05E-10
ge 73	4.07E-10	4.42E-10	4.76E-10	5.10E-10	5.44E-10	5.44E-10
cs134	2.08E-10	2.89E-10	3.11E-10	3.33E-10	3.55E-10	2.53E-10
ge 76	1.45E-10	1.57E-10	1.69E-10	1.81E-10	1.93E-10	1.93E-10
kr 85	1.96E-10	2.06E-10	2.05E-10	2.05E-10	2.05E-10	1.92E-10
gd160	1.23E-10	1.36E-10	1.48E-10	1.62E-10	1.75E-10	1.75E-10
ho165	7.14E-11	8.10E-11	9.12E-11	1.02E-10	1.13E-10	1.13E-10
ce144	1.11E-10	2.17E-10	2.16E-10	2.16E-10	2.16E-10	8.88E-11
dy160	3.17E-11	3.74E-11	4.36E-11	5.03E-11	5.75E-11	5.75E-11
xe128	2.30E-11	2.70E-11	3.12E-11	3.58E-11	4.07E-11	4.07E-11
te124	2.25E-11	2.48E-11	2.73E-11	2.97E-11	3.23E-11	3.23E-11
sr 86	1.55E-11	1.78E-11	2.02E-11	2.27E-11	2.53E-11	2.53E-11
sr 87	1.76E-11	1.92E-11	2.07E-11	2.23E-11	2.38E-11	2.38E-11
sn116	8.75E-12	1.03E-11	1.19E-11	1.37E-11	1.56E-11	1.56E-11
nb 94	9.73E-12	1.06E-11	1.16E-11	1.25E-11	1.35E-11	1.35E-11
ge 74	8.20E-12	8.89E-12	9.58E-12	1.03E-11	1.10E-11	1.10E-11
se 76	5.80E-12	6.51E-12	7.26E-12	8.05E-12	8.87E-12	8.87E-12
ge 72	5.67E-12	6.16E-12	6.65E-12	7.14E-12	7.63E-12	7.63E-12
te122	3.67E-12	4.30E-12	4.99E-12	5.72E-12	6.51E-12	6.51E-12
ru106	6.75E-12	1.14E-11	1.15E-11	1.17E-11	1.18E-11	5.97E-12
er166	3.56E-12	4.09E-12	4.64E-12	5.22E-12	5.83E-12	5.83E-12
y 90	5.74E-12	5.83E-12	5.82E-12	5.81E-12	5.80E-12	5.66E-12
sb125	4.83E-12	5.86E-12	5.88E-12	5.91E-12	5.93E-12	4.61E-12
nb 95	5.97E-12	5.52E-11	5.51E-11	5.51E-11	5.50E-11	2.35E-12
zr 95	3.07E-12	5.95E-11	5.94E-11	5.94E-11	5.93E-11	1.14E-12
kr 80	5.18E-13	6.08E-13	7.08E-13	8.19E-13	9.43E-13	9.43E-13
y 91	2.02E-12	5.15E-11	5.14E-11	5.13E-11	5.12E-11	6.81E-13
te127m	5.32E-13	2.94E-12	2.96E-12	2.97E-12	2.98E-12	3.03E-13
ce141	1.69E-12	5.81E-10	5.80E-10	5.80E-10	5.80E-10	2.41E-13
ru103	1.07E-12	1.35E-10	1.35E-10	1.35E-10	1.35E-10	2.14E-13

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 36
0 fraction of total absorption rate
power= .00mw, burnup= 5362.mwd, flux= 9.28E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

er167	9.60E-14	1.16E-13	1.39E-13	1.65E-13	1.93E-13	1.93E-13
te123	5.98E-14	7.14E-14	8.44E-14	9.91E-14	1.15E-13	1.15E-13
sr 89	2.57E-13	1.10E-11	1.10E-11	1.10E-11	1.09E-11	7.31E-14
cd108	1.21E-14	1.54E-14	1.93E-14	2.37E-14	2.89E-14	2.89E-14
be 9	1.82E-14	1.97E-14	2.12E-14	2.27E-14	2.41E-14	2.41E-14
li 7	7.40E-15	8.01E-15	8.62E-15	9.23E-15	9.84E-15	9.84E-15
sb126	3.14E-15	5.01E-15	5.31E-15	5.62E-15	5.92E-15	4.22E-15
sn114	2.20E-15	2.59E-15	3.00E-15	3.45E-15	3.93E-15	3.93E-15
pm148m	1.36E-14	1.35E-12	1.36E-12	1.36E-12	1.37E-12	2.97E-15
sn123	8.62E-16	3.75E-15	3.76E-15	3.76E-15	3.77E-15	5.30E-16
tb160	8.46E-16	1.28E-14	1.39E-14	1.50E-14	1.61E-14	4.87E-16
te129m	2.37E-15	6.73E-13	6.74E-13	6.75E-13	6.76E-13	3.63E-16
cd115m	1.29E-15	9.19E-14	9.22E-14	9.25E-14	9.28E-14	3.18E-16
sb124	5.37E-17	1.30E-15	1.34E-15	1.38E-15	1.42E-15	2.11E-17
pr143	8.92E-16	9.64E-10	9.63E-10	9.62E-10	9.61E-10	8.40E-18
pm148	2.34E-17	4.90E-14	4.91E-14	4.91E-14	4.92E-14	5.11E-18
cd109	1.01E-18	1.65E-18	1.78E-18	1.93E-18	2.09E-18	1.21E-18
eu156	5.64E-17	1.50E-11	1.52E-11	1.53E-11	1.55E-11	9.14E-19
nd147	1.04E-17	3.38E-10	3.38E-10	3.38E-10	3.37E-10	3.69E-20
ba140	5.86E-18	1.72E-11	1.72E-11	1.71E-11	1.71E-11	3.69E-20
la140	2.17E-18	5.54E-12	5.54E-12	5.53E-12	5.53E-12	1.85E-20

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 37
power= 1.468E-03mw, burnup=5.3618E+03mwd, flux= 9.28E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
h 1	2.40E-04	2.59E-04	2.79E-04	2.99E-04	3.18E-04	3.18E-04
h 2	7.13E-07	7.72E-07	8.30E-07	8.89E-07	9.47E-07	9.47E-07
h 3	1.41E-11	1.49E-11	1.51E-11	1.53E-11	1.54E-11	1.46E-11
h 4	.00E+00	2.19E-35	2.21E-35	2.24E-35	2.26E-35	.00E+00
he 3	4.83E-09	5.18E-09	5.53E-09	5.87E-09	6.20E-09	6.20E-09
he 4	3.97E-05	4.29E-05	4.62E-05	4.95E-05	5.27E-05	5.27E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	4.77E-06	5.16E-06	5.55E-06	5.94E-06	6.33E-06	6.33E-06
ne 21	4.18E-10	4.85E-10	5.56E-10	6.31E-10	7.11E-10	7.11E-10
ne 22	3.13E-08	3.39E-08	3.65E-08	3.91E-08	4.16E-08	4.16E-08
ne 23	2.60E-30	2.60E-15	2.60E-15	2.60E-15	2.60E-15	2.60E-30
na 22	1.26E-11	1.54E-11	1.54E-11	1.54E-11	1.54E-11	1.18E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	1.00E-23	9.66E-09	9.66E-09	9.66E-09	9.66E-09	9.66E-24
na 24m	1.65E-30	1.59E-15	1.59E-15	1.59E-15	1.59E-15	1.59E-30
na 25	4.85E-40	5.56E-25	6.35E-25	7.18E-25	8.06E-25	8.06E-40
mg 24	3.57E-02	3.82E-02	4.07E-02	4.32E-02	4.57E-02	4.57E-02
mg 25	4.67E-08	5.38E-08	6.14E-08	6.94E-08	7.79E-08	7.79E-08
mg 26	7.13E-07	7.71E-07	8.30E-07	8.88E-07	9.47E-07	9.47E-07
mg 27	7.77E-28	7.77E-13	7.77E-13	7.77E-13	7.77E-13	7.77E-28
mg 28	.00E+00	5.72E-25	5.72E-25	5.72E-25	5.72E-25	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	7.45E-26	7.16E-11	7.16E-11	7.16E-11	7.16E-11	7.16E-26
al 29	3.60E-38	4.16E-23	4.78E-23	5.44E-23	6.13E-23	6.13E-38
al 30	.00E+00	2.34E-33	2.90E-33	3.53E-33	4.26E-33	.00E+00
si 28	1.04E-01	1.11E-01	1.19E-01	1.26E-01	1.33E-01	1.33E-01
si 29	3.87E-07	4.49E-07	5.16E-07	5.87E-07	6.62E-07	6.62E-07
si 30	1.50E-12	1.89E-12	2.34E-12	2.86E-12	3.44E-12	3.44E-12
si 31	3.82E-40	4.90E-25	6.07E-25	7.40E-25	8.92E-25	8.97E-40
si 32	2.24E-31	2.86E-31	3.57E-31	4.37E-31	5.29E-31	5.27E-31
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		9.28E+07	9.28E+07	9.28E+07	9.28E+07	9.27E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 38
power= 1.468E-03mw, burnup=5.3618E+03mwd, flux= 9.28E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	2.26E+00	2.56E+00	2.88E+00	3.21E+00	3.56E+00	3.56E+00
pb206	3.70E-03	4.51E-03	5.40E-03	6.38E-03	7.45E-03	7.45E-03
pb207	4.14E-04	4.85E-04	5.61E-04	6.43E-04	7.30E-04	7.30E-04
pb208	2.38E-05	2.79E-05	3.22E-05	3.69E-05	4.18E-05	4.18E-05
pb209	6.25E-11	7.20E-11	8.20E-11	9.25E-11	1.03E-10	1.03E-10
pb210	3.92E-05	4.37E-05	4.81E-05	5.25E-05	5.70E-05	5.70E-05
pb211	1.08E-11	1.17E-11	1.25E-11	1.34E-11	1.42E-11	1.43E-11
pb212	1.09E-11	1.17E-11	1.26E-11	1.34E-11	1.43E-11	1.43E-11
pb214	8.97E-11	9.98E-11	1.10E-10	1.20E-10	1.30E-10	1.30E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	3.09E-04	3.88E-04	4.77E-04	5.79E-04	6.94E-04	6.94E-04
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.42E-08	2.69E-08	2.96E-08	3.23E-08	3.51E-08	3.51E-08
bi211	6.43E-13	6.93E-13	7.43E-13	7.93E-13	8.43E-13	8.45E-13
bi212	1.03E-12	1.11E-12	1.19E-12	1.27E-12	1.35E-12	1.36E-12
bi213	1.46E-11	1.68E-11	1.92E-11	2.16E-11	2.41E-11	2.41E-11

bi214	6.66E-11	7.41E-11	8.16E-11	8.92E-11	9.68E-11	9.68E-11
po210	6.60E-07	7.42E-07	8.17E-07	8.93E-07	9.69E-07	9.59E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	7.11E-18	7.65E-18	8.21E-18	8.77E-18	9.32E-18	9.34E-18
po212	5.44E-23	5.85E-23	6.27E-23	6.70E-23	7.12E-23	7.13E-23
po213	2.19E-20	2.53E-20	2.88E-20	3.25E-20	3.63E-20	3.63E-20
po214	9.16E-18	1.02E-17	1.12E-17	1.23E-17	1.33E-17	1.33E-17
po215	8.91E-18	9.60E-18	1.03E-17	1.10E-17	1.17E-17	1.17E-17
po216	4.13E-17	4.44E-17	4.76E-17	5.09E-17	5.40E-17	5.42E-17
po218	1.04E-11	1.15E-11	1.27E-11	1.39E-11	1.51E-11	1.51E-11
rn218	6.21E-33	6.16E-29	6.61E-29	7.05E-29	7.49E-29	3.88E-34
rn219	1.98E-14	2.14E-14	2.29E-14	2.45E-14	2.60E-14	2.61E-14
rn220	1.58E-14	1.70E-14	1.83E-14	1.95E-14	2.07E-14	2.08E-14
rn222	1.84E-08	2.05E-08	2.26E-08	2.47E-08	2.68E-08	2.68E-08
ra222	6.75E-30	6.69E-26	7.17E-26	7.66E-26	8.14E-26	4.21E-31
ra223	4.95E-09	5.33E-09	5.72E-09	6.10E-09	6.49E-09	6.50E-09
ra224	9.00E-11	9.68E-11	1.04E-10	1.11E-10	1.18E-10	1.18E-10
ra225	6.83E-09	7.87E-09	8.96E-09	1.01E-08	1.13E-08	1.13E-08
ra226	2.82E-03	3.13E-03	3.45E-03	3.77E-03	4.09E-03	4.09E-03
ra228	1.60E-11	1.73E-11	1.87E-11	2.00E-11	2.14E-11	2.14E-11
ac225	4.61E-09	5.31E-09	6.05E-09	6.82E-09	7.63E-09	7.63E-09
ac227	3.43E-06	3.71E-06	3.98E-06	4.25E-06	4.51E-06	4.51E-06
ac228	1.95E-15	2.11E-15	2.28E-15	2.44E-15	2.61E-15	2.61E-15
th226	3.29E-28	3.26E-24	3.50E-24	3.74E-24	3.97E-24	2.06E-29
th227	7.99E-09	8.60E-09	9.23E-09	9.85E-09	1.05E-08	1.05E-08
th228	1.71E-08	1.85E-08	1.98E-08	2.12E-08	2.25E-08	2.25E-08
th229	1.33E-03	1.53E-03	1.74E-03	1.96E-03	2.20E-03	2.20E-03
th230	1.88E-01	2.03E-01	2.18E-01	2.33E-01	2.49E-01	2.49E-01
th231	2.94E-09	3.27E-09	3.29E-09	3.31E-09	3.33E-09	2.92E-09
th232	3.90E-02	4.23E-02	4.56E-02	4.89E-02	5.22E-02	5.22E-02
th233	1.29E-28	1.40E-13	1.51E-13	1.62E-13	1.73E-13	1.73E-28
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	5.16E-03	5.57E-03	5.98E-03	6.39E-03	6.79E-03	6.79E-03
pa232	3.20E-26	3.46E-11	3.71E-11	3.96E-11	4.21E-11	4.21E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 39
power= 1.468E-03mw, burnup=5.3618E+03mwd, flux= 9.28E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.45E-06	1.45E-06	1.45E-06	1.44E-06	1.44E-06	1.44E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	3.19E-25	3.16E-21	3.39E-21	3.62E-21	3.85E-21	1.99E-26
u231	2.73E-32	2.94E-17	3.15E-17	3.37E-17	3.58E-17	3.58E-32
u232	6.21E-07	6.74E-07	7.24E-07	7.72E-07	8.21E-07	8.13E-07
u233	9.92E-02	1.07E-01	1.15E-01	1.23E-01	1.31E-01	1.31E-01
u234	9.33E+00	9.35E+00	9.38E+00	9.40E+00	9.42E+00	9.42E+00
u235	7.11E+02	7.10E+02	7.08E+02	7.07E+02	7.06E+02	7.06E+02
u236	1.77E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02
u237	4.49E-13	1.14E-06	1.14E-06	1.14E-06	1.14E-06	6.96E-13
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.63E+04	3.63E+04
u239	1.12E-22	1.12E-07	1.12E-07	1.12E-07	1.12E-07	1.12E-22
u240	1.03E-40	2.05E-40	4.10E-40	8.21E-40	1.33E-39	1.33E-39
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	1.94E-12	3.12E-12	3.12E-12	3.12E-12	3.11E-12	1.64E-12
np236m	7.45E-28	7.41E-13	7.41E-13	7.40E-13	7.40E-13	7.40E-28
np236	5.30E-07	5.72E-07	6.14E-07	6.55E-07	6.97E-07	6.97E-07
np237	4.19E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01

```
     np238   1.17E-14  5.52E-07  5.51E-07  5.51E-07  5.51E-07  1.93E-14
     np239   2.44E-15  1.62E-05  1.62E-05  1.62E-05  1.62E-05  6.38E-15
     np240m  8.76E-43  1.75E-42  3.50E-42  7.01E-42  1.14E-41  1.14E-41
     np240   1.80E-40  1.19E-15  1.19E-15  1.19E-15  1.19E-15  4.66E-40
     np241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu236   3.39E-10  4.03E-10  4.03E-10  4.03E-10  4.03E-10  3.18E-10
     pu237   9.81E-16  6.79E-14  7.04E-14  7.27E-14  7.51E-14  2.76E-16
     pu238   8.32E-03  8.35E-03  8.34E-03  8.34E-03  8.33E-03  8.27E-03
     pu239   1.16E+01  1.24E+01  1.32E+01  1.39E+01  1.47E+01  1.47E+01
     pu240   1.02E-01  1.16E-01  1.31E-01  1.46E-01  1.61E-01  1.61E-01
     pu241   1.46E-05  1.71E-05  1.93E-05  2.15E-05  2.37E-05  2.26E-05
     pu242   1.00E-06  1.26E-06  1.56E-06  1.89E-06  2.26E-06  2.26E-06
     pu243   7.66E-31  9.61E-16  1.19E-15  1.44E-15  1.72E-15  1.73E-30
     pu244   6.24E-30  1.22E-29  2.27E-29  4.03E-29  6.88E-29  6.88E-29
     pu245    .00E+00  1.53E-40  3.06E-40  6.11E-40  9.93E-40   .00E+00
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239   3.89E-35  4.45E-20  5.06E-20  5.69E-20  6.33E-20  6.34E-35
     am240   1.78E-32  2.04E-17  2.32E-17  2.60E-17  2.90E-17  2.90E-32
     am241   3.89E-04  4.47E-04  5.08E-04  5.72E-04  6.36E-04  6.36E-04
     am242m  6.31E-08  7.30E-08  8.32E-08  9.39E-08  1.05E-07  1.04E-07
     am242   8.14E-13  6.07E-12  6.90E-12  7.76E-12  8.64E-12  1.35E-12
     am243   2.79E-09  3.66E-09  4.69E-09  5.89E-09  7.29E-09  7.29E-09
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   7.67E-33  1.00E-17  1.28E-17  1.61E-17  1.99E-17  1.99E-32
     am245    .00E+00  2.98E-41  5.97E-41  1.19E-40  2.09E-40   .00E+00
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   3.43E-25  1.28E-22  1.46E-22  1.64E-22  1.83E-22  8.12E-26
     cm242   4.47E-10  1.23E-09  1.39E-09  1.57E-09  1.75E-09  5.85E-10
     cm243   8.69E-15  1.01E-14  1.15E-14  1.29E-14  1.44E-14  1.41E-14
     cm244   1.17E-13  1.57E-13  2.01E-13  2.53E-13  3.13E-13  3.01E-13
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides         page   40
       power= 1.468E-03mw, burnup=5.3618E+03mwd, flux= 9.28E+07n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
              charge ******* d ******* d ******* d ******* d ******* d
     cm245   6.95E-17  9.78E-17  1.34E-16  1.79E-16  2.35E-16  2.35E-16
     cm246   1.74E-19  2.63E-19  3.85E-19  5.48E-19  7.60E-19  7.60E-19
     cm247   8.10E-24  1.34E-23  2.12E-23  3.25E-23  4.83E-23  4.83E-23
     cm248   3.74E-27  6.74E-27  1.16E-26  1.91E-26  3.04E-26  3.04E-26
     cm249    .00E+00  7.65E-38  1.31E-37  2.17E-37  3.45E-37   .00E+00
     cm250   5.52E-43  1.08E-42  1.99E-42  3.52E-42  6.00E-42  6.00E-42
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               9.28E+07  9.28E+07  9.28E+07  9.28E+07  9.27E-08
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number  5 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
```

```
          pass n applies mid time densities of nth library interval
        first library updated was...
        pass   1
        pass   0
        *scale-system control module sas2 library*
        used a time-dependent neutron spectrum, for each of the above passes
          pass 0 applies start-up fuel densiities
          pass n applies mid time densities of nth library interval
        first library updated was...
        ******************************************************************************
        *                                                                            *
        *            prelim lwr origen-s binary working library--id = 1143            *
        *         made from modified card-image origen-s libraries of scale 4.2       *
        *      data from the light element, actinide, and fission product libraries   *
        *        decay data, including gamma and total energy, are from endf/b-vi     *
        *                                                                            *
        *      neutron flux spectrum factors and cross sections were produced from    *
        *     the "presas2" case updating all nuclides on the scale "burnup" library  *
        *                                                                            *
        *                  fission product yields are from endf/b-v                  *
        *                                                                            *
        *              photon libraries use an 18-energy-group structure             *
        *             the photon data are from the master photon data base,          *
        *              produced to include bremsstrahlung from uo2 matrix            *
        *                                                                            *
        *        see information above this box (if present) for later updates       *
        *                                                                            *
        ******************************************************************************
        *                                                                            *
0       ******************************************************************************
0                 .other identification and sizes of library.
0                  data set name:  ft33f001
0               8/29/1996    date library was produced
0                    1697    total number of nuclides in library
                      689    number of light-element nuclides
                      129    number of actinide nuclides
                      879    number of fission product nuclides
0                    7993    number of nonzero off-diagonal matrix elements
0       ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   41
        power=    .00mw, burnup=   6702.mwd, flux= 9.23E+07n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.227854E+06   1.228214E+06   1.228540E+06   1.228833E+06   1.229094E+06   1.229093E+06
     absorptions   9.908031E+05   9.912365E+05   9.916465E+05   9.920353E+05   9.924034E+05   9.924018E+05
     k infinity    1.239251E+00   1.239072E+00   1.238889E+00   1.238699E+00   1.238502E+00   1.238503E+00
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   9.795352E+05   9.798043E+05   9.800555E+05   9.802891E+05   9.805056E+05   9.805048E+05
     non-actinide
     abs. fracs.   1.137245E-02   1.153332E-02   1.168865E-02   1.184052E-02   1.198888E-02   1.198804E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products    page   42
0                                  fraction of total absorption rate
        power=    .00mw, burnup=   6702.mwd, flux= 9.23E+07n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.41E-03  5.42E-03  5.43E-03  5.44E-03  5.44E-03  5.44E-03
     eu151     7.00E-04  7.37E-04  7.72E-04  8.08E-04  8.42E-04  8.42E-04
     nd143     5.33E-04  5.66E-04  5.99E-04  6.31E-04  6.63E-04  6.63E-04
```

rh103	2.49E-04	2.65E-04	2.81E-04	2.96E-04	3.12E-04	3.12E-04
xe131	1.70E-04	1.80E-04	1.91E-04	2.01E-04	2.12E-04	2.12E-04
gd155	1.74E-04	1.78E-04	1.81E-04	1.84E-04	1.86E-04	1.87E-04
cs133	1.32E-04	1.40E-04	1.48E-04	1.56E-04	1.64E-04	1.64E-04
sm147	9.76E-05	1.04E-04	1.10E-04	1.16E-04	1.22E-04	1.22E-04
tc 99	9.54E-05	1.01E-04	1.07E-04	1.13E-04	1.18E-04	1.18E-04
nd145	7.49E-05	7.95E-05	8.41E-05	8.87E-05	9.33E-05	9.33E-05
cd113	8.65E-05	8.78E-05	8.90E-05	9.00E-05	9.09E-05	9.09E-05
mo 95	5.19E-05	5.51E-05	5.83E-05	6.15E-05	6.47E-05	6.47E-05
sm152	4.64E-05	4.96E-05	5.29E-05	5.62E-05	5.95E-05	5.95E-05
gd157	4.69E-05	4.75E-05	4.81E-05	4.87E-05	4.93E-05	4.93E-05
sm150	3.23E-05	3.48E-05	3.74E-05	3.99E-05	4.25E-05	4.25E-05
kr 83	3.24E-05	3.44E-05	3.64E-05	3.84E-05	4.03E-05	4.03E-05
cs135	2.98E-05	3.16E-05	3.35E-05	3.53E-05	3.71E-05	3.71E-05
ru101	2.31E-05	2.45E-05	2.59E-05	2.74E-05	2.88E-05	2.88E-05
pr141	2.22E-05	2.36E-05	2.49E-05	2.63E-05	2.77E-05	2.77E-05
eu153	2.14E-05	2.27E-05	2.41E-05	2.55E-05	2.69E-05	2.69E-05
la139	1.82E-05	1.93E-05	2.04E-05	2.15E-05	2.26E-05	2.26E-05
sm151	1.74E-05	1.76E-05	1.76E-05	1.76E-05	1.77E-05	1.75E-05
ba137	8.68E-06	9.23E-06	9.77E-06	1.03E-05	1.08E-05	1.08E-05
pd105	8.26E-06	8.80E-06	9.35E-06	9.90E-06	1.05E-05	1.05E-05
zr 93	7.28E-06	7.73E-06	8.17E-06	8.62E-06	9.06E-06	9.06E-06
i129	5.75E-06	6.11E-06	6.48E-06	6.84E-06	7.20E-06	7.20E-06
ag109	5.27E-06	5.73E-06	6.21E-06	6.70E-06	7.20E-06	7.20E-06
nd144	5.49E-06	5.83E-06	6.17E-06	6.52E-06	6.86E-06	6.86E-06
mo 97	4.12E-06	4.37E-06	4.63E-06	4.88E-06	5.14E-06	5.14E-06
zr 91	1.92E-06	2.04E-06	2.16E-06	2.28E-06	2.39E-06	2.39E-06
gd152	1.52E-06	1.71E-06	1.90E-06	2.11E-06	2.32E-06	2.32E-06
y 89	1.84E-06	1.96E-06	2.07E-06	2.18E-06	2.29E-06	2.29E-06
ru102	1.69E-06	1.80E-06	1.91E-06	2.01E-06	2.12E-06	2.12E-06
pd108	1.44E-06	1.55E-06	1.67E-06	1.79E-06	1.92E-06	1.92E-06
ce142	1.51E-06	1.60E-06	1.70E-06	1.79E-06	1.88E-06	1.88E-06
nd148	1.45E-06	1.54E-06	1.63E-06	1.72E-06	1.81E-06	1.81E-06
nd146	1.22E-06	1.30E-06	1.37E-06	1.45E-06	1.52E-06	1.52E-06
ba138	1.04E-06	1.11E-06	1.17E-06	1.24E-06	1.30E-06	1.30E-06
in115	1.03E-06	1.10E-06	1.17E-06	1.23E-06	1.30E-06	1.30E-06
ce140	9.76E-07	1.04E-06	1.10E-06	1.16E-06	1.22E-06	1.22E-06
xe132	8.81E-07	9.36E-07	9.91E-07	1.05E-06	1.10E-06	1.10E-06
pd107	7.80E-07	8.39E-07	9.00E-07	9.62E-07	1.03E-06	1.03E-06
mo 98	6.02E-07	6.39E-07	6.77E-07	7.14E-07	7.51E-07	7.51E-07
mo100	5.84E-07	6.21E-07	6.57E-07	6.93E-07	7.29E-07	7.29E-07
xe134	5.76E-07	6.12E-07	6.48E-07	6.84E-07	7.19E-07	7.19E-07
zr 92	4.64E-07	4.93E-07	5.21E-07	5.50E-07	5.78E-07	5.78E-07
i127	3.99E-07	4.25E-07	4.51E-07	4.77E-07	5.03E-07	5.03E-07
ru104	3.73E-07	3.97E-07	4.21E-07	4.45E-07	4.69E-07	4.69E-07
zr 96	3.64E-07	3.87E-07	4.09E-07	4.31E-07	4.54E-07	4.54E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 43
0 fraction of total absorption rate
power= .00mw, burnup= 6702.mwd, flux= 9.23E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

nd150	3.24E-07	3.45E-07	3.65E-07	3.85E-07	4.06E-07	4.06E-07
xe136	3.12E-07	3.31E-07	3.50E-07	3.70E-07	3.89E-07	3.89E-07
ru 99	2.48E-07	2.80E-07	3.13E-07	3.48E-07	3.86E-07	3.86E-07
br 81	2.33E-07	2.47E-07	2.62E-07	2.76E-07	2.90E-07	2.90E-07
rb 85	2.26E-07	2.40E-07	2.54E-07	2.67E-07	2.81E-07	2.81E-07
cd111	1.88E-07	2.02E-07	2.16E-07	2.30E-07	2.45E-07	2.45E-07
zr 94	1.96E-07	2.08E-07	2.20E-07	2.32E-07	2.44E-07	2.44E-07
zr 90	1.81E-07	1.92E-07	2.03E-07	2.14E-07	2.26E-07	2.26E-07
sm154	1.44E-07	1.53E-07	1.62E-07	1.72E-07	1.81E-07	1.81E-07

te130	1.43E-07	1.51E-07	1.60E-07	1.69E-07	1.78E-07	1.78E-07
rb 87	1.30E-07	1.38E-07	1.46E-07	1.54E-07	1.62E-07	1.62E-07
se 77	9.37E-08	9.95E-08	1.05E-07	1.11E-07	1.17E-07	1.17E-07
pd106	7.68E-08	8.22E-08	8.76E-08	9.31E-08	9.86E-08	9.86E-08
gd156	6.21E-08	6.73E-08	7.26E-08	7.80E-08	8.35E-08	8.35E-08
gd154	5.18E-08	5.85E-08	6.56E-08	7.31E-08	8.11E-08	8.11E-08
kr 84	6.16E-08	6.54E-08	6.92E-08	7.30E-08	7.68E-08	7.68E-08
eu152	6.29E-08	6.98E-08	7.32E-08	7.65E-08	7.98E-08	7.47E-08
pm147	7.67E-08	9.87E-08	9.86E-08	9.85E-08	9.85E-08	7.16E-08
se 79	4.77E-08	5.07E-08	5.36E-08	5.65E-08	5.94E-08	5.94E-08
sb121	4.71E-08	5.01E-08	5.31E-08	5.61E-08	5.92E-08	5.92E-08
eu155	5.27E-08	6.14E-08	6.18E-08	6.21E-08	6.24E-08	5.19E-08
sb123	3.82E-08	4.06E-08	4.31E-08	4.55E-08	4.79E-08	4.79E-08
dy161	3.32E-08	3.61E-08	3.90E-08	4.20E-08	4.50E-08	4.50E-08
kr 86	3.44E-08	3.65E-08	3.86E-08	4.07E-08	4.28E-08	4.28E-08
te128	3.16E-08	3.36E-08	3.56E-08	3.76E-08	3.96E-08	3.96E-08
ba135	2.40E-08	2.70E-08	3.03E-08	3.38E-08	3.74E-08	3.74E-08
se 80	2.24E-08	2.38E-08	2.52E-08	2.66E-08	2.79E-08	2.79E-08
te125	2.05E-08	2.18E-08	2.32E-08	2.45E-08	2.59E-08	2.59E-08
ru100	1.57E-08	1.77E-08	1.98E-08	2.20E-08	2.44E-08	2.44E-08
tb159	1.71E-08	1.84E-08	1.97E-08	2.11E-08	2.24E-08	2.24E-08
cd112	1.43E-08	1.53E-08	1.63E-08	1.73E-08	1.83E-08	1.83E-08
gd158	1.38E-08	1.48E-08	1.59E-08	1.70E-08	1.81E-08	1.81E-08
nd142	1.11E-08	1.25E-08	1.40E-08	1.56E-08	1.72E-08	1.72E-08
ba134	1.07E-08	1.20E-08	1.35E-08	1.50E-08	1.66E-08	1.66E-08
li 6	1.25E-08	1.32E-08	1.40E-08	1.47E-08	1.55E-08	1.55E-08
sm148	9.77E-09	1.10E-08	1.23E-08	1.37E-08	1.52E-08	1.52E-08
sn117	1.08E-08	1.15E-08	1.22E-08	1.29E-08	1.37E-08	1.37E-08
pd104	7.20E-09	8.12E-09	9.10E-09	1.01E-08	1.12E-08	1.12E-08
sn119	8.62E-09	9.18E-09	9.73E-09	1.03E-08	1.08E-08	1.08E-08
cd114	8.10E-09	8.71E-09	9.34E-09	9.97E-09	1.06E-08	1.06E-08
sn115	7.90E-09	8.40E-09	8.91E-09	9.42E-09	9.93E-09	9.93E-09
dy164	6.52E-09	7.15E-09	7.80E-09	8.48E-09	9.18E-09	9.18E-09
dy162	6.03E-09	6.61E-09	7.21E-09	7.83E-09	8.47E-09	8.47E-09
sr 88	6.32E-09	6.71E-09	7.09E-09	7.48E-09	7.87E-09	7.87E-09
pd110	5.97E-09	6.42E-09	6.88E-09	7.35E-09	7.83E-09	7.83E-09
nb 93	3.86E-09	4.36E-09	4.88E-09	5.44E-09	6.02E-09	6.02E-09
sr 90	5.95E-09	6.09E-09	6.08E-09	6.07E-09	6.06E-09	5.87E-09
se 82	4.31E-09	4.57E-09	4.84E-09	5.10E-09	5.37E-09	5.37E-09
sn126	3.67E-09	3.91E-09	4.15E-09	4.39E-09	4.63E-09	4.63E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 44
0 fraction of total absorption rate
power= .00mw, burnup= 6702.mwd, flux= 9.23E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

se 78	3.30E-09	3.51E-09	3.72E-09	3.92E-09	4.13E-09	4.13E-09
mo 96	2.64E-09	2.96E-09	3.30E-09	3.65E-09	4.03E-09	4.03E-09
eu154	3.17E-09	3.66E-09	3.88E-09	4.10E-09	4.32E-09	3.91E-09
sn124	2.74E-09	2.92E-09	3.09E-09	3.27E-09	3.45E-09	3.45E-09
br 79	1.95E-09	2.20E-09	2.46E-09	2.74E-09	3.03E-09	3.03E-09
ba136	1.91E-09	2.08E-09	2.26E-09	2.44E-09	2.63E-09	2.63E-09
cd110	1.50E-09	1.73E-09	1.97E-09	2.23E-09	2.52E-09	2.52E-09
as 75	1.96E-09	2.08E-09	2.20E-09	2.32E-09	2.45E-09	2.45E-09
xe130	1.48E-09	1.64E-09	1.82E-09	2.00E-09	2.19E-09	2.19E-09
dy163	1.48E-09	1.63E-09	1.78E-09	1.94E-09	2.10E-09	2.10E-09
ag107	1.28E-09	1.46E-09	1.66E-09	1.86E-09	2.09E-09	2.09E-09
kr 82	1.39E-09	1.53E-09	1.67E-09	1.81E-09	1.96E-09	1.96E-09
in113	1.54E-09	1.64E-09	1.74E-09	1.84E-09	1.94E-09	1.94E-09
xe129	1.12E-09	1.27E-09	1.42E-09	1.58E-09	1.75E-09	1.75E-09
sn118	1.11E-09	1.18E-09	1.26E-09	1.33E-09	1.40E-09	1.40E-09

cs137	1.34E-09	1.37E-09	1.37E-09	1.37E-09	1.37E-09	1.33E-09
sn122	9.49E-10	1.01E-09	1.07E-09	1.13E-09	1.19E-09	1.19E-09
cd116	9.41E-10	1.00E-09	1.06E-09	1.12E-09	1.18E-09	1.18E-09
te126	7.09E-10	7.95E-10	8.86E-10	9.81E-10	1.08E-09	1.08E-09
sn120	7.05E-10	7.50E-10	7.95E-10	8.40E-10	8.86E-10	8.86E-10
ge 73	5.45E-10	5.79E-10	6.13E-10	6.48E-10	6.82E-10	6.82E-10
cs134	2.53E-10	3.76E-10	3.98E-10	4.20E-10	4.42E-10	2.90E-10
ge 76	1.93E-10	2.05E-10	2.17E-10	2.29E-10	2.41E-10	2.41E-10
gd160	1.75E-10	1.89E-10	2.03E-10	2.18E-10	2.33E-10	2.33E-10
kr 85	1.92E-10	2.04E-10	2.04E-10	2.04E-10	2.04E-10	1.88E-10
ho165	1.13E-10	1.25E-10	1.37E-10	1.50E-10	1.64E-10	1.64E-10
dy160	5.75E-11	6.53E-11	7.36E-11	8.25E-11	9.19E-11	9.19E-11
ce144	8.88E-11	2.16E-10	2.16E-10	2.15E-10	2.15E-10	7.08E-11
xe128	4.07E-11	4.59E-11	5.14E-11	5.72E-11	6.34E-11	6.34E-11
te124	3.23E-11	3.49E-11	3.76E-11	4.04E-11	4.32E-11	4.32E-11
sr 86	2.53E-11	2.82E-11	3.11E-11	3.42E-11	3.74E-11	3.74E-11
sr 87	2.38E-11	2.54E-11	2.70E-11	2.86E-11	3.02E-11	3.02E-11
sn116	1.56E-11	1.76E-11	1.97E-11	2.20E-11	2.43E-11	2.43E-11
nb 94	1.35E-11	1.45E-11	1.55E-11	1.66E-11	1.77E-11	1.77E-11
ge 74	1.10E-11	1.16E-11	1.23E-11	1.30E-11	1.37E-11	1.37E-11
se 76	8.87E-12	9.73E-12	1.06E-11	1.15E-11	1.25E-11	1.25E-11
te122	6.51E-12	7.35E-12	8.24E-12	9.18E-12	1.02E-11	1.02E-11
ge 72	7.63E-12	8.13E-12	8.62E-12	9.12E-12	9.62E-12	9.62E-12
er166	5.84E-12	6.48E-12	7.15E-12	7.84E-12	8.57E-12	8.57E-12
y 90	5.66E-12	5.79E-12	5.78E-12	5.78E-12	5.77E-12	5.59E-12
ru106	5.97E-12	1.19E-11	1.20E-11	1.22E-11	1.23E-11	5.25E-12
sb125	4.61E-12	5.95E-12	5.98E-12	6.00E-12	6.02E-12	4.40E-12
kr 80	9.43E-13	1.08E-12	1.23E-12	1.39E-12	1.57E-12	1.57E-12
nb 95	2.35E-12	5.50E-11	5.49E-11	5.49E-11	5.48E-11	8.62E-13
zr 95	1.14E-12	5.92E-11	5.92E-11	5.91E-11	5.91E-11	4.21E-13
er167	1.93E-13	2.25E-13	2.59E-13	2.96E-13	3.36E-13	3.36E-13
y 91	6.81E-13	5.11E-11	5.11E-11	5.10E-11	5.09E-11	2.29E-13
te123	1.15E-13	1.33E-13	1.53E-13	1.75E-13	1.99E-13	1.99E-13
te127m	3.03E-13	3.00E-12	3.01E-12	3.02E-12	3.03E-12	1.72E-13

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 45
0 fraction of total absorption rate
power= .00mw, burnup= 6702.mwd, flux= 9.23E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

cd108	2.89E-14	3.48E-14	4.15E-14	4.90E-14	5.74E-14	5.74E-14
ru103	2.14E-13	1.36E-10	1.36E-10	1.36E-10	1.36E-10	4.29E-14
ce141	2.41E-13	5.79E-10	5.79E-10	5.79E-10	5.78E-10	3.43E-14
be 9	2.41E-14	2.56E-14	2.71E-14	2.86E-14	3.01E-14	3.01E-14
sr 89	7.32E-14	1.09E-11	1.09E-11	1.09E-11	1.09E-11	2.08E-14
li 7	9.84E-15	1.05E-14	1.11E-14	1.17E-14	1.23E-14	1.23E-14
sn114	3.93E-15	4.44E-15	4.98E-15	5.56E-15	6.17E-15	6.17E-15
sb126	4.22E-15	6.22E-15	6.52E-15	6.83E-15	7.13E-15	5.32E-15
pm148m	2.97E-15	1.37E-12	1.38E-12	1.38E-12	1.38E-12	6.50E-16
sn123	5.30E-16	3.77E-15	3.77E-15	3.77E-15	3.78E-15	3.26E-16
tb160	4.87E-16	1.73E-14	1.85E-14	1.97E-14	2.09E-14	2.62E-16
cd115m	3.18E-16	9.31E-14	9.34E-14	9.37E-14	9.40E-14	7.78E-17
te129m	3.63E-16	6.77E-13	6.78E-13	6.79E-13	6.80E-13	5.54E-17
sb124	2.11E-17	1.46E-15	1.50E-15	1.53E-15	1.57E-15	8.19E-18
cd109	1.21E-18	2.24E-18	2.42E-18	2.59E-18	2.78E-18	1.40E-18
pm148	5.12E-18	4.92E-14	4.93E-14	4.93E-14	4.94E-14	1.12E-18
pr143	8.40E-18	9.60E-10	9.59E-10	9.59E-10	9.58E-10	8.30E-20
eu156	9.14E-19	1.56E-11	1.58E-11	1.59E-11	1.61E-11	1.84E-20

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 46
power= 1.468E-03mw, burnup=6.7023E+03mwd, flux= 9.23E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
h 1	3.18E-04	3.38E-04	3.58E-04	3.78E-04	3.97E-04	3.97E-04
h 2	9.47E-07	1.01E-06	1.07E-06	1.12E-06	1.18E-06	1.18E-06
h 3	1.46E-11	1.57E-11	1.58E-11	1.60E-11	1.62E-11	1.51E-11
h 4	.00E+00	2.30E-35	2.32E-35	2.35E-35	2.37E-35	.00E+00
he 3	6.20E-09	6.53E-09	6.86E-09	7.18E-09	7.49E-09	7.49E-09
he 4	5.27E-05	5.60E-05	5.92E-05	6.25E-05	6.58E-05	6.58E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	6.33E-06	6.73E-06	7.12E-06	7.51E-06	7.90E-06	7.90E-06
ne 21	7.11E-10	7.96E-10	8.85E-10	9.79E-10	1.08E-09	1.08E-09
ne 22	4.16E-08	4.42E-08	4.68E-08	4.94E-08	5.20E-08	5.20E-08
ne 23	2.60E-30	2.61E-15	2.61E-15	2.61E-15	2.61E-15	2.61E-30
na 22	1.18E-11	1.54E-11	1.54E-11	1.54E-11	1.54E-11	1.11E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	9.66E-24	9.55E-09	9.55E-09	9.55E-09	9.55E-09	9.55E-24
na 24m	1.59E-30	1.57E-15	1.57E-15	1.57E-15	1.57E-15	1.57E-30
na 25	8.06E-40	8.98E-25	9.95E-25	1.10E-24	1.20E-24	1.20E-39
mg 24	4.57E-02	4.82E-02	5.07E-02	5.32E-02	5.56E-02	5.56E-02
mg 25	7.79E-08	8.69E-08	9.63E-08	1.06E-07	1.16E-07	1.16E-07
mg 26	9.47E-07	1.01E-06	1.06E-06	1.12E-06	1.18E-06	1.18E-06
mg 27	7.77E-28	7.79E-13	7.79E-13	7.79E-13	7.79E-13	7.79E-28
mg 28	.00E+00	5.74E-25	5.74E-25	5.74E-25	5.74E-25	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	7.16E-26	7.08E-11	7.08E-11	7.08E-11	7.08E-11	7.08E-26
al 29	6.13E-38	6.87E-23	7.64E-23	8.45E-23	9.30E-23	9.30E-38
al 30	.00E+00	5.07E-33	5.97E-33	6.98E-33	8.09E-33	.00E+00
si 28	1.33E-01	1.40E-01	1.48E-01	1.55E-01	1.62E-01	1.62E-01
si 29	6.62E-07	7.42E-07	8.25E-07	9.13E-07	1.01E-06	1.01E-06
si 30	3.44E-12	4.10E-12	4.83E-12	5.64E-12	6.54E-12	6.54E-12
si 31	8.97E-40	1.06E-24	1.25E-24	1.46E-24	1.70E-24	1.70E-39
si 32	5.27E-31	6.33E-31	7.49E-31	8.78E-31	1.02E-30	1.02E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		9.23E+07	9.23E+07	9.23E+07	9.23E+07	9.23E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 47
power= 1.468E-03mw, burnup=6.7023E+03mwd, flux= 9.23E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	3.56E+00	3.92E+00	4.30E+00	4.70E+00	5.10E+00	5.11E+00
pb206	7.45E-03	8.61E-03	9.85E-03	1.12E-02	1.26E-02	1.26E-02
pb207	7.30E-04	8.22E-04	9.20E-04	1.02E-03	1.13E-03	1.13E-03
pb208	4.18E-05	4.71E-05	5.27E-05	5.85E-05	6.47E-05	6.47E-05
pb209	1.03E-10	1.15E-10	1.26E-10	1.38E-10	1.51E-10	1.51E-10
pb210	5.70E-05	6.15E-05	6.59E-05	7.04E-05	7.49E-05	7.49E-05
pb211	1.43E-11	1.51E-11	1.59E-11	1.67E-11	1.75E-11	1.76E-11
pb212	1.43E-11	1.51E-11	1.59E-11	1.68E-11	1.76E-11	1.76E-11
pb214	1.30E-10	1.41E-10	1.51E-10	1.61E-10	1.71E-10	1.71E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	6.94E-04	8.21E-04	9.62E-04	1.12E-03	1.28E-03	1.28E-03
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	3.51E-08	3.78E-08	4.06E-08	4.33E-08	4.61E-08	4.61E-08
bi211	8.45E-13	8.93E-13	9.42E-13	9.91E-13	1.04E-12	1.04E-12
bi212	1.36E-12	1.43E-12	1.51E-12	1.59E-12	1.67E-12	1.67E-12
bi213	2.41E-11	2.68E-11	2.95E-11	3.23E-11	3.52E-11	3.52E-11
bi214	9.68E-11	1.04E-10	1.12E-10	1.19E-10	1.27E-10	1.27E-10
po210	9.59E-07	1.04E-06	1.12E-06	1.20E-06	1.27E-06	1.26E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

po211	9.34E-18	9.87E-18	1.04E-17	1.10E-17	1.15E-17	1.15E-17
po212	7.13E-23	7.53E-23	7.95E-23	8.36E-23	8.77E-23	8.78E-23
po213	3.63E-20	4.03E-20	4.43E-20	4.86E-20	5.29E-20	5.29E-20
po214	1.33E-17	1.44E-17	1.54E-17	1.64E-17	1.75E-17	1.75E-17
po215	1.17E-17	1.24E-17	1.31E-17	1.37E-17	1.44E-17	1.44E-17
po216	5.42E-17	5.72E-17	6.04E-17	6.35E-17	6.66E-17	6.67E-17
po218	1.51E-11	1.63E-11	1.74E-11	1.86E-11	1.98E-11	1.98E-11
rn218	3.88E-34	7.93E-29	8.37E-29	8.80E-29	9.23E-29	2.27E-35
rn219	2.61E-14	2.75E-14	2.91E-14	3.06E-14	3.21E-14	3.21E-14
rn220	2.08E-14	2.19E-14	2.31E-14	2.43E-14	2.55E-14	2.56E-14
rn222	2.68E-08	2.89E-08	3.10E-08	3.31E-08	3.52E-08	3.52E-08
ra222	4.21E-31	8.61E-26	9.08E-26	9.55E-26	1.00E-25	2.47E-32
ra223	6.50E-09	6.87E-09	7.25E-09	7.62E-09	8.00E-09	8.02E-09
ra224	1.18E-10	1.25E-10	1.32E-10	1.38E-10	1.45E-10	1.45E-10
ra225	1.13E-08	1.25E-08	1.38E-08	1.51E-08	1.64E-08	1.65E-08
ra226	4.09E-03	4.41E-03	4.73E-03	5.05E-03	5.37E-03	5.37E-03
ra228	2.14E-11	2.27E-11	2.41E-11	2.54E-11	2.68E-11	2.68E-11
ac225	7.63E-09	8.46E-09	9.32E-09	1.02E-08	1.11E-08	1.11E-08
ac227	4.51E-06	4.78E-06	5.04E-06	5.30E-06	5.56E-06	5.56E-06
ac228	2.61E-15	2.77E-15	2.94E-15	3.10E-15	3.27E-15	3.27E-15
th226	2.06E-29	4.20E-24	4.43E-24	4.66E-24	4.89E-24	1.20E-30
th227	1.05E-08	1.11E-08	1.17E-08	1.23E-08	1.29E-08	1.29E-08
th228	2.25E-08	2.38E-08	2.51E-08	2.64E-08	2.77E-08	2.77E-08
th229	2.20E-03	2.44E-03	2.68E-03	2.94E-03	3.20E-03	3.20E-03
th230	2.49E-01	2.64E-01	2.79E-01	2.94E-01	3.09E-01	3.09E-01
th231	2.92E-09	3.34E-09	3.36E-09	3.38E-09	3.40E-09	2.90E-09
th232	5.22E-02	5.55E-02	5.88E-02	6.21E-02	6.54E-02	6.55E-02
th233	1.73E-28	1.84E-13	1.95E-13	2.05E-13	2.16E-13	2.16E-28
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	6.79E-03	7.19E-03	7.58E-03	7.98E-03	8.37E-03	8.37E-03
pa232	4.21E-26	4.45E-11	4.70E-11	4.94E-11	5.19E-11	5.19E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 48
power= 1.468E-03mw, burnup=6.7023E+03mwd, flux= 9.23E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.99E-26	4.07E-21	4.30E-21	4.52E-21	4.74E-21	1.17E-27
u231	3.58E-32	3.80E-17	4.01E-17	4.22E-17	4.43E-17	4.43E-32
u232	8.13E-07	8.69E-07	9.17E-07	9.64E-07	1.01E-06	9.99E-07
u233	1.31E-01	1.39E-01	1.47E-01	1.54E-01	1.62E-01	1.62E-01
u234	9.42E+00	9.44E+00	9.47E+00	9.49E+00	9.51E+00	9.51E+00
u235	7.06E+02	7.04E+02	7.03E+02	7.01E+02	7.00E+02	7.00E+02
u236	1.78E+02	1.79E+02	1.79E+02	1.79E+02	1.79E+02	1.79E+02
u237	6.96E-13	1.14E-06	1.14E-06	1.14E-06	1.14E-06	9.56E-13
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	1.12E-22	1.12E-07	1.12E-07	1.12E-07	1.12E-07	1.12E-22
u240	1.33E-39	2.26E-39	3.69E-39	5.64E-39	8.62E-39	8.62E-39
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	1.64E-12	3.12E-12	3.11E-12	3.11E-12	3.11E-12	1.40E-12
np236m	7.40E-28	7.40E-13	7.40E-13	7.39E-13	7.39E-13	7.39E-28
np236	6.97E-07	7.38E-07	7.79E-07	8.20E-07	8.60E-07	8.60E-07
np237	4.18E+01	4.18E+01	4.17E+01	4.17E+01	4.17E+01	4.17E+01
np238	1.93E-14	5.50E-07	5.50E-07	5.49E-07	5.49E-07	2.77E-14
np239	6.38E-15	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.32E-14
np240m	1.14E-41	1.93E-41	3.15E-41	4.82E-41	7.36E-41	7.36E-41

```
      np240   4.66E-40  1.18E-15  1.18E-15  1.18E-15  1.18E-15  9.61E-40
      np241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      pu236   3.18E-10  4.03E-10  4.03E-10  4.03E-10  4.03E-10  2.99E-10
      pu237   2.76E-16  7.74E-14  7.96E-14  8.18E-14  8.39E-14  7.60E-17
      pu238   8.27E-03  8.32E-03  8.32E-03  8.31E-03  8.31E-03  8.23E-03
      pu239   1.47E+01  1.54E+01  1.61E+01  1.68E+01  1.75E+01  1.75E+01
      pu240   1.61E-01  1.76E-01  1.92E-01  2.08E-01  2.24E-01  2.24E-01
      pu241   2.26E-05  2.60E-05  2.83E-05  3.06E-05  3.30E-05  3.10E-05
      pu242   2.26E-06  2.68E-06  3.13E-06  3.63E-06  4.16E-06  4.16E-06
      pu243   1.73E-30  2.04E-15  2.38E-15  2.76E-15  3.17E-15  3.18E-30
      pu244   6.88E-29  1.13E-28  1.81E-28  2.82E-28  4.29E-28  4.30E-28
      pu245    .00E+00  1.68E-39  2.67E-39  4.20E-39  6.34E-39   .00E+00
      pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am239   6.34E-35  6.99E-20  7.67E-20  8.35E-20  9.03E-20  9.04E-35
      am240   2.90E-32  3.20E-17  3.51E-17  3.82E-17  4.13E-17  4.13E-32
      am241   6.36E-04  7.02E-04  7.69E-04  8.37E-04  9.07E-04  9.07E-04
      am242m  1.04E-07  1.16E-07  1.27E-07  1.39E-07  1.50E-07  1.50E-07
      am242   1.35E-12  9.53E-12  1.04E-11  1.14E-11  1.23E-11  1.93E-12
      am243   7.29E-09  8.89E-09  1.07E-08  1.28E-08  1.50E-08  1.50E-08
      am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am244   1.99E-32  2.43E-17  2.92E-17  3.48E-17  4.11E-17  4.11E-32
      am245    .00E+00  3.43E-40  5.37E-40  8.50E-40  1.28E-39  1.49E-41
      am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      cm241   8.12E-26  2.02E-22  2.21E-22  2.41E-22  2.61E-22  1.68E-26
      cm242   5.85E-10  1.92E-09  2.11E-09  2.30E-09  2.49E-09  6.92E-10
      cm243   1.41E-14  1.59E-14  1.74E-14  1.90E-14  2.05E-14  1.99E-14
      cm244   3.01E-13  3.81E-13  4.59E-13  5.47E-13  6.45E-13  6.15E-13
1
      sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                actinides        page   49
        power= 1.468E-03mw, burnup=6.7023E+03mwd, flux= 9.23E+07n/cm**2-sec
0                                          nuclide concentrations, gram atoms
                                           basis = single reactor assembly
             charge ******* d ******* d ******* d ******* d ******* d
      cm245   2.35E-16  3.03E-16  3.84E-16  4.80E-16  5.92E-16  5.92E-16
      cm246   7.60E-19  1.03E-18  1.37E-18  1.79E-18  2.31E-18  2.31E-18
      cm247   4.83E-23  7.00E-23  9.91E-23  1.37E-22  1.87E-22  1.87E-22
      cm248   3.04E-26  4.70E-26  7.07E-26  1.04E-25  1.50E-25  1.50E-25
      cm249    .00E+00  5.33E-37  8.02E-37  1.18E-36  1.70E-36   .00E+00
      cm250   6.00E-42  9.86E-42  1.57E-41  2.44E-41  3.70E-41  3.70E-41
      cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
    totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0     flux              9.23E+07  9.23E+07  9.23E+07  9.23E+07  9.23E-08
0         1q array has      20 entries.
0         3q array has       1 entries.
0         3q array has       1 entries.
0         3q array has       1 entries.
0         4q array has       1 entries.
0        54q array has      12 entries.
1library information...

          cross-section data taken from position number  6 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
```

```
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         ******************************************************************************
         *                                                                            *
         *            prelim lwr origen-s binary working library--id = 1143            *
         *         made from modified card-image origen-s libraries of scale 4.2       *
         *      data from the light element, actinide, and fission product libraries   *
         *        decay data, including gamma and total energy, are from endf/b-vi     *
         *                                                                            *
         *      neutron flux spectrum factors and cross sections were produced from    *
         *     the "presas2" case updating all nuclides on the scale "burnup" library  *
         *                                                                            *
         *                  fission product yields are from endf/b-v                  *
         *                                                                            *
         *              photon libraries use an 18-energy-group structure             *
         *             the photon data are from the master photon data base,           *
         *              produced to include bremsstrahlung from uo2 matrix            *
         *                                                                            *
         *        see information above this box (if present) for later updates       *
         *                                                                            *
         ******************************************************************************
         *                                                                            *
0        ******************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/29/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   50
        power=    .00mw, burnup=   8043.mwd, flux= 9.22E+07n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.230308E+06   1.230539E+06   1.230739E+06   1.230910E+06   1.231051E+06   1.231049E+06
     absorptions   9.935671E+05   9.939184E+05   9.942503E+05   9.945639E+05   9.948606E+05   9.948588E+05
     k infinity    1.238274E+00   1.238068E+00   1.237857E+00   1.237638E+00   1.237410E+00   1.237411E+00
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   9.816583E+05   9.818589E+05   9.820431E+05   9.822113E+05   9.823639E+05   9.823629E+05
     non-actinide
     abs. fracs.   1.198596E-02   1.213330E-02   1.227772E-02   1.242018E-02   1.256132E-02   1.256043E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products    page   51
0                                 fraction of total absorption rate
        power=    .00mw, burnup=   8043.mwd, flux= 9.22E+07n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.44E-03  5.45E-03  5.45E-03  5.45E-03  5.45E-03  5.45E-03
     eu151     8.42E-04  8.76E-04  9.09E-04  9.41E-04  9.73E-04  9.73E-04
     nd143     6.63E-04  6.96E-04  7.28E-04  7.60E-04  7.92E-04  7.92E-04
     rh103     3.12E-04  3.28E-04  3.43E-04  3.59E-04  3.75E-04  3.75E-04
     xe131     2.12E-04  2.22E-04  2.33E-04  2.43E-04  2.54E-04  2.54E-04
     cs133     1.64E-04  1.73E-04  1.81E-04  1.89E-04  1.97E-04  1.97E-04
```

gd155	1.86E-04	1.89E-04	1.91E-04	1.93E-04	1.95E-04	1.95E-04
sm147	1.22E-04	1.28E-04	1.34E-04	1.40E-04	1.45E-04	1.46E-04
tc 99	1.18E-04	1.24E-04	1.30E-04	1.36E-04	1.41E-04	1.41E-04
nd145	9.33E-05	9.79E-05	1.02E-04	1.07E-04	1.12E-04	1.12E-04
cd113	9.09E-05	9.18E-05	9.25E-05	9.32E-05	9.39E-05	9.39E-05
mo 95	6.47E-05	6.79E-05	7.10E-05	7.42E-05	7.74E-05	7.74E-05
sm152	5.96E-05	6.29E-05	6.63E-05	6.98E-05	7.32E-05	7.32E-05
sm150	4.25E-05	4.50E-05	4.76E-05	5.01E-05	5.26E-05	5.26E-05
gd157	4.93E-05	4.99E-05	5.04E-05	5.10E-05	5.15E-05	5.15E-05
kr 83	4.03E-05	4.23E-05	4.43E-05	4.62E-05	4.82E-05	4.82E-05
cs135	3.71E-05	3.90E-05	4.08E-05	4.27E-05	4.45E-05	4.45E-05
ru101	2.88E-05	3.03E-05	3.17E-05	3.31E-05	3.46E-05	3.46E-05
pr141	2.77E-05	2.90E-05	3.04E-05	3.18E-05	3.31E-05	3.31E-05
eu153	2.69E-05	2.83E-05	2.97E-05	3.11E-05	3.25E-05	3.25E-05
la139	2.26E-05	2.38E-05	2.49E-05	2.60E-05	2.71E-05	2.71E-05
sm151	1.75E-05	1.77E-05	1.77E-05	1.78E-05	1.78E-05	1.76E-05
ba137	1.08E-05	1.14E-05	1.19E-05	1.25E-05	1.30E-05	1.30E-05
pd105	1.05E-05	1.10E-05	1.16E-05	1.21E-05	1.27E-05	1.27E-05
zr 93	9.07E-06	9.51E-06	9.95E-06	1.04E-05	1.08E-05	1.08E-05
ag109	7.20E-06	7.71E-06	8.24E-06	8.78E-06	9.33E-06	9.33E-06
i129	7.20E-06	7.56E-06	7.93E-06	8.29E-06	8.66E-06	8.66E-06
nd144	6.86E-06	7.20E-06	7.54E-06	7.88E-06	8.23E-06	8.23E-06
mo 97	5.14E-06	5.39E-06	5.65E-06	5.90E-06	6.15E-06	6.15E-06
gd152	2.32E-06	2.54E-06	2.77E-06	3.01E-06	3.26E-06	3.26E-06
zr 91	2.39E-06	2.51E-06	2.63E-06	2.75E-06	2.86E-06	2.86E-06
y 89	2.29E-06	2.40E-06	2.52E-06	2.63E-06	2.74E-06	2.74E-06
ru102	2.12E-06	2.22E-06	2.33E-06	2.43E-06	2.54E-06	2.54E-06
pd108	1.92E-06	2.04E-06	2.17E-06	2.30E-06	2.44E-06	2.44E-06
ce142	1.88E-06	1.98E-06	2.07E-06	2.16E-06	2.26E-06	2.26E-06
nd148	1.81E-06	1.90E-06	1.99E-06	2.08E-06	2.17E-06	2.17E-06
nd146	1.52E-06	1.60E-06	1.67E-06	1.75E-06	1.82E-06	1.82E-06
in115	1.30E-06	1.36E-06	1.43E-06	1.50E-06	1.56E-06	1.56E-06
ba138	1.30E-06	1.36E-06	1.43E-06	1.49E-06	1.56E-06	1.56E-06
ce140	1.22E-06	1.28E-06	1.34E-06	1.40E-06	1.46E-06	1.46E-06
xe132	1.10E-06	1.16E-06	1.21E-06	1.27E-06	1.32E-06	1.32E-06
pd107	1.03E-06	1.09E-06	1.15E-06	1.22E-06	1.29E-06	1.29E-06
mo 98	7.51E-07	7.89E-07	8.26E-07	8.63E-07	9.00E-07	9.00E-07
mo100	7.29E-07	7.66E-07	8.02E-07	8.38E-07	8.74E-07	8.74E-07
xe134	7.19E-07	7.55E-07	7.90E-07	8.26E-07	8.62E-07	8.62E-07
zr 92	5.78E-07	6.06E-07	6.35E-07	6.63E-07	6.91E-07	6.91E-07
i127	5.03E-07	5.30E-07	5.56E-07	5.83E-07	6.09E-07	6.09E-07
ru104	4.69E-07	4.93E-07	5.17E-07	5.42E-07	5.66E-07	5.66E-07
ru 99	3.86E-07	4.25E-07	4.65E-07	5.08E-07	5.53E-07	5.53E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 52
0 fraction of total absorption rate
power= .00mw, burnup= 8043.mwd, flux= 9.22E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	4.54E-07	4.77E-07	4.99E-07	5.21E-07	5.44E-07	5.44E-07
nd150	4.06E-07	4.26E-07	4.46E-07	4.66E-07	4.87E-07	4.87E-07
xe136	3.89E-07	4.08E-07	4.28E-07	4.47E-07	4.66E-07	4.66E-07
br 81	2.90E-07	3.05E-07	3.19E-07	3.33E-07	3.48E-07	3.48E-07
rb 85	2.81E-07	2.95E-07	3.09E-07	3.22E-07	3.36E-07	3.36E-07
cd111	2.45E-07	2.59E-07	2.74E-07	2.89E-07	3.04E-07	3.04E-07
zr 94	2.44E-07	2.56E-07	2.69E-07	2.81E-07	2.93E-07	2.93E-07
zr 90	2.26E-07	2.37E-07	2.48E-07	2.59E-07	2.70E-07	2.70E-07
sm154	1.81E-07	1.90E-07	2.00E-07	2.09E-07	2.19E-07	2.19E-07
te130	1.78E-07	1.87E-07	1.96E-07	2.05E-07	2.14E-07	2.14E-07
rb 87	1.62E-07	1.70E-07	1.78E-07	1.86E-07	1.94E-07	1.94E-07
se 77	1.17E-07	1.23E-07	1.28E-07	1.34E-07	1.40E-07	1.40E-07

pd106	9.86E-08	1.04E-07	1.10E-07	1.16E-07	1.21E-07	1.21E-07
gd154	8.11E-08	8.94E-08	9.82E-08	1.07E-07	1.17E-07	1.17E-07
gd156	8.35E-08	8.91E-08	9.47E-08	1.00E-07	1.06E-07	1.06E-07
kr 84	7.68E-08	8.06E-08	8.43E-08	8.81E-08	9.19E-08	9.19E-08
eu152	7.47E-08	8.29E-08	8.61E-08	8.91E-08	9.21E-08	8.52E-08
sb121	5.92E-08	6.22E-08	6.52E-08	6.83E-08	7.13E-08	7.13E-08
se 79	5.94E-08	6.23E-08	6.52E-08	6.81E-08	7.10E-08	7.10E-08
pm147	7.16E-08	9.84E-08	9.84E-08	9.83E-08	9.83E-08	6.69E-08
dy161	4.50E-08	4.82E-08	5.13E-08	5.46E-08	5.79E-08	5.79E-08
sb123	4.79E-08	5.04E-08	5.29E-08	5.53E-08	5.78E-08	5.78E-08
ba135	3.74E-08	4.12E-08	4.52E-08	4.94E-08	5.38E-08	5.38E-08
kr 86	4.28E-08	4.49E-08	4.70E-08	4.91E-08	5.12E-08	5.12E-08
eu155	5.19E-08	6.27E-08	6.30E-08	6.33E-08	6.36E-08	5.09E-08
te128	3.96E-08	4.16E-08	4.36E-08	4.56E-08	4.76E-08	4.76E-08
ru100	2.44E-08	2.68E-08	2.94E-08	3.21E-08	3.49E-08	3.49E-08
se 80	2.79E-08	2.93E-08	3.07E-08	3.21E-08	3.35E-08	3.35E-08
te125	2.59E-08	2.72E-08	2.86E-08	2.99E-08	3.13E-08	3.13E-08
tb159	2.24E-08	2.38E-08	2.52E-08	2.66E-08	2.81E-08	2.81E-08
nd142	1.72E-08	1.90E-08	2.08E-08	2.28E-08	2.48E-08	2.48E-08
ba134	1.66E-08	1.83E-08	2.00E-08	2.19E-08	2.38E-08	2.38E-08
gd158	1.81E-08	1.92E-08	2.04E-08	2.15E-08	2.27E-08	2.27E-08
cd112	1.83E-08	1.93E-08	2.03E-08	2.13E-08	2.24E-08	2.24E-08
sm148	1.52E-08	1.67E-08	1.83E-08	2.00E-08	2.18E-08	2.18E-08
li 6	1.54E-08	1.62E-08	1.69E-08	1.77E-08	1.84E-08	1.84E-08
sn117	1.37E-08	1.44E-08	1.51E-08	1.59E-08	1.66E-08	1.66E-08
pd104	1.12E-08	1.24E-08	1.36E-08	1.49E-08	1.62E-08	1.62E-08
cd114	1.06E-08	1.12E-08	1.19E-08	1.25E-08	1.32E-08	1.32E-08
sn119	1.08E-08	1.14E-08	1.20E-08	1.25E-08	1.31E-08	1.31E-08
dy164	9.17E-09	9.89E-09	1.06E-08	1.14E-08	1.21E-08	1.21E-08
sn115	9.93E-09	1.04E-08	1.10E-08	1.15E-08	1.20E-08	1.20E-08
dy162	8.47E-09	9.13E-09	9.81E-09	1.05E-08	1.12E-08	1.12E-08
pd110	7.83E-09	8.31E-09	8.81E-09	9.31E-09	9.81E-09	9.81E-09
sr 88	7.86E-09	8.25E-09	8.63E-09	9.02E-09	9.40E-09	9.40E-09
nb 93	6.02E-09	6.63E-09	7.28E-09	7.95E-09	8.65E-09	8.65E-09
se 82	5.37E-09	5.63E-09	5.90E-09	6.16E-09	6.42E-09	6.42E-09
sr 90	5.87E-09	6.05E-09	6.04E-09	6.03E-09	6.02E-09	5.80E-09
mo 96	4.03E-09	4.42E-09	4.83E-09	5.26E-09	5.71E-09	5.71E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 53
0 fraction of total absorption rate
power= .00mw, burnup= 8043.mwd, flux= 9.22E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sn126	4.62E-09	4.86E-09	5.10E-09	5.34E-09	5.59E-09	5.59E-09
se 78	4.13E-09	4.34E-09	4.54E-09	4.75E-09	4.95E-09	4.95E-09
eu154	3.91E-09	4.55E-09	4.77E-09	5.00E-09	5.23E-09	4.63E-09
br 79	3.03E-09	3.34E-09	3.66E-09	4.00E-09	4.35E-09	4.35E-09
sn124	3.45E-09	3.63E-09	3.81E-09	3.99E-09	4.17E-09	4.17E-09
cd110	2.52E-09	2.82E-09	3.15E-09	3.50E-09	3.87E-09	3.87E-09
ba136	2.63E-09	2.83E-09	3.03E-09	3.24E-09	3.46E-09	3.46E-09
ag107	2.09E-09	2.32E-09	2.57E-09	2.83E-09	3.11E-09	3.11E-09
xe130	2.19E-09	2.39E-09	2.60E-09	2.82E-09	3.04E-09	3.04E-09
as 75	2.45E-09	2.57E-09	2.69E-09	2.81E-09	2.93E-09	2.93E-09
dy163	2.10E-09	2.27E-09	2.44E-09	2.61E-09	2.80E-09	2.80E-09
kr 82	1.96E-09	2.12E-09	2.28E-09	2.44E-09	2.61E-09	2.61E-09
xe129	1.75E-09	1.94E-09	2.12E-09	2.32E-09	2.53E-09	2.53E-09
in113	1.94E-09	2.04E-09	2.15E-09	2.25E-09	2.35E-09	2.35E-09
sn118	1.40E-09	1.47E-09	1.54E-09	1.62E-09	1.69E-09	1.69E-09
te126	1.08E-09	1.19E-09	1.30E-09	1.41E-09	1.54E-09	1.54E-09
sn122	1.19E-09	1.25E-09	1.32E-09	1.38E-09	1.44E-09	1.44E-09
cd116	1.18E-09	1.24E-09	1.30E-09	1.37E-09	1.43E-09	1.43E-09

cs137	1.33E-09	1.37E-09	1.37E-09	1.37E-09	1.37E-09	1.32E-09
sn120	8.86E-10	9.31E-10	9.77E-10	1.02E-09	1.07E-09	1.07E-09
ge 73	6.82E-10	7.17E-10	7.51E-10	7.86E-10	8.20E-10	8.20E-10
cs134	2.90E-10	4.64E-10	4.86E-10	5.08E-10	5.30E-10	3.20E-10
gd160	2.33E-10	2.48E-10	2.63E-10	2.79E-10	2.95E-10	2.95E-10
ge 76	2.41E-10	2.52E-10	2.64E-10	2.76E-10	2.88E-10	2.88E-10
ho165	1.64E-10	1.78E-10	1.92E-10	2.07E-10	2.23E-10	2.23E-10
kr 85	1.88E-10	2.03E-10	2.03E-10	2.03E-10	2.02E-10	1.84E-10
dy160	9.19E-11	1.02E-10	1.12E-10	1.24E-10	1.35E-10	1.35E-10
xe128	6.34E-11	6.99E-11	7.67E-11	8.38E-11	9.13E-11	9.13E-11
ce144	7.08E-11	2.15E-10	2.15E-10	2.14E-10	2.14E-10	5.65E-11
te124	4.32E-11	4.61E-11	4.91E-11	5.21E-11	5.53E-11	5.53E-11
sr 86	3.74E-11	4.08E-11	4.43E-11	4.80E-11	5.18E-11	5.18E-11
sr 87	3.02E-11	3.18E-11	3.34E-11	3.51E-11	3.67E-11	3.67E-11
sn116	2.43E-11	2.69E-11	2.95E-11	3.23E-11	3.51E-11	3.51E-11
nb 94	1.77E-11	1.88E-11	2.00E-11	2.13E-11	2.25E-11	2.25E-11
se 76	1.25E-11	1.35E-11	1.45E-11	1.56E-11	1.67E-11	1.67E-11
ge 74	1.37E-11	1.44E-11	1.51E-11	1.58E-11	1.65E-11	1.65E-11
te122	1.02E-11	1.12E-11	1.23E-11	1.35E-11	1.47E-11	1.47E-11
er166	8.57E-12	9.32E-12	1.01E-11	1.09E-11	1.17E-11	1.17E-11
ge 72	9.62E-12	1.01E-11	1.06E-11	1.11E-11	1.16E-11	1.16E-11
y 90	5.59E-12	5.76E-12	5.75E-12	5.74E-12	5.73E-12	5.52E-12
ru106	5.25E-12	1.24E-11	1.25E-11	1.26E-11	1.28E-11	4.59E-12
sb125	4.40E-12	6.04E-12	6.06E-12	6.08E-12	6.10E-12	4.18E-12
kr 80	1.57E-12	1.76E-12	1.97E-12	2.20E-12	2.45E-12	2.45E-12
er167	3.36E-13	3.80E-13	4.27E-13	4.78E-13	5.32E-13	5.32E-13
nb 95	8.62E-13	5.48E-11	5.47E-11	5.47E-11	5.46E-11	3.18E-13
te123	1.99E-13	2.25E-13	2.53E-13	2.84E-13	3.17E-13	3.17E-13
zr 95	4.21E-13	5.90E-11	5.90E-11	5.90E-11	5.89E-11	1.56E-13
cd108	5.74E-14	6.68E-14	7.72E-14	8.86E-14	1.01E-13	1.01E-13
te127m	1.72E-13	3.04E-12	3.06E-12	3.07E-12	3.08E-12	9.79E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 54
0 fraction of total absorption rate
power= .00mw, burnup= 8043.mwd, flux= 9.22E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

y 91	2.29E-13	5.08E-11	5.08E-11	5.07E-11	5.06E-11	7.72E-14
be 9	3.02E-14	3.17E-14	3.31E-14	3.46E-14	3.61E-14	3.61E-14
li 7	1.23E-14	1.29E-14	1.35E-14	1.41E-14	1.47E-14	1.47E-14
sn114	6.17E-15	6.81E-15	7.48E-15	8.19E-15	8.93E-15	8.93E-15
ru103	4.29E-14	1.36E-10	1.37E-10	1.37E-10	1.37E-10	8.60E-15
sb126	5.32E-15	7.43E-15	7.73E-15	8.03E-15	8.34E-15	6.42E-15
sr 89	2.08E-14	1.08E-11	1.08E-11	1.08E-11	1.08E-11	5.89E-15
ce141	3.43E-14	5.78E-10	5.77E-10	5.77E-10	5.77E-10	4.87E-15
sn123	3.26E-16	3.78E-15	3.79E-15	3.79E-15	3.79E-15	2.00E-16
pm148m	6.49E-16	1.39E-12	1.39E-12	1.40E-12	1.40E-12	1.42E-16
tb160	2.62E-16	2.21E-14	2.33E-14	2.46E-14	2.59E-14	1.35E-16
cd115m	7.78E-17	9.43E-14	9.46E-14	9.48E-14	9.51E-14	1.90E-17
te129m	5.54E-17	6.80E-13	6.81E-13	6.82E-13	6.83E-13	8.45E-18
sb124	8.19E-18	1.61E-15	1.65E-15	1.69E-15	1.73E-15	3.14E-18
cd109	1.40E-18	2.98E-18	3.20E-18	3.42E-18	3.66E-18	1.61E-18
pm148	1.11E-18	4.94E-14	4.95E-14	4.95E-14	4.96E-14	2.48E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 55
power= 1.468E-03mw, burnup=8.0428E+03mwd, flux= 9.22E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d
h 1	3.97E-04	4.17E-04	4.37E-04	4.57E-04	4.77E-04	4.77E-04
h 2	1.18E-06	1.24E-06	1.30E-06	1.36E-06	1.42E-06	1.42E-06

h 3	1.51E-11	1.64E-11	1.65E-11	1.67E-11	1.68E-11	1.55E-11
h 4	.00E+00	2.40E-35	2.42E-35	2.45E-35	2.47E-35	.00E+00
he 3	7.49E-09	7.80E-09	8.10E-09	8.40E-09	8.70E-09	8.70E-09
he 4	6.58E-05	6.91E-05	7.24E-05	7.56E-05	7.89E-05	7.89E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	7.90E-06	8.30E-06	8.69E-06	9.09E-06	9.48E-06	9.48E-06
ne 21	1.08E-09	1.18E-09	1.29E-09	1.40E-09	1.51E-09	1.51E-09
ne 22	5.20E-08	5.46E-08	5.72E-08	5.98E-08	6.24E-08	6.24E-08
ne 23	2.61E-30	2.62E-15	2.62E-15	2.62E-15	2.62E-15	2.62E-30
na 22	1.11E-11	1.55E-11	1.55E-11	1.55E-11	1.55E-11	1.04E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	9.55E-24	9.56E-09	9.56E-09	9.56E-09	9.56E-09	9.56E-24
na 24m	1.57E-30	1.57E-15	1.57E-15	1.57E-15	1.57E-15	1.57E-30
na 25	1.20E-39	1.32E-24	1.43E-24	1.55E-24	1.68E-24	1.68E-39
mg 24	5.56E-02	5.81E-02	6.06E-02	6.31E-02	6.55E-02	6.55E-02
mg 25	1.16E-07	1.27E-07	1.38E-07	1.50E-07	1.62E-07	1.62E-07
mg 26	1.18E-06	1.24E-06	1.30E-06	1.36E-06	1.42E-06	1.42E-06
mg 27	7.79E-28	7.82E-13	7.82E-13	7.82E-13	7.82E-13	7.82E-28
mg 28	.00E+00	5.76E-25	5.76E-25	5.76E-25	5.76E-25	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	7.08E-26	7.08E-11	7.08E-11	7.08E-11	7.08E-11	7.09E-26
al 29	9.30E-38	1.02E-22	1.11E-22	1.21E-22	1.31E-22	1.31E-37
al 30	.00E+00	9.32E-33	1.07E-32	1.21E-32	1.37E-32	.00E+00
si 28	1.62E-01	1.69E-01	1.76E-01	1.84E-01	1.91E-01	1.91E-01
si 29	1.01E-06	1.10E-06	1.20E-06	1.31E-06	1.42E-06	1.42E-06
si 30	6.54E-12	7.53E-12	8.60E-12	9.78E-12	1.11E-11	1.11E-11
si 31	1.70E-39	1.95E-24	2.23E-24	2.53E-24	2.86E-24	2.86E-39
si 32	1.02E-30	1.18E-30	1.35E-30	1.54E-30	1.74E-30	1.73E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		9.22E+07	9.22E+07	9.22E+07	9.22E+07	9.22E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 56
power= 1.468E-03mw, burnup=8.0428E+03mwd, flux= 9.22E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	5.11E+00	5.53E+00	5.96E+00	6.41E+00	6.87E+00	6.87E+00
pb206	1.26E-02	1.41E-02	1.57E-02	1.74E-02	1.91E-02	1.91E-02
pb207	1.13E-03	1.24E-03	1.36E-03	1.49E-03	1.61E-03	1.61E-03
pb208	6.47E-05	7.12E-05	7.79E-05	8.49E-05	9.23E-05	9.23E-05
pb209	1.51E-10	1.63E-10	1.76E-10	1.89E-10	2.03E-10	2.03E-10
pb210	7.49E-05	7.93E-05	8.37E-05	8.82E-05	9.26E-05	9.26E-05
pb211	1.76E-11	1.84E-11	1.92E-11	2.00E-11	2.08E-11	2.08E-11
pb212	1.76E-11	1.84E-11	1.92E-11	2.00E-11	2.08E-11	2.08E-11
pb214	1.71E-10	1.81E-10	1.91E-10	2.01E-10	2.12E-10	2.12E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.28E-03	1.47E-03	1.67E-03	1.88E-03	2.11E-03	2.11E-03
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	4.61E-08	4.88E-08	5.15E-08	5.43E-08	5.70E-08	5.70E-08
bi211	1.04E-12	1.09E-12	1.14E-12	1.18E-12	1.23E-12	1.23E-12
bi212	1.67E-12	1.75E-12	1.82E-12	1.90E-12	1.98E-12	1.97E-12
bi213	3.52E-11	3.81E-11	4.11E-11	4.42E-11	4.73E-11	4.73E-11
bi214	1.27E-10	1.35E-10	1.42E-10	1.50E-10	1.57E-10	1.57E-10
po210	1.26E-06	1.35E-06	1.42E-06	1.50E-06	1.57E-06	1.56E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	1.15E-17	1.20E-17	1.26E-17	1.31E-17	1.36E-17	1.36E-17
po212	8.78E-23	9.17E-23	9.58E-23	9.98E-23	1.04E-22	1.04E-22
po213	5.29E-20	5.73E-20	6.18E-20	6.64E-20	7.11E-20	7.11E-20
po214	1.75E-17	1.85E-17	1.96E-17	2.06E-17	2.16E-17	2.16E-17
po215	1.44E-17	1.51E-17	1.57E-17	1.64E-17	1.71E-17	1.71E-17

po216	6.67E-17	6.97E-17	7.28E-17	7.58E-17	7.88E-17	7.88E-17
po218	1.98E-11	2.10E-11	2.21E-11	2.33E-11	2.45E-11	2.45E-11
rn218	2.27E-35	9.67E-29	1.01E-28	1.05E-28	1.09E-28	1.28E-36
rn219	3.21E-14	3.35E-14	3.50E-14	3.65E-14	3.80E-14	3.80E-14
rn220	2.56E-14	2.67E-14	2.79E-14	2.91E-14	3.02E-14	3.02E-14
rn222	3.52E-08	3.73E-08	3.93E-08	4.14E-08	4.35E-08	4.35E-08
ra222	2.47E-32	1.05E-25	1.10E-25	1.14E-25	1.19E-25	1.39E-33
ra223	8.02E-09	8.37E-09	8.74E-09	9.10E-09	9.47E-09	9.49E-09
ra224	1.45E-10	1.52E-10	1.59E-10	1.65E-10	1.72E-10	1.72E-10
ra225	1.65E-08	1.78E-08	1.92E-08	2.07E-08	2.21E-08	2.21E-08
ra226	5.37E-03	5.69E-03	6.01E-03	6.33E-03	6.64E-03	6.64E-03
ra228	2.68E-11	2.81E-11	2.95E-11	3.09E-11	3.22E-11	3.22E-11
ac225	1.11E-08	1.20E-08	1.30E-08	1.40E-08	1.49E-08	1.50E-08
ac227	5.56E-06	5.82E-06	6.08E-06	6.33E-06	6.58E-06	6.58E-06
ac228	3.27E-15	3.43E-15	3.60E-15	3.77E-15	3.93E-15	3.93E-15
th226	1.20E-30	5.12E-24	5.35E-24	5.57E-24	5.80E-24	6.79E-32
th227	1.29E-08	1.35E-08	1.41E-08	1.47E-08	1.53E-08	1.53E-08
th228	2.77E-08	2.90E-08	3.03E-08	3.16E-08	3.28E-08	3.27E-08
th229	3.20E-03	3.47E-03	3.74E-03	4.02E-03	4.30E-03	4.30E-03
th230	3.09E-01	3.24E-01	3.38E-01	3.53E-01	3.68E-01	3.68E-01
th231	2.90E-09	3.42E-09	3.44E-09	3.46E-09	3.48E-09	2.87E-09
th232	6.55E-02	6.88E-02	7.21E-02	7.54E-02	7.88E-02	7.88E-02
th233	2.16E-28	2.27E-13	2.38E-13	2.49E-13	2.61E-13	2.61E-28
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	8.37E-03	8.75E-03	9.14E-03	9.52E-03	9.90E-03	9.90E-03
pa232	5.19E-26	5.43E-11	5.67E-11	5.90E-11	6.14E-11	6.14E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 57
power= 1.468E-03mw, burnup=8.0428E+03mwd, flux= 9.22E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.17E-27	4.96E-21	5.18E-21	5.40E-21	5.62E-21	6.57E-29
u231	4.43E-32	4.65E-17	4.86E-17	5.06E-17	5.27E-17	5.27E-32
u232	9.99E-07	1.06E-06	1.11E-06	1.15E-06	1.20E-06	1.18E-06
u233	1.62E-01	1.70E-01	1.77E-01	1.85E-01	1.92E-01	1.92E-01
u234	9.51E+00	9.53E+00	9.56E+00	9.58E+00	9.60E+00	9.60E+00
u235	7.00E+02	6.99E+02	6.97E+02	6.96E+02	6.95E+02	6.95E+02
u236	1.79E+02	1.80E+02	1.80E+02	1.80E+02	1.80E+02	1.80E+02
u237	9.56E-13	1.15E-06	1.15E-06	1.15E-06	1.15E-06	1.22E-12
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	1.12E-22	1.12E-07	1.12E-07	1.12E-07	1.12E-07	1.12E-22
u240	8.62E-39	1.28E-38	1.87E-38	2.68E-38	3.78E-38	3.78E-38
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	1.40E-12	3.12E-12	3.12E-12	3.11E-12	3.11E-12	1.19E-12
np236m	7.39E-28	7.40E-13	7.40E-13	7.40E-13	7.39E-13	7.39E-28
np236	8.60E-07	9.01E-07	9.41E-07	9.82E-07	1.02E-06	1.02E-06
np237	4.17E+01	4.17E+01	4.16E+01	4.16E+01	4.16E+01	4.16E+01
np238	2.77E-14	5.49E-07	5.49E-07	5.48E-07	5.48E-07	3.64E-14
np239	1.32E-14	1.62E-05	1.62E-05	1.62E-05	1.62E-05	2.34E-14
np240m	7.36E-41	1.09E-40	1.59E-40	2.29E-40	3.22E-40	3.22E-40
np240	9.61E-40	1.19E-15	1.19E-15	1.19E-15	1.19E-15	1.72E-39
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	2.99E-10	4.04E-10	4.03E-10	4.03E-10	4.03E-10	2.83E-10
pu237	7.60E-17	8.62E-14	8.82E-14	9.02E-14	9.22E-14	2.05E-17
pu238	8.23E-03	8.31E-03	8.30E-03	8.30E-03	8.30E-03	8.20E-03

```
     pu239   1.75E+01  1.82E+01  1.88E+01  1.95E+01  2.01E+01  2.01E+01
     pu240   2.24E-01  2.40E-01  2.56E-01  2.72E-01  2.89E-01  2.89E-01
     pu241   3.10E-05  3.53E-05  3.77E-05  4.01E-05  4.25E-05  3.95E-05
     pu242   4.16E-06  4.74E-06  5.36E-06  6.02E-06  6.73E-06  6.73E-06
     pu243   3.18E-30  3.61E-15  4.08E-15  4.59E-15  5.13E-15  5.15E-30
     pu244   4.30E-28  6.39E-28  9.31E-28  1.33E-27  1.88E-27  1.88E-27
     pu245    .00E+00  9.48E-39  1.38E-38  1.97E-38  2.78E-38   .00E+00
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239   9.04E-35  9.75E-20  1.05E-19  1.12E-19  1.19E-19  1.19E-34
     am240   4.13E-32  4.46E-17  4.78E-17  5.10E-17  5.43E-17  5.43E-32
     am241   9.07E-04  9.76E-04  1.05E-03  1.12E-03  1.19E-03  1.19E-03
     am242m  1.50E-07  1.62E-07  1.74E-07  1.86E-07  1.98E-07  1.97E-07
     am242   1.93E-12  1.33E-11  1.42E-11  1.52E-11  1.62E-11  2.54E-12
     am243   1.50E-08  1.76E-08  2.04E-08  2.34E-08  2.68E-08  2.68E-08
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   4.11E-32  4.80E-17  5.56E-17  6.40E-17  7.32E-17  7.31E-32
     am245   1.49E-41  1.91E-39  2.78E-39  3.97E-39  5.59E-39  4.48E-41
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   1.68E-26  2.81E-22  3.01E-22  3.22E-22  3.42E-22  3.20E-27
     cm242   6.92E-10  2.68E-09  2.87E-09  3.07E-09  3.26E-09  7.81E-10
     cm243   1.99E-14  2.21E-14  2.37E-14  2.53E-14  2.69E-14  2.60E-14
     cm244   6.15E-13  7.54E-13  8.74E-13  1.01E-12  1.15E-12  1.09E-12
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides         page   58
       power= 1.468E-03mw, burnup=8.0428E+03mwd, flux= 9.22E+07n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
            charge ******* d ******* d ******* d ******* d ******* d
     cm245   5.92E-16  7.21E-16  8.70E-16  1.04E-15  1.23E-15  1.23E-15
     cm246   2.31E-18  2.93E-18  3.67E-18  4.55E-18  5.57E-18  5.57E-18
     cm247   1.87E-22  2.50E-22  3.31E-22  4.30E-22  5.53E-22  5.53E-22
     cm248   1.50E-25  2.11E-25  2.93E-25  4.00E-25  5.39E-25  5.39E-25
     cm249    .00E+00  2.40E-36  3.32E-36  4.54E-36  6.11E-36   .00E+00
     cm250   3.70E-41  5.48E-41  7.98E-41  1.14E-40  1.60E-40  1.60E-40
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              9.22E+07  9.22E+07  9.22E+07  9.22E+07  9.22E-08
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number  7 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
```

```
          first library updated was...
          ******************************************************************************
          *                                                                            *
          *            prelim lwr origen-s binary working library--id = 1143            *
          *         made from modified card-image origen-s libraries of scale 4.2       *
          *      data from the light element, actinide, and fission product libraries   *
          *        decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                            *
          *      neutron flux spectrum factors and cross sections were produced from    *
          *     the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                            *
          *                  fission product yields are from endf/b-v                  *
          *                                                                            *
          *              photon libraries use an 18-energy-group structure             *
          *             the photon data are from the master photon data base,          *
          *              produced to include bremsstrahlung from uo2 matrix            *
          *                                                                            *
          *        see information above this box (if present) for later updates       *
          *                                                                            *
          ******************************************************************************
          *                                                                            *
0         ******************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                 8/29/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
                        879    number of fission product nuclides
0                      7993    number of nonzero off-diagonal matrix elements
0         ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   59
         power=    .00mw, burnup=   9383.mwd, flux= 9.22E+07n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.232141E+06   1.232255E+06   1.232342E+06   1.232401E+06   1.232434E+06   1.232432E+06
     absorptions   9.958843E+05   9.961657E+05   9.964301E+05   9.966786E+05   9.969119E+05   9.969099E+05
     k infinity    1.237233E+00   1.236998E+00   1.236757E+00   1.236508E+00   1.236251E+00   1.236252E+00
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   9.833770E+05   9.835148E+05   9.836378E+05   9.837461E+05   9.838402E+05   9.838389E+05
     non-actinide
     abs. fracs.   1.255894E-02   1.269954E-02   1.283813E-02   1.297551E-02   1.311225E-02   1.311159E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products    page   60
0                                  fraction of total absorption rate
         power=    .00mw, burnup=   9383.mwd, flux= 9.22E+07n/cm**2-sec
0                initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.45E-03  5.45E-03  5.45E-03  5.45E-03  5.45E-03  5.45E-03
     eu151     9.72E-04  1.00E-03  1.03E-03  1.06E-03  1.09E-03  1.09E-03
     nd143     7.92E-04  8.24E-04  8.56E-04  8.88E-04  9.20E-04  9.20E-04
     rh103     3.75E-04  3.91E-04  4.06E-04  4.22E-04  4.38E-04  4.38E-04
     xe131     2.54E-04  2.64E-04  2.75E-04  2.85E-04  2.96E-04  2.96E-04
     cs133     1.97E-04  2.05E-04  2.13E-04  2.21E-04  2.30E-04  2.30E-04
     gd155     1.95E-04  1.97E-04  1.99E-04  2.00E-04  2.02E-04  2.02E-04
     sm147     1.46E-04  1.51E-04  1.57E-04  1.63E-04  1.69E-04  1.69E-04
     tc 99     1.41E-04  1.47E-04  1.53E-04  1.58E-04  1.64E-04  1.64E-04
     nd145     1.12E-04  1.16E-04  1.21E-04  1.25E-04  1.30E-04  1.30E-04
     cd113     9.39E-05  9.45E-05  9.50E-05  9.55E-05  9.60E-05  9.60E-05
```

mo 95	7.74E-05	8.06E-05	8.38E-05	8.69E-05	9.01E-05	9.01E-05
sm152	7.32E-05	7.67E-05	8.03E-05	8.38E-05	8.74E-05	8.74E-05
sm150	5.26E-05	5.52E-05	5.77E-05	6.03E-05	6.28E-05	6.28E-05
kr 83	4.82E-05	5.01E-05	5.21E-05	5.40E-05	5.60E-05	5.60E-05
gd157	5.15E-05	5.20E-05	5.25E-05	5.30E-05	5.35E-05	5.35E-05
cs135	4.45E-05	4.64E-05	4.82E-05	5.00E-05	5.19E-05	5.19E-05
ru101	3.46E-05	3.60E-05	3.74E-05	3.89E-05	4.03E-05	4.03E-05
pr141	3.31E-05	3.45E-05	3.59E-05	3.72E-05	3.86E-05	3.86E-05
eu153	3.25E-05	3.39E-05	3.53E-05	3.68E-05	3.82E-05	3.82E-05
la139	2.71E-05	2.82E-05	2.93E-05	3.05E-05	3.16E-05	3.16E-05
sm151	1.76E-05	1.78E-05	1.79E-05	1.79E-05	1.79E-05	1.77E-05
ba137	1.30E-05	1.35E-05	1.41E-05	1.46E-05	1.52E-05	1.52E-05
pd105	1.27E-05	1.33E-05	1.38E-05	1.44E-05	1.50E-05	1.50E-05
zr 93	1.08E-05	1.13E-05	1.17E-05	1.22E-05	1.26E-05	1.26E-05
ag109	9.33E-06	9.89E-06	1.05E-05	1.10E-05	1.16E-05	1.16E-05
i129	8.65E-06	9.02E-06	9.39E-06	9.75E-06	1.01E-05	1.01E-05
nd144	8.22E-06	8.57E-06	8.91E-06	9.25E-06	9.60E-06	9.60E-06
mo 97	6.15E-06	6.41E-06	6.66E-06	6.91E-06	7.17E-06	7.17E-06
gd152	3.26E-06	3.51E-06	3.77E-06	4.05E-06	4.32E-06	4.32E-06
zr 91	2.86E-06	2.98E-06	3.10E-06	3.21E-06	3.33E-06	3.33E-06
y 89	2.74E-06	2.85E-06	2.96E-06	3.07E-06	3.19E-06	3.19E-06
pd108	2.44E-06	2.57E-06	2.71E-06	2.85E-06	2.99E-06	2.99E-06
ru102	2.54E-06	2.65E-06	2.75E-06	2.86E-06	2.96E-06	2.96E-06
ce142	2.26E-06	2.35E-06	2.44E-06	2.54E-06	2.63E-06	2.63E-06
nd148	2.17E-06	2.26E-06	2.35E-06	2.44E-06	2.53E-06	2.53E-06
nd146	1.82E-06	1.90E-06	1.97E-06	2.05E-06	2.13E-06	2.13E-06
in115	1.56E-06	1.63E-06	1.70E-06	1.77E-06	1.83E-06	1.83E-06
ba138	1.56E-06	1.62E-06	1.69E-06	1.75E-06	1.81E-06	1.81E-06
ce140	1.46E-06	1.52E-06	1.58E-06	1.64E-06	1.70E-06	1.70E-06
pd107	1.29E-06	1.36E-06	1.42E-06	1.49E-06	1.57E-06	1.57E-06
xe132	1.32E-06	1.38E-06	1.43E-06	1.49E-06	1.54E-06	1.54E-06
mo 98	9.01E-07	9.38E-07	9.75E-07	1.01E-06	1.05E-06	1.05E-06
mo100	8.74E-07	9.11E-07	9.47E-07	9.83E-07	1.02E-06	1.02E-06
xe134	8.61E-07	8.97E-07	9.33E-07	9.68E-07	1.00E-06	1.00E-06
zr 92	6.91E-07	7.19E-07	7.47E-07	7.76E-07	8.04E-07	8.04E-07
ru 99	5.53E-07	5.99E-07	6.47E-07	6.97E-07	7.49E-07	7.49E-07
i127	6.09E-07	6.36E-07	6.63E-07	6.90E-07	7.17E-07	7.17E-07
ru104	5.66E-07	5.91E-07	6.15E-07	6.40E-07	6.64E-07	6.64E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 61
0 fraction of total absorption rate
power= .00mw, burnup= 9383.mwd, flux= 9.22E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	5.44E-07	5.66E-07	5.89E-07	6.11E-07	6.33E-07	6.33E-07
nd150	4.87E-07	5.07E-07	5.27E-07	5.48E-07	5.68E-07	5.68E-07
xe136	4.66E-07	4.86E-07	5.05E-07	5.24E-07	5.43E-07	5.43E-07
br 81	3.48E-07	3.62E-07	3.76E-07	3.91E-07	4.05E-07	4.05E-07
rb 85	3.36E-07	3.50E-07	3.64E-07	3.77E-07	3.91E-07	3.91E-07
cd111	3.04E-07	3.19E-07	3.35E-07	3.51E-07	3.66E-07	3.66E-07
zr 94	2.93E-07	3.05E-07	3.17E-07	3.29E-07	3.41E-07	3.41E-07
zr 90	2.70E-07	2.81E-07	2.92E-07	3.03E-07	3.14E-07	3.14E-07
sm154	2.19E-07	2.28E-07	2.38E-07	2.47E-07	2.57E-07	2.57E-07
te130	2.14E-07	2.23E-07	2.31E-07	2.40E-07	2.49E-07	2.49E-07
rb 87	1.94E-07	2.02E-07	2.10E-07	2.18E-07	2.25E-07	2.25E-07
se 77	1.40E-07	1.46E-07	1.51E-07	1.57E-07	1.63E-07	1.63E-07
gd154	1.17E-07	1.27E-07	1.38E-07	1.49E-07	1.60E-07	1.60E-07
pd106	1.21E-07	1.27E-07	1.33E-07	1.39E-07	1.45E-07	1.45E-07
gd156	1.06E-07	1.12E-07	1.18E-07	1.24E-07	1.29E-07	1.29E-07
kr 84	9.19E-08	9.57E-08	9.94E-08	1.03E-07	1.07E-07	1.07E-07
eu152	8.52E-08	9.51E-08	9.80E-08	1.01E-07	1.04E-07	9.46E-08

sb121	7.13E-08	7.44E-08	7.75E-08	8.06E-08	8.36E-08	8.36E-08
se 79	7.10E-08	7.39E-08	7.68E-08	7.97E-08	8.26E-08	8.26E-08
ba135	5.38E-08	5.83E-08	6.31E-08	6.80E-08	7.31E-08	7.31E-08
dy161	5.79E-08	6.13E-08	6.48E-08	6.83E-08	7.18E-08	7.18E-08
sb123	5.78E-08	6.03E-08	6.28E-08	6.52E-08	6.77E-08	6.77E-08
pm147	6.69E-08	9.82E-08	9.82E-08	9.81E-08	9.81E-08	6.25E-08
kr 86	5.12E-08	5.33E-08	5.53E-08	5.74E-08	5.95E-08	5.95E-08
te128	4.76E-08	4.96E-08	5.16E-08	5.37E-08	5.57E-08	5.57E-08
eu155	5.09E-08	6.39E-08	6.42E-08	6.45E-08	6.47E-08	4.99E-08
ru100	3.49E-08	3.78E-08	4.08E-08	4.40E-08	4.73E-08	4.73E-08
se 80	3.34E-08	3.48E-08	3.62E-08	3.76E-08	3.90E-08	3.90E-08
te125	3.13E-08	3.26E-08	3.40E-08	3.54E-08	3.68E-08	3.68E-08
tb159	2.81E-08	2.95E-08	3.10E-08	3.25E-08	3.40E-08	3.40E-08
nd142	2.48E-08	2.68E-08	2.90E-08	3.13E-08	3.36E-08	3.36E-08
ba134	2.38E-08	2.58E-08	2.79E-08	3.01E-08	3.23E-08	3.23E-08
sm148	2.18E-08	2.36E-08	2.55E-08	2.75E-08	2.96E-08	2.96E-08
gd158	2.27E-08	2.38E-08	2.50E-08	2.62E-08	2.74E-08	2.74E-08
cd112	2.24E-08	2.34E-08	2.45E-08	2.55E-08	2.66E-08	2.66E-08
pd104	1.62E-08	1.76E-08	1.90E-08	2.05E-08	2.20E-08	2.20E-08
li 6	1.84E-08	1.91E-08	1.98E-08	2.06E-08	2.13E-08	2.13E-08
sn117	1.66E-08	1.73E-08	1.81E-08	1.88E-08	1.96E-08	1.96E-08
cd114	1.32E-08	1.39E-08	1.45E-08	1.52E-08	1.58E-08	1.58E-08
dy164	1.21E-08	1.29E-08	1.37E-08	1.45E-08	1.54E-08	1.54E-08
sn119	1.31E-08	1.37E-08	1.42E-08	1.48E-08	1.54E-08	1.54E-08
dy162	1.12E-08	1.20E-08	1.27E-08	1.35E-08	1.43E-08	1.43E-08
sn115	1.20E-08	1.25E-08	1.30E-08	1.35E-08	1.41E-08	1.41E-08
pd110	9.81E-09	1.03E-08	1.08E-08	1.14E-08	1.19E-08	1.19E-08
nb 93	8.65E-09	9.38E-09	1.01E-08	1.09E-08	1.17E-08	1.17E-08
sr 88	9.40E-09	9.78E-09	1.02E-08	1.05E-08	1.09E-08	1.09E-08
mo 96	5.71E-09	6.17E-09	6.65E-09	7.16E-09	7.68E-09	7.68E-09
se 82	6.42E-09	6.69E-09	6.95E-09	7.21E-09	7.47E-09	7.47E-09
sn126	5.58E-09	5.83E-09	6.07E-09	6.31E-09	6.55E-09	6.55E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 62
0 fraction of total absorption rate
power= .00mw, burnup= 9383.mwd, flux= 9.22E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

br 79	4.35E-09	4.72E-09	5.10E-09	5.50E-09	5.91E-09	5.91E-09
se 78	4.95E-09	5.16E-09	5.37E-09	5.57E-09	5.78E-09	5.78E-09
sr 90	5.80E-09	6.01E-09	6.00E-09	6.00E-09	5.99E-09	5.74E-09
cd110	3.87E-09	4.26E-09	4.68E-09	5.12E-09	5.59E-09	5.59E-09
eu154	4.63E-09	5.45E-09	5.68E-09	5.91E-09	6.14E-09	5.34E-09
sn124	4.17E-09	4.35E-09	4.53E-09	4.72E-09	4.90E-09	4.90E-09
ag107	3.11E-09	3.41E-09	3.72E-09	4.04E-09	4.38E-09	4.38E-09
ba136	3.46E-09	3.68E-09	3.90E-09	4.14E-09	4.37E-09	4.37E-09
xe130	3.04E-09	3.27E-09	3.51E-09	3.76E-09	4.02E-09	4.02E-09
dy163	2.80E-09	2.98E-09	3.17E-09	3.37E-09	3.57E-09	3.57E-09
xe129	2.53E-09	2.75E-09	2.97E-09	3.20E-09	3.45E-09	3.45E-09
as 75	2.93E-09	3.05E-09	3.17E-09	3.30E-09	3.42E-09	3.42E-09
kr 82	2.61E-09	2.78E-09	2.96E-09	3.14E-09	3.33E-09	3.33E-09
in113	2.35E-09	2.45E-09	2.56E-09	2.66E-09	2.77E-09	2.77E-09
te126	1.54E-09	1.66E-09	1.79E-09	1.93E-09	2.07E-09	2.07E-09
sn118	1.69E-09	1.76E-09	1.84E-09	1.91E-09	1.98E-09	1.98E-09
sn122	1.44E-09	1.50E-09	1.57E-09	1.63E-09	1.69E-09	1.69E-09
cd116	1.43E-09	1.49E-09	1.55E-09	1.61E-09	1.67E-09	1.67E-09
cs137	1.32E-09	1.37E-09	1.37E-09	1.37E-09	1.37E-09	1.31E-09
sn120	1.07E-09	1.11E-09	1.16E-09	1.21E-09	1.25E-09	1.25E-09
ge 73	8.20E-10	8.55E-10	8.90E-10	9.24E-10	9.59E-10	9.59E-10
gd160	2.95E-10	3.11E-10	3.27E-10	3.44E-10	3.61E-10	3.61E-10
cs134	3.20E-10	5.52E-10	5.73E-10	5.95E-10	6.17E-10	3.43E-10

ge 76	2.88E-10	3.00E-10	3.12E-10	3.23E-10	3.35E-10	3.35E-10
ho165	2.23E-10	2.39E-10	2.55E-10	2.72E-10	2.90E-10	2.90E-10
dy160	1.35E-10	1.48E-10	1.60E-10	1.74E-10	1.88E-10	1.88E-10
kr 85	1.84E-10	2.02E-10	2.02E-10	2.02E-10	2.02E-10	1.80E-10
xe128	9.13E-11	9.91E-11	1.07E-10	1.16E-10	1.25E-10	1.25E-10
te124	5.53E-11	5.84E-11	6.17E-11	6.50E-11	6.84E-11	6.84E-11
sr 86	5.18E-11	5.57E-11	5.98E-11	6.40E-11	6.84E-11	6.84E-11
sn116	3.51E-11	3.82E-11	4.13E-11	4.46E-11	4.80E-11	4.80E-11
ce144	5.65E-11	2.14E-10	2.14E-10	2.14E-10	2.14E-10	4.51E-11
sr 87	3.67E-11	3.84E-11	4.00E-11	4.17E-11	4.34E-11	4.34E-11
nb 94	2.25E-11	2.39E-11	2.52E-11	2.66E-11	2.81E-11	2.81E-11
se 76	1.67E-11	1.78E-11	1.90E-11	2.02E-11	2.15E-11	2.15E-11
te122	1.47E-11	1.59E-11	1.72E-11	1.86E-11	2.00E-11	2.00E-11
ge 74	1.65E-11	1.72E-11	1.79E-11	1.85E-11	1.92E-11	1.92E-11
er166	1.17E-11	1.26E-11	1.35E-11	1.44E-11	1.53E-11	1.53E-11
ge 72	1.16E-11	1.21E-11	1.27E-11	1.32E-11	1.37E-11	1.37E-11
y 90	5.52E-12	5.72E-12	5.71E-12	5.71E-12	5.70E-12	5.46E-12
ru106	4.59E-12	1.29E-11	1.30E-11	1.31E-11	1.32E-11	4.00E-12
sb125	4.18E-12	6.12E-12	6.14E-12	6.16E-12	6.18E-12	3.97E-12
kr 80	2.45E-12	2.71E-12	2.99E-12	3.29E-12	3.62E-12	3.62E-12
er167	5.32E-13	5.89E-13	6.51E-13	7.16E-13	7.86E-13	7.86E-13
te123	3.17E-13	3.53E-13	3.91E-13	4.32E-13	4.76E-13	4.76E-13
cd108	1.01E-13	1.15E-13	1.30E-13	1.46E-13	1.64E-13	1.64E-13
nb 95	3.18E-13	5.46E-11	5.46E-11	5.45E-11	5.45E-11	1.18E-13
zr 95	1.56E-13	5.89E-11	5.88E-11	5.88E-11	5.88E-11	5.78E-14
te127m	9.79E-14	3.09E-12	3.10E-12	3.11E-12	3.12E-12	5.55E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 63

0 fraction of total absorption rate

power= .00mw, burnup= 9383.mwd, flux= 9.22E+07n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

be 9	3.62E-14	3.77E-14	3.91E-14	4.06E-14	4.21E-14	4.21E-14
y 91	7.72E-14	5.05E-11	5.05E-11	5.04E-11	5.04E-11	2.60E-14
li 7	1.47E-14	1.53E-14	1.59E-14	1.65E-14	1.71E-14	1.71E-14
sn114	8.92E-15	9.70E-15	1.05E-14	1.13E-14	1.22E-14	1.22E-14
sb126	6.42E-15	8.64E-15	8.94E-15	9.24E-15	9.54E-15	7.54E-15
ru103	8.60E-15	1.37E-10	1.37E-10	1.38E-10	1.38E-10	1.72E-15
sr 89	5.89E-15	1.08E-11	1.08E-11	1.08E-11	1.07E-11	1.67E-15
ce141	4.87E-15	5.76E-10	5.76E-10	5.76E-10	5.76E-10	6.91E-16
sn123	2.00E-16	3.80E-15	3.80E-15	3.80E-15	3.81E-15	1.23E-16
tb160	1.35E-16	2.72E-14	2.85E-14	2.98E-14	3.11E-14	6.77E-17
pm148m	1.42E-16	1.41E-12	1.41E-12	1.41E-12	1.42E-12	3.09E-17
cd115m	1.90E-17	9.54E-14	9.56E-14	9.59E-14	9.61E-14	4.64E-18
cd109	1.61E-18	3.92E-18	4.19E-18	4.47E-18	4.79E-18	1.84E-18
te129m	8.44E-18	6.84E-13	6.84E-13	6.85E-13	6.86E-13	1.29E-18
sb124	3.14E-18	1.77E-15	1.81E-15	1.85E-15	1.88E-15	1.19E-18
pm148	2.48E-19	4.97E-14	4.97E-14	4.98E-14	4.98E-14	5.51E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 64

power= 1.468E-03mw, burnup=9.3832E+03mwd, flux= 9.22E+07n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
h 1	4.77E-04	4.96E-04	5.16E-04	5.36E-04	5.56E-04	5.56E-04
h 2	1.42E-06	1.48E-06	1.54E-06	1.60E-06	1.66E-06	1.66E-06
h 3	1.55E-11	1.70E-11	1.72E-11	1.73E-11	1.75E-11	1.58E-11
h 4	.00E+00	2.50E-35	2.52E-35	2.54E-35	2.56E-35	.00E+00
he 3	8.70E-09	8.99E-09	9.27E-09	9.55E-09	9.83E-09	9.83E-09
he 4	7.89E-05	8.22E-05	8.55E-05	8.88E-05	9.21E-05	9.21E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ne 20	9.48E-06	9.88E-06	1.03E-05	1.07E-05	1.11E-05	1.11E-05
ne 21	1.51E-09	1.63E-09	1.76E-09	1.89E-09	2.02E-09	2.02E-09
ne 22	6.24E-08	6.50E-08	6.76E-08	7.02E-08	7.28E-08	7.28E-08
ne 23	2.62E-30	2.63E-15	2.63E-15	2.63E-15	2.63E-15	2.63E-30
na 22	1.04E-11	1.56E-11	1.56E-11	1.56E-11	1.56E-11	9.76E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	9.56E-24	9.56E-09	9.56E-09	9.56E-09	9.56E-09	9.57E-24
na 24m	1.57E-30	1.57E-15	1.57E-15	1.57E-15	1.57E-15	1.57E-30
na 25	1.68E-39	1.81E-24	1.94E-24	2.08E-24	2.23E-24	2.23E-39
mg 24	6.55E-02	6.80E-02	7.05E-02	7.30E-02	7.55E-02	7.55E-02
mg 25	1.62E-07	1.75E-07	1.88E-07	2.01E-07	2.15E-07	2.15E-07
mg 26	1.42E-06	1.48E-06	1.54E-06	1.60E-06	1.65E-06	1.65E-06
mg 27	7.82E-28	7.84E-13	7.84E-13	7.84E-13	7.84E-13	7.84E-28
mg 28	.00E+00	5.77E-25	5.78E-25	5.78E-25	5.78E-25	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	7.09E-26	7.09E-11	7.09E-11	7.09E-11	7.09E-11	7.09E-26
al 29	1.31E-37	1.42E-22	1.53E-22	1.64E-22	1.76E-22	1.76E-37
al 30	.00E+00	1.54E-32	1.72E-32	1.92E-32	2.14E-32	.00E+00
si 28	1.91E-01	1.98E-01	2.05E-01	2.12E-01	2.20E-01	2.20E-01
si 29	1.42E-06	1.53E-06	1.65E-06	1.77E-06	1.89E-06	1.89E-06
si 30	1.11E-11	1.24E-11	1.39E-11	1.55E-11	1.72E-11	1.72E-11
si 31	2.86E-39	3.22E-24	3.61E-24	4.02E-24	4.47E-24	4.47E-39
si 32	1.73E-30	1.96E-30	2.20E-30	2.46E-30	2.73E-30	2.72E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		9.21E+07	9.22E+07	9.22E+07	9.22E+07	9.22E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 65
power= 1.468E-03mw, burnup=9.3832E+03mwd, flux= 9.22E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d	******* d
he 4	6.87E+00	7.35E+00	7.84E+00	8.34E+00	8.85E+00	8.85E+00
pb206	1.91E-02	2.10E-02	2.29E-02	2.50E-02	2.71E-02	2.71E-02
pb207	1.61E-03	1.75E-03	1.89E-03	2.03E-03	2.18E-03	2.18E-03
pb208	9.23E-05	9.99E-05	1.08E-04	1.16E-04	1.24E-04	1.24E-04
pb209	2.03E-10	2.16E-10	2.30E-10	2.44E-10	2.58E-10	2.58E-10
pb210	9.26E-05	9.70E-05	1.01E-04	1.06E-04	1.10E-04	1.10E-04
pb211	2.08E-11	2.16E-11	2.23E-11	2.31E-11	2.39E-11	2.40E-11
pb212	2.08E-11	2.16E-11	2.24E-11	2.32E-11	2.40E-11	2.39E-11
pb214	2.12E-10	2.22E-10	2.32E-10	2.42E-10	2.52E-10	2.52E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.11E-03	2.35E-03	2.61E-03	2.89E-03	3.18E-03	3.18E-03
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	5.70E-08	5.97E-08	6.24E-08	6.51E-08	6.77E-08	6.78E-08
bi211	1.23E-12	1.28E-12	1.32E-12	1.37E-12	1.42E-12	1.42E-12
bi212	1.97E-12	2.05E-12	2.13E-12	2.20E-12	2.27E-12	2.27E-12
bi213	4.73E-11	5.05E-11	5.37E-11	5.70E-11	6.03E-11	6.03E-11
bi214	1.57E-10	1.65E-10	1.72E-10	1.79E-10	1.87E-10	1.87E-10
po210	1.56E-06	1.65E-06	1.72E-06	1.80E-06	1.87E-06	1.85E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	1.36E-17	1.41E-17	1.46E-17	1.51E-17	1.57E-17	1.57E-17
po212	1.04E-22	1.08E-22	1.12E-22	1.16E-22	1.20E-22	1.19E-22
po213	7.11E-20	7.59E-20	8.08E-20	8.57E-20	9.06E-20	9.07E-20
po214	2.16E-17	2.26E-17	2.37E-17	2.47E-17	2.57E-17	2.57E-17
po215	1.71E-17	1.77E-17	1.84E-17	1.90E-17	1.96E-17	1.97E-17
po216	7.88E-17	8.19E-17	8.49E-17	8.78E-17	9.08E-17	9.06E-17
po218	2.45E-11	2.56E-11	2.68E-11	2.80E-11	2.91E-11	2.91E-11
rn218	1.28E-36	1.14E-28	1.18E-28	1.22E-28	1.26E-28	7.02E-38
rn219	3.80E-14	3.94E-14	4.08E-14	4.23E-14	4.37E-14	4.38E-14
rn220	3.02E-14	3.14E-14	3.25E-14	3.37E-14	3.48E-14	3.48E-14

rn222	4.35E-08	4.55E-08	4.76E-08	4.97E-08	5.17E-08	5.17E-08
ra222	1.39E-33	1.23E-25	1.28E-25	1.33E-25	1.37E-25	7.63E-35
ra223	9.49E-09	9.83E-09	1.02E-08	1.05E-08	1.09E-08	1.09E-08
ra224	1.72E-10	1.79E-10	1.85E-10	1.92E-10	1.98E-10	1.98E-10
ra225	2.21E-08	2.36E-08	2.51E-08	2.67E-08	2.82E-08	2.82E-08
ra226	6.64E-03	6.96E-03	7.27E-03	7.59E-03	7.90E-03	7.90E-03
ra228	3.22E-11	3.36E-11	3.50E-11	3.63E-11	3.77E-11	3.77E-11
ac225	1.50E-08	1.60E-08	1.70E-08	1.80E-08	1.90E-08	1.91E-08
ac227	6.58E-06	6.84E-06	7.09E-06	7.33E-06	7.58E-06	7.58E-06
ac228	3.93E-15	4.10E-15	4.27E-15	4.43E-15	4.60E-15	4.60E-15
th226	6.79E-32	6.02E-24	6.25E-24	6.47E-24	6.68E-24	3.72E-33
th227	1.53E-08	1.59E-08	1.64E-08	1.70E-08	1.76E-08	1.76E-08
th228	3.27E-08	3.41E-08	3.53E-08	3.66E-08	3.78E-08	3.76E-08
th229	4.30E-03	4.59E-03	4.89E-03	5.18E-03	5.48E-03	5.48E-03
th230	3.68E-01	3.83E-01	3.97E-01	4.12E-01	4.27E-01	4.27E-01
th231	2.87E-09	3.50E-09	3.52E-09	3.53E-09	3.55E-09	2.85E-09
th232	7.88E-02	8.21E-02	8.54E-02	8.88E-02	9.21E-02	9.22E-02
th233	2.61E-28	2.72E-13	2.83E-13	2.94E-13	3.05E-13	3.05E-28
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	9.90E-03	1.03E-02	1.07E-02	1.10E-02	1.14E-02	1.14E-02
pa232	6.14E-26	6.38E-11	6.61E-11	6.84E-11	7.07E-11	7.07E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 66
power= 1.468E-03mw, burnup=9.3832E+03mwd, flux= 9.22E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.43E-06	1.43E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	6.57E-29	5.84E-21	6.05E-21	6.27E-21	6.48E-21	3.60E-30
u231	5.27E-32	5.48E-17	5.69E-17	5.89E-17	6.10E-17	6.10E-32
u232	1.18E-06	1.24E-06	1.29E-06	1.33E-06	1.38E-06	1.36E-06
u233	1.92E-01	2.00E-01	2.07E-01	2.15E-01	2.22E-01	2.22E-01
u234	9.60E+00	9.62E+00	9.64E+00	9.67E+00	9.69E+00	9.69E+00
u235	6.95E+02	6.94E+02	6.92E+02	6.91E+02	6.90E+02	6.90E+02
u236	1.80E+02	1.81E+02	1.81E+02	1.81E+02	1.81E+02	1.81E+02
u237	1.22E-12	1.15E-06	1.15E-06	1.16E-06	1.16E-06	1.47E-12
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	1.12E-22	1.12E-07	1.12E-07	1.12E-07	1.12E-07	1.12E-22
u240	3.78E-38	5.23E-38	7.17E-38	9.69E-38	1.29E-37	1.30E-37
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	1.19E-12	3.12E-12	3.12E-12	3.12E-12	3.11E-12	1.02E-12
np236m	7.39E-28	7.41E-13	7.40E-13	7.40E-13	7.40E-13	7.40E-28
np236	1.02E-06	1.06E-06	1.10E-06	1.14E-06	1.18E-06	1.18E-06
np237	4.16E+01	4.16E+01	4.16E+01	4.15E+01	4.15E+01	4.15E+01
np238	3.64E-14	5.48E-07	5.48E-07	5.48E-07	5.47E-07	4.52E-14
np239	2.34E-14	1.62E-05	1.62E-05	1.62E-05	1.62E-05	3.77E-14
np240m	3.22E-40	4.47E-40	6.12E-40	8.27E-40	1.10E-39	1.11E-39
np240	1.72E-39	1.19E-15	1.19E-15	1.19E-15	1.19E-15	2.78E-39
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	2.83E-10	4.04E-10	4.04E-10	4.04E-10	4.04E-10	2.67E-10
pu237	2.05E-17	9.43E-14	9.61E-14	9.80E-14	9.97E-14	5.47E-18
pu238	8.20E-03	8.29E-03	8.29E-03	8.29E-03	8.28E-03	8.17E-03
pu239	2.01E+01	2.07E+01	2.13E+01	2.19E+01	2.24E+01	2.24E+01
pu240	2.89E-01	3.05E-01	3.21E-01	3.37E-01	3.53E-01	3.53E-01
pu241	3.95E-05	4.49E-05	4.72E-05	4.96E-05	5.20E-05	4.78E-05
pu242	6.73E-06	7.48E-06	8.27E-06	9.10E-06	9.98E-06	9.98E-06
pu243	5.15E-30	5.70E-15	6.30E-15	6.94E-15	7.61E-15	7.66E-30

```
     pu244    1.88E-27  2.61E-27  3.57E-27  4.83E-27  6.45E-27  6.45E-27
     pu245     .00E+00  3.86E-38  5.28E-38  7.14E-38  9.54E-38   .00E+00
     pu246     .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239    1.19E-34  1.26E-19  1.33E-19  1.40E-19  1.47E-19  1.47E-34
     am240    5.43E-32  5.76E-17  6.08E-17  6.41E-17  6.73E-17  6.73E-32
     am241    1.19E-03  1.26E-03  1.33E-03  1.40E-03  1.47E-03  1.47E-03
     am242m   1.97E-07  2.10E-07  2.22E-07  2.34E-07  2.46E-07  2.44E-07
     am242    2.54E-12  1.71E-11  1.81E-11  1.90E-11  2.00E-11  3.15E-12
     am243    2.68E-08  3.04E-08  3.43E-08  3.86E-08  4.31E-08  4.31E-08
     am244m    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244    7.31E-32  8.31E-17  9.38E-17  1.05E-16  1.18E-16  1.18E-31
     am245    4.48E-41  7.76E-39  1.06E-38  1.43E-38  1.91E-38  1.19E-40
     am246     .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241    3.20E-27  3.63E-22  3.84E-22  4.05E-22  4.25E-22  5.76E-28
     cm242    7.81E-10  3.45E-09  3.65E-09  3.84E-09  4.04E-09  8.62E-10
     cm243    2.60E-14  2.85E-14  3.01E-14  3.18E-14  3.34E-14  3.20E-14
     cm244    1.09E-12  1.31E-12  1.47E-12  1.66E-12  1.85E-12  1.73E-12
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page   67
       power= 1.468E-03mw, burnup=9.3832E+03mwd, flux= 9.22E+07n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
              charge ******* d ******* d ******* d ******* d ******* d
     cm245    1.23E-15  1.45E-15  1.69E-15  1.96E-15  2.26E-15  2.26E-15
     cm246    5.57E-18  6.77E-18  8.15E-18  9.73E-18  1.15E-17  1.15E-17
     cm247    5.53E-22  7.03E-22  8.84E-22  1.10E-21  1.36E-21  1.36E-21
     cm248    5.39E-25  7.15E-25  9.39E-25  1.22E-24  1.57E-24  1.57E-24
     cm249     .00E+00  8.13E-36  1.07E-35  1.38E-35  1.78E-35   .00E+00
     cm250    1.60E-40  2.22E-40  3.03E-40  4.08E-40  5.44E-40  5.44E-40
     cm251     .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals     3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               9.21E+07  9.22E+07  9.22E+07  9.22E+07  9.22E-08
0         1q array has      20 entries.
0         3q array has       1 entries.
0         3q array has       1 entries.
0         3q array has       1 entries.
0         4q array has       1 entries.
0        54q array has      12 entries.
1library information...

          cross-section data taken from position number  8 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *         made from modified card-image origen-s libraries of scale 4.2        *
```

```
         *      data from the light element, actinide, and fission product libraries    *
         *        decay data, including gamma and total energy, are from endf/b-vi      *
         *                                                                              *
         *      neutron flux spectrum factors and cross sections were produced from     *
         *     the "presas2" case updating all nuclides on the scale "burnup" library   *
         *                                                                              *
         *                  fission product yields are from endf/b-v                    *
         *                                                                              *
         *              photon libraries use an 18-energy-group structure               *
         *             the photon data are from the master photon data base,            *
         *              produced to include bremsstrahlung from uo2 matrix              *
         *                                                                              *
         *        see information above this box (if present) for later updates         *
         *                                                                              *
         ********************************************************************************
         *                                                                              *
0        ********************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/29/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   68
        power=    .00mw, burnup=  10724.mwd, flux= 9.22E+07n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.233181E+06   1.233189E+06   1.233173E+06   1.233132E+06   1.233067E+06   1.233064E+06
     absorptions   9.976366E+05   9.978565E+05   9.980606E+05   9.982511E+05   9.984277E+05   9.984253E+05
     k infinity    1.236103E+00   1.235838E+00   1.235569E+00   1.235292E+00   1.235008E+00   1.235009E+00
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   9.845568E+05   9.846375E+05   9.847045E+05   9.847583E+05   9.847991E+05   9.847976E+05
     non-actinide
     abs. fracs.   1.311076E-02   1.324737E-02   1.338202E-02   1.351643E-02   1.365000E-02   1.364917E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products    page   69
0                                 fraction of total absorption rate
        power=    .00mw, burnup=  10724.mwd, flux= 9.22E+07n/cm**2-sec
0               initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.45E-03  5.45E-03  5.45E-03  5.45E-03  5.45E-03  5.45E-03
     eu151     1.09E-03  1.12E-03  1.15E-03  1.18E-03  1.20E-03  1.20E-03
     nd143     9.20E-04  9.52E-04  9.84E-04  1.02E-03  1.05E-03  1.05E-03
     rh103     4.38E-04  4.54E-04  4.69E-04  4.85E-04  5.01E-04  5.01E-04
     xe131     2.96E-04  3.06E-04  3.17E-04  3.27E-04  3.38E-04  3.38E-04
     cs133     2.30E-04  2.38E-04  2.46E-04  2.54E-04  2.62E-04  2.62E-04
     gd155     2.02E-04  2.03E-04  2.05E-04  2.06E-04  2.07E-04  2.07E-04
     sm147     1.69E-04  1.75E-04  1.81E-04  1.87E-04  1.93E-04  1.93E-04
     tc 99     1.64E-04  1.70E-04  1.75E-04  1.81E-04  1.86E-04  1.86E-04
     nd145     1.30E-04  1.34E-04  1.39E-04  1.44E-04  1.48E-04  1.48E-04
     mo 95     9.01E-05  9.33E-05  9.64E-05  9.96E-05  1.03E-04  1.03E-04
     sm152     8.74E-05  9.10E-05  9.46E-05  9.83E-05  1.02E-04  1.02E-04
     cd113     9.60E-05  9.64E-05  9.69E-05  9.73E-05  9.77E-05  9.77E-05
     sm150     6.28E-05  6.54E-05  6.79E-05  7.04E-05  7.30E-05  7.30E-05
     kr 83     5.60E-05  5.79E-05  5.98E-05  6.18E-05  6.37E-05  6.37E-05
     cs135     5.19E-05  5.37E-05  5.56E-05  5.74E-05  5.92E-05  5.92E-05
```

gd157	5.35E-05	5.40E-05	5.44E-05	5.49E-05	5.53E-05	5.53E-05
ru101	4.03E-05	4.17E-05	4.32E-05	4.46E-05	4.60E-05	4.60E-05
pr141	3.86E-05	4.00E-05	4.13E-05	4.27E-05	4.41E-05	4.41E-05
eu153	3.82E-05	3.96E-05	4.11E-05	4.25E-05	4.40E-05	4.40E-05
la139	3.16E-05	3.27E-05	3.38E-05	3.49E-05	3.60E-05	3.60E-05
sm151	1.77E-05	1.80E-05	1.80E-05	1.80E-05	1.81E-05	1.78E-05
pd105	1.50E-05	1.56E-05	1.62E-05	1.67E-05	1.73E-05	1.73E-05
ba137	1.52E-05	1.57E-05	1.62E-05	1.68E-05	1.73E-05	1.73E-05
zr 93	1.26E-05	1.31E-05	1.35E-05	1.39E-05	1.44E-05	1.44E-05
ag109	1.16E-05	1.22E-05	1.29E-05	1.35E-05	1.41E-05	1.41E-05
i129	1.01E-05	1.05E-05	1.08E-05	1.12E-05	1.16E-05	1.16E-05
nd144	9.59E-06	9.94E-06	1.03E-05	1.06E-05	1.10E-05	1.10E-05
mo 97	7.17E-06	7.42E-06	7.67E-06	7.93E-06	8.18E-06	8.18E-06
gd152	4.32E-06	4.61E-06	4.90E-06	5.20E-06	5.51E-06	5.51E-06
zr 91	3.33E-06	3.44E-06	3.56E-06	3.68E-06	3.79E-06	3.79E-06
y 89	3.18E-06	3.30E-06	3.41E-06	3.52E-06	3.63E-06	3.63E-06
pd108	2.99E-06	3.13E-06	3.28E-06	3.43E-06	3.58E-06	3.58E-06
ru102	2.96E-06	3.07E-06	3.18E-06	3.28E-06	3.39E-06	3.39E-06
ce142	2.63E-06	2.72E-06	2.81E-06	2.91E-06	3.00E-06	3.00E-06
nd148	2.53E-06	2.62E-06	2.71E-06	2.80E-06	2.89E-06	2.89E-06
nd146	2.13E-06	2.20E-06	2.28E-06	2.35E-06	2.43E-06	2.43E-06
in115	1.83E-06	1.90E-06	1.97E-06	2.03E-06	2.10E-06	2.10E-06
ba138	1.81E-06	1.88E-06	1.94E-06	2.01E-06	2.07E-06	2.07E-06
ce140	1.70E-06	1.76E-06	1.82E-06	1.88E-06	1.94E-06	1.94E-06
pd107	1.56E-06	1.64E-06	1.71E-06	1.78E-06	1.86E-06	1.86E-06
xe132	1.54E-06	1.60E-06	1.65E-06	1.71E-06	1.77E-06	1.77E-06
mo 98	1.05E-06	1.09E-06	1.12E-06	1.16E-06	1.20E-06	1.20E-06
mo100	1.02E-06	1.06E-06	1.09E-06	1.13E-06	1.16E-06	1.16E-06
xe134	1.00E-06	1.04E-06	1.07E-06	1.11E-06	1.15E-06	1.15E-06
ru 99	7.49E-07	8.03E-07	8.58E-07	9.16E-07	9.75E-07	9.75E-07
zr 92	8.04E-07	8.32E-07	8.60E-07	8.88E-07	9.16E-07	9.16E-07
i127	7.17E-07	7.44E-07	7.71E-07	7.98E-07	8.26E-07	8.26E-07
ru104	6.64E-07	6.89E-07	7.14E-07	7.39E-07	7.64E-07	7.64E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 70
0 fraction of total absorption rate
power= .00mw, burnup= 10724.mwd, flux= 9.22E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	6.34E-07	6.56E-07	6.78E-07	7.01E-07	7.23E-07	7.23E-07
nd150	5.68E-07	5.89E-07	6.09E-07	6.29E-07	6.50E-07	6.50E-07
xe136	5.43E-07	5.63E-07	5.82E-07	6.01E-07	6.20E-07	6.20E-07
br 81	4.05E-07	4.19E-07	4.34E-07	4.48E-07	4.62E-07	4.62E-07
rb 85	3.91E-07	4.05E-07	4.18E-07	4.32E-07	4.46E-07	4.46E-07
cd111	3.66E-07	3.82E-07	3.99E-07	4.15E-07	4.31E-07	4.31E-07
zr 94	3.41E-07	3.53E-07	3.65E-07	3.77E-07	3.89E-07	3.89E-07
zr 90	3.14E-07	3.25E-07	3.35E-07	3.46E-07	3.57E-07	3.57E-07
sm154	2.57E-07	2.67E-07	2.76E-07	2.86E-07	2.96E-07	2.96E-07
te130	2.49E-07	2.58E-07	2.67E-07	2.76E-07	2.85E-07	2.85E-07
rb 87	2.25E-07	2.33E-07	2.41E-07	2.49E-07	2.57E-07	2.57E-07
gd154	1.60E-07	1.72E-07	1.84E-07	1.97E-07	2.10E-07	2.10E-07
se 77	1.63E-07	1.69E-07	1.74E-07	1.80E-07	1.86E-07	1.86E-07
pd106	1.45E-07	1.51E-07	1.57E-07	1.63E-07	1.69E-07	1.69E-07
gd156	1.29E-07	1.35E-07	1.41E-07	1.47E-07	1.54E-07	1.54E-07
kr 84	1.07E-07	1.11E-07	1.14E-07	1.18E-07	1.22E-07	1.22E-07
eu152	9.45E-08	1.06E-07	1.09E-07	1.12E-07	1.14E-07	1.03E-07
sb121	8.36E-08	8.67E-08	8.98E-08	9.29E-08	9.60E-08	9.60E-08
ba135	7.31E-08	7.84E-08	8.39E-08	8.96E-08	9.54E-08	9.55E-08
se 79	8.25E-08	8.54E-08	8.83E-08	9.12E-08	9.40E-08	9.40E-08
dy161	7.18E-08	7.54E-08	7.91E-08	8.28E-08	8.66E-08	8.66E-08
sb123	6.77E-08	7.02E-08	7.27E-08	7.52E-08	7.78E-08	7.78E-08

kr 86	5.95E-08	6.16E-08	6.36E-08	6.57E-08	6.78E-08	6.78E-08
te128	5.57E-08	5.77E-08	5.97E-08	6.18E-08	6.38E-08	6.38E-08
ru100	4.73E-08	5.06E-08	5.41E-08	5.78E-08	6.15E-08	6.15E-08
pm147	6.25E-08	9.81E-08	9.80E-08	9.80E-08	9.79E-08	5.84E-08
eu155	4.99E-08	6.50E-08	6.52E-08	6.55E-08	6.57E-08	4.89E-08
se 80	3.90E-08	4.03E-08	4.17E-08	4.31E-08	4.45E-08	4.45E-08
nd142	3.36E-08	3.61E-08	3.86E-08	4.12E-08	4.39E-08	4.39E-08
te125	3.68E-08	3.82E-08	3.96E-08	4.10E-08	4.24E-08	4.24E-08
ba134	3.23E-08	3.47E-08	3.71E-08	3.96E-08	4.22E-08	4.22E-08
tb159	3.40E-08	3.55E-08	3.71E-08	3.86E-08	4.02E-08	4.02E-08
sm148	2.96E-08	3.17E-08	3.39E-08	3.62E-08	3.86E-08	3.86E-08
gd158	2.74E-08	2.86E-08	2.98E-08	3.11E-08	3.23E-08	3.23E-08
cd112	2.66E-08	2.77E-08	2.88E-08	2.98E-08	3.09E-08	3.09E-08
pd104	2.20E-08	2.36E-08	2.53E-08	2.70E-08	2.88E-08	2.88E-08
li 6	2.13E-08	2.20E-08	2.27E-08	2.34E-08	2.42E-08	2.42E-08
sn117	1.96E-08	2.03E-08	2.11E-08	2.19E-08	2.26E-08	2.26E-08
dy164	1.54E-08	1.62E-08	1.71E-08	1.80E-08	1.88E-08	1.88E-08
cd114	1.58E-08	1.65E-08	1.72E-08	1.79E-08	1.85E-08	1.85E-08
sn119	1.54E-08	1.59E-08	1.65E-08	1.71E-08	1.76E-08	1.76E-08
dy162	1.43E-08	1.51E-08	1.59E-08	1.68E-08	1.76E-08	1.76E-08
sn115	1.41E-08	1.46E-08	1.51E-08	1.56E-08	1.62E-08	1.62E-08
nb 93	1.17E-08	1.26E-08	1.35E-08	1.44E-08	1.53E-08	1.53E-08
pd110	1.19E-08	1.25E-08	1.30E-08	1.36E-08	1.41E-08	1.41E-08
sr 88	1.09E-08	1.13E-08	1.17E-08	1.21E-08	1.25E-08	1.25E-08
mo 96	7.68E-09	8.21E-09	8.77E-09	9.34E-09	9.94E-09	9.94E-09
se 82	7.47E-09	7.73E-09	8.00E-09	8.26E-09	8.52E-09	8.52E-09
br 79	5.91E-09	6.34E-09	6.77E-09	7.23E-09	7.70E-09	7.70E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 71
0 fraction of total absorption rate
power= .00mw, burnup= 10724.mwd, flux= 9.22E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

cd110	5.58E-09	6.07E-09	6.59E-09	7.13E-09	7.70E-09	7.70E-09
sn126	6.55E-09	6.79E-09	7.04E-09	7.28E-09	7.53E-09	7.53E-09
se 78	5.78E-09	5.99E-09	6.19E-09	6.40E-09	6.61E-09	6.61E-09
eu154	5.33E-09	6.38E-09	6.61E-09	6.84E-09	7.08E-09	6.02E-09
ag107	4.38E-09	4.74E-09	5.11E-09	5.50E-09	5.90E-09	5.90E-09
sr 90	5.73E-09	5.98E-09	5.97E-09	5.97E-09	5.96E-09	5.67E-09
sn124	4.90E-09	5.08E-09	5.27E-09	5.45E-09	5.63E-09	5.63E-09
ba136	4.37E-09	4.62E-09	4.87E-09	5.12E-09	5.38E-09	5.38E-09
xe130	4.02E-09	4.29E-09	4.56E-09	4.85E-09	5.14E-09	5.14E-09
xe129	3.45E-09	3.70E-09	3.96E-09	4.23E-09	4.51E-09	4.51E-09
dy163	3.57E-09	3.77E-09	3.98E-09	4.19E-09	4.41E-09	4.41E-09
kr 82	3.33E-09	3.52E-09	3.71E-09	3.91E-09	4.12E-09	4.12E-09
as 75	3.42E-09	3.54E-09	3.66E-09	3.78E-09	3.90E-09	3.90E-09
in113	2.77E-09	2.87E-09	2.98E-09	3.08E-09	3.19E-09	3.19E-09
te126	2.07E-09	2.21E-09	2.37E-09	2.52E-09	2.68E-09	2.68E-09
sn118	1.99E-09	2.06E-09	2.13E-09	2.21E-09	2.28E-09	2.28E-09
sn122	1.69E-09	1.75E-09	1.82E-09	1.88E-09	1.94E-09	1.94E-09
cd116	1.67E-09	1.74E-09	1.80E-09	1.86E-09	1.92E-09	1.92E-09
sn120	1.25E-09	1.30E-09	1.35E-09	1.39E-09	1.44E-09	1.44E-09
cs137	1.31E-09	1.36E-09	1.36E-09	1.36E-09	1.36E-09	1.30E-09
ge 73	9.59E-10	9.94E-10	1.03E-09	1.06E-09	1.10E-09	1.10E-09
gd160	3.61E-10	3.78E-10	3.95E-10	4.13E-10	4.31E-10	4.31E-10
ge 76	3.35E-10	3.47E-10	3.59E-10	3.71E-10	3.82E-10	3.82E-10
ho165	2.90E-10	3.08E-10	3.27E-10	3.46E-10	3.66E-10	3.66E-10
cs134	3.43E-10	6.39E-10	6.61E-10	6.83E-10	7.05E-10	3.60E-10
dy160	1.88E-10	2.03E-10	2.18E-10	2.34E-10	2.51E-10	2.51E-10
kr 85	1.80E-10	2.01E-10	2.01E-10	2.01E-10	2.01E-10	1.76E-10
xe128	1.25E-10	1.34E-10	1.43E-10	1.53E-10	1.63E-10	1.63E-10

sr 86	6.84E-11	7.29E-11	7.75E-11	8.23E-11	8.73E-11	8.73E-11
te124	6.84E-11	7.19E-11	7.54E-11	7.90E-11	8.27E-11	8.27E-11
sn116	4.80E-11	5.15E-11	5.51E-11	5.89E-11	6.28E-11	6.28E-11
sr 87	4.34E-11	4.51E-11	4.68E-11	4.85E-11	5.02E-11	5.02E-11
ce144	4.51E-11	2.13E-10	2.13E-10	2.13E-10	2.13E-10	3.60E-11
nb 94	2.81E-11	2.96E-11	3.12E-11	3.28E-11	3.45E-11	3.45E-11
se 76	2.15E-11	2.27E-11	2.40E-11	2.54E-11	2.68E-11	2.68E-11
te122	2.00E-11	2.15E-11	2.30E-11	2.46E-11	2.62E-11	2.62E-11
ge 74	1.92E-11	1.99E-11	2.06E-11	2.13E-11	2.20E-11	2.20E-11
er166	1.53E-11	1.62E-11	1.72E-11	1.82E-11	1.92E-11	1.92E-11
ge 72	1.37E-11	1.42E-11	1.47E-11	1.52E-11	1.58E-11	1.58E-11
y 90	5.46E-12	5.69E-12	5.68E-12	5.68E-12	5.67E-12	5.40E-12
kr 80	3.62E-12	3.96E-12	4.33E-12	4.72E-12	5.13E-12	5.13E-12
sb125	3.97E-12	6.20E-12	6.22E-12	6.24E-12	6.25E-12	3.77E-12
ru106	4.00E-12	1.33E-11	1.34E-11	1.35E-11	1.36E-11	3.47E-12
er167	7.85E-13	8.59E-13	9.36E-13	1.02E-12	1.10E-12	1.10E-12
te123	4.76E-13	5.23E-13	5.74E-13	6.27E-13	6.83E-13	6.83E-13
cd108	1.64E-13	1.84E-13	2.04E-13	2.27E-13	2.51E-13	2.51E-13
be 9	4.22E-14	4.37E-14	4.51E-14	4.66E-14	4.81E-14	4.81E-14
nb 95	1.18E-13	5.44E-11	5.44E-11	5.44E-11	5.43E-11	4.36E-14
te127m	5.55E-14	3.13E-12	3.14E-12	3.15E-12	3.16E-12	3.13E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 72
0 fraction of total absorption rate
power= .00mw, burnup= 10724.mwd, flux= 9.22E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 95	5.78E-14	5.87E-11	5.87E-11	5.87E-11	5.86E-11	2.14E-14
li 7	1.71E-14	1.77E-14	1.84E-14	1.90E-14	1.96E-14	1.96E-14
sn114	1.22E-14	1.31E-14	1.41E-14	1.50E-14	1.60E-14	1.60E-14
y 91	2.60E-14	5.03E-11	5.02E-11	5.02E-11	5.01E-11	8.73E-15
sb126	7.54E-15	9.84E-15	1.01E-14	1.04E-14	1.07E-14	8.66E-15
sr 89	1.67E-15	1.07E-11	1.07E-11	1.07E-11	1.07E-11	4.73E-16
ru103	1.72E-15	1.38E-10	1.38E-10	1.38E-10	1.38E-10	3.42E-16
ce141	6.91E-16	5.75E-10	5.75E-10	5.75E-10	5.75E-10	9.75E-17
sn123	1.23E-16	3.81E-15	3.81E-15	3.82E-15	3.82E-15	7.55E-17
tb160	6.77E-17	3.25E-14	3.38E-14	3.52E-14	3.66E-14	3.30E-17
pm148m	3.09E-17	1.42E-12	1.43E-12	1.43E-12	1.43E-12	6.70E-18
cd109	1.84E-18	5.11E-18	5.45E-18	5.82E-18	6.21E-18	2.07E-18
cd115m	4.64E-18	9.64E-14	9.66E-14	9.68E-14	9.71E-14	1.13E-18
sb124	1.19E-18	1.92E-15	1.96E-15	2.00E-15	2.04E-15	4.49E-19
te129m	1.28E-18	6.87E-13	6.88E-13	6.88E-13	6.89E-13	1.93E-19
pm148	5.51E-20	4.99E-14	4.99E-14	5.00E-14	5.01E-14	9.17E-21

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 73
power= 1.468E-03mw, burnup=1.0724E+04mwd, flux= 9.22E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
h 1	5.56E-04	5.76E-04	5.96E-04	6.16E-04	6.36E-04	6.36E-04
h 2	1.66E-06	1.72E-06	1.78E-06	1.84E-06	1.89E-06	1.89E-06
h 3	1.58E-11	1.76E-11	1.78E-11	1.79E-11	1.81E-11	1.61E-11
h 4	.00E+00	2.59E-35	2.61E-35	2.63E-35	2.65E-35	.00E+00
he 3	9.83E-09	1.01E-08	1.04E-08	1.06E-08	1.09E-08	1.09E-08
he 4	9.21E-05	9.54E-05	9.87E-05	1.02E-04	1.05E-04	1.05E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.11E-05	1.15E-05	1.19E-05	1.23E-05	1.27E-05	1.27E-05
ne 21	2.02E-09	2.16E-09	2.30E-09	2.45E-09	2.60E-09	2.60E-09
ne 22	7.28E-08	7.54E-08	7.80E-08	8.06E-08	8.33E-08	8.33E-08
ne 23	2.63E-30	2.64E-15	2.64E-15	2.64E-15	2.64E-15	2.64E-30
na 22	9.76E-12	1.56E-11	1.56E-11	1.56E-11	1.56E-11	9.16E-12

na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	9.57E-24	9.57E-09	9.57E-09	9.57E-09	9.58E-09	9.58E-24
na 24m	1.57E-30	1.57E-15	1.57E-15	1.57E-15	1.57E-15	1.57E-30
na 25	2.23E-39	2.38E-24	2.53E-24	2.69E-24	2.86E-24	2.86E-39
mg 24	7.55E-02	7.79E-02	8.04E-02	8.29E-02	8.54E-02	8.54E-02
mg 25	2.15E-07	2.29E-07	2.44E-07	2.59E-07	2.75E-07	2.75E-07
mg 26	1.65E-06	1.71E-06	1.77E-06	1.83E-06	1.89E-06	1.89E-06
mg 27	7.84E-28	7.86E-13	7.86E-13	7.87E-13	7.87E-13	7.87E-28
mg 28	.00E+00	5.79E-25	5.80E-25	5.80E-25	5.80E-25	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	7.09E-26	7.09E-11	7.10E-11	7.10E-11	7.10E-11	7.10E-26
al 29	1.76E-37	1.88E-22	2.00E-22	2.13E-22	2.27E-22	2.27E-37
al 30	.00E+00	2.37E-32	2.61E-32	2.87E-32	3.14E-32	.00E+00
si 28	2.20E-01	2.27E-01	2.34E-01	2.41E-01	2.48E-01	2.48E-01
si 29	1.89E-06	2.02E-06	2.16E-06	2.29E-06	2.44E-06	2.44E-06
si 30	1.72E-11	1.91E-11	2.10E-11	2.31E-11	2.53E-11	2.53E-11
si 31	4.47E-39	4.94E-24	5.45E-24	5.99E-24	6.57E-24	6.56E-39
si 32	2.72E-30	3.03E-30	3.35E-30	3.69E-30	4.05E-30	4.01E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		9.21E+07	9.22E+07	9.22E+07	9.22E+07	9.22E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 74

power= 1.468E-03mw, burnup=1.0724E+04mwd, flux= 9.22E+07n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	8.85E+00	9.37E+00	9.91E+00	1.05E+01	1.10E+01	1.10E+01
pb206	2.71E-02	2.93E-02	3.15E-02	3.39E-02	3.63E-02	3.63E-02
pb207	2.18E-03	2.33E-03	2.49E-03	2.65E-03	2.82E-03	2.82E-03
pb208	1.24E-04	1.33E-04	1.42E-04	1.51E-04	1.61E-04	1.61E-04
pb209	2.58E-10	2.72E-10	2.87E-10	3.02E-10	3.16E-10	3.16E-10
pb210	1.10E-04	1.14E-04	1.19E-04	1.23E-04	1.27E-04	1.27E-04
pb211	2.40E-11	2.47E-11	2.54E-11	2.62E-11	2.70E-11	2.70E-11
pb212	2.39E-11	2.48E-11	2.55E-11	2.63E-11	2.71E-11	2.70E-11
pb214	2.52E-10	2.62E-10	2.71E-10	2.81E-10	2.91E-10	2.91E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	3.18E-03	3.49E-03	3.82E-03	4.16E-03	4.52E-03	4.53E-03
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	6.78E-08	7.04E-08	7.31E-08	7.57E-08	7.84E-08	7.84E-08
bi211	1.42E-12	1.46E-12	1.51E-12	1.55E-12	1.60E-12	1.60E-12
bi212	2.27E-12	2.35E-12	2.42E-12	2.50E-12	2.57E-12	2.56E-12
bi213	6.03E-11	6.36E-11	6.70E-11	7.04E-11	7.39E-11	7.39E-11
bi214	1.87E-10	1.94E-10	2.02E-10	2.09E-10	2.16E-10	2.16E-10
po210	1.85E-06	1.94E-06	2.02E-06	2.09E-06	2.16E-06	2.15E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	1.57E-17	1.62E-17	1.67E-17	1.72E-17	1.77E-17	1.77E-17
po212	1.19E-22	1.23E-22	1.27E-22	1.31E-22	1.35E-22	1.35E-22
po213	9.07E-20	9.57E-20	1.01E-19	1.06E-19	1.11E-19	1.11E-19
po214	2.57E-17	2.67E-17	2.77E-17	2.87E-17	2.97E-17	2.97E-17
po215	1.97E-17	2.03E-17	2.09E-17	2.15E-17	2.22E-17	2.22E-17
po216	9.06E-17	9.37E-17	9.67E-17	9.96E-17	1.02E-16	1.02E-16
po218	2.91E-11	3.03E-11	3.14E-11	3.25E-11	3.37E-11	3.37E-11
rn218	7.02E-38	1.30E-28	1.35E-28	1.39E-28	1.43E-28	3.73E-39
rn219	4.38E-14	4.51E-14	4.65E-14	4.79E-14	4.93E-14	4.94E-14
rn220	3.48E-14	3.59E-14	3.71E-14	3.82E-14	3.93E-14	3.92E-14
rn222	5.17E-08	5.37E-08	5.58E-08	5.78E-08	5.98E-08	5.98E-08
ra222	7.63E-35	1.42E-25	1.46E-25	1.50E-25	1.55E-25	4.05E-36
ra223	1.09E-08	1.13E-08	1.16E-08	1.20E-08	1.23E-08	1.23E-08
ra224	1.98E-10	2.04E-10	2.11E-10	2.17E-10	2.24E-10	2.23E-10
ra225	2.82E-08	2.98E-08	3.13E-08	3.29E-08	3.45E-08	3.45E-08

ra226	7.90E-03	8.21E-03	8.52E-03	8.83E-03	9.14E-03	9.14E-03
ra228	3.77E-11	3.91E-11	4.04E-11	4.18E-11	4.32E-11	4.32E-11
ac225	1.91E-08	2.01E-08	2.12E-08	2.22E-08	2.33E-08	2.33E-08
ac227	7.58E-06	7.83E-06	8.07E-06	8.31E-06	8.55E-06	8.55E-06
ac228	4.60E-15	4.77E-15	4.94E-15	5.10E-15	5.27E-15	5.27E-15
th226	3.72E-33	6.91E-24	7.13E-24	7.34E-24	7.56E-24	1.97E-34
th227	1.76E-08	1.82E-08	1.87E-08	1.93E-08	1.98E-08	1.99E-08
th228	3.76E-08	3.90E-08	4.03E-08	4.15E-08	4.27E-08	4.24E-08
th229	5.48E-03	5.79E-03	6.09E-03	6.40E-03	6.72E-03	6.72E-03
th230	4.27E-01	4.41E-01	4.56E-01	4.70E-01	4.84E-01	4.84E-01
th231	2.85E-09	3.57E-09	3.59E-09	3.61E-09	3.63E-09	2.83E-09
th232	9.22E-02	9.55E-02	9.89E-02	1.02E-01	1.06E-01	1.06E-01
th233	3.05E-28	3.16E-13	3.27E-13	3.39E-13	3.50E-13	3.50E-28
th234	5.37E-07	5.37E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	1.14E-02	1.18E-02	1.21E-02	1.25E-02	1.29E-02	1.29E-02
pa232	7.07E-26	7.30E-11	7.53E-11	7.76E-11	7.98E-11	7.99E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 75
power= 1.468E-03mw, burnup=1.0724E+04mwd, flux= 9.22E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.43E-06	1.43E-06	1.43E-06	1.43E-06	1.43E-06	1.43E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	3.60E-30	6.70E-21	6.91E-21	7.12E-21	7.33E-21	1.91E-31
u231	6.10E-32	6.30E-17	6.50E-17	6.71E-17	6.90E-17	6.91E-32
u232	1.36E-06	1.42E-06	1.47E-06	1.51E-06	1.56E-06	1.53E-06
u233	2.22E-01	2.29E-01	2.37E-01	2.44E-01	2.51E-01	2.51E-01
u234	9.69E+00	9.71E+00	9.73E+00	9.75E+00	9.77E+00	9.77E+00
u235	6.90E+02	6.89E+02	6.87E+02	6.86E+02	6.85E+02	6.85E+02
u236	1.81E+02	1.82E+02	1.82E+02	1.82E+02	1.83E+02	1.83E+02
u237	1.47E-12	1.16E-06	1.16E-06	1.16E-06	1.17E-06	1.71E-12
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	1.12E-22	1.12E-07	1.12E-07	1.12E-07	1.12E-07	1.12E-22
u240	1.30E-37	1.71E-37	2.24E-37	2.90E-37	3.72E-37	3.73E-37
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	1.02E-12	3.12E-12	3.12E-12	3.12E-12	3.12E-12	8.67E-13
np236m	7.40E-28	7.41E-13	7.41E-13	7.40E-13	7.40E-13	7.40E-28
np236	1.18E-06	1.22E-06	1.26E-06	1.30E-06	1.34E-06	1.34E-06
np237	4.15E+01	4.15E+01	4.15E+01	4.15E+01	4.14E+01	4.14E+01
np238	4.52E-14	5.47E-07	5.47E-07	5.47E-07	5.47E-07	5.38E-14
np239	3.77E-14	1.62E-05	1.62E-05	1.62E-05	1.62E-05	5.64E-14
np240m	1.11E-39	1.46E-39	1.91E-39	2.47E-39	3.18E-39	3.18E-39
np240	2.78E-39	1.19E-15	1.19E-15	1.19E-15	1.19E-15	4.17E-39
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	2.67E-10	4.04E-10	4.04E-10	4.04E-10	4.04E-10	2.52E-10
pu237	5.47E-18	1.02E-13	1.03E-13	1.05E-13	1.07E-13	1.43E-18
pu238	8.17E-03	8.28E-03	8.28E-03	8.28E-03	8.27E-03	8.14E-03
pu239	2.24E+01	2.30E+01	2.35E+01	2.41E+01	2.46E+01	2.46E+01
pu240	3.53E-01	3.69E-01	3.85E-01	4.00E-01	4.16E-01	4.16E-01
pu241	4.78E-05	5.43E-05	5.66E-05	5.89E-05	6.12E-05	5.56E-05
pu242	9.98E-06	1.09E-05	1.19E-05	1.29E-05	1.39E-05	1.39E-05
pu243	7.66E-30	8.31E-15	9.05E-15	9.81E-15	1.06E-14	1.07E-29
pu244	6.45E-27	8.52E-27	1.11E-26	1.44E-26	1.85E-26	1.86E-26
pu245	.00E+00	1.26E-37	1.65E-37	2.14E-37	2.74E-37	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.47E-34	1.54E-19	1.61E-19	1.68E-19	1.75E-19	1.75E-34
am240	6.73E-32	7.06E-17	7.38E-17	7.70E-17	8.02E-17	8.02E-32

```
     am241   1.47E-03  1.54E-03  1.61E-03  1.68E-03  1.75E-03  1.75E-03
     am242m  2.44E-07  2.58E-07  2.70E-07  2.82E-07  2.94E-07  2.91E-07
     am242   3.15E-12  2.09E-11  2.19E-11  2.29E-11  2.38E-11  3.75E-12
     am243   4.31E-08  4.79E-08  5.31E-08  5.86E-08  6.44E-08  6.44E-08
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   1.18E-31  1.31E-16  1.45E-16  1.60E-16  1.76E-16  1.76E-31
     am245   1.19E-40  2.52E-38  3.30E-38  4.27E-38  5.48E-38  2.54E-40
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   5.76E-28  4.46E-22  4.66E-22  4.87E-22  5.07E-22  9.87E-29
     cm242   8.62E-10  4.23E-09  4.42E-09  4.61E-09  4.80E-09  9.40E-10
     cm243   3.20E-14  3.49E-14  3.66E-14  3.82E-14  3.97E-14  3.79E-14
     cm244   1.73E-12  2.06E-12  2.28E-12  2.52E-12  2.77E-12  2.57E-12
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page   76
       power= 1.468E-03mw, burnup=1.0724E+04mwd, flux= 9.22E+07n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
            charge ******* d ******* d ******* d ******* d ******* d
     cm245   2.26E-15  2.59E-15  2.95E-15  3.35E-15  3.78E-15  3.77E-15
     cm246   1.15E-17  1.36E-17  1.58E-17  1.84E-17  2.13E-17  2.13E-17
     cm247   1.36E-21  1.66E-21  2.02E-21  2.44E-21  2.92E-21  2.92E-21
     cm248   1.57E-24  1.99E-24  2.51E-24  3.14E-24  3.90E-24  3.90E-24
     cm249    .00E+00  2.26E-35  2.86E-35  3.57E-35  4.43E-35   .00E+00
     cm250   5.44E-40  7.17E-40  9.35E-40  1.21E-39  1.55E-39  1.55E-39
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              9.21E+07  9.22E+07  9.22E+07  9.22E+07  9.22E-08
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number  9 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *           prelim lwr origen-s binary working library--id = 1143              *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
```

```
         *                                                                          *
         *                 fission product yields are from endf/b-v                 *
         *                                                                          *
         *             photon libraries use an 18-energy-group structure            *
         *            the photon data are from the master photon data base,         *
         *             produced to include bremsstrahlung from uo2 matrix           *
         *                                                                          *
         *       see information above this box (if present) for later updates      *
         *                                                                          *
         ****************************************************************************
         *                                                                          *
0        ****************************************************************************
0                 .other identification and sizes of library.
0                  data set name:  ft33f001
0               8/29/1996    date library was produced
0                    1697    total number of nuclides in library
                      689    number of light-element nuclides
                      129    number of actinide nuclides
                      879    number of fission product nuclides
0                    7993    number of nonzero off-diagonal matrix elements
0        ****************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   77
        power=    .00mw, burnup=  12064.mwd, flux= 9.22E+07n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                  initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.234046E+06   1.233959E+06   1.233848E+06   1.233716E+06   1.233562E+06   1.233559E+06
     absorptions   9.992796E+05   9.994441E+05   9.995941E+05   9.997313E+05   9.998563E+05   9.998534E+05
     k infinity    1.234936E+00   1.234645E+00   1.234349E+00   1.234047E+00   1.233739E+00   1.233740E+00
0                  initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   9.856426E+05   9.856710E+05   9.856871E+05   9.856911E+05   9.856834E+05   9.856814E+05
     non-actinide
     abs. fracs.   1.364678E-02   1.378077E-02   1.391262E-02   1.404399E-02   1.417500E-02   1.417410E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products    page   78
0                                 fraction of total absorption rate
        power=    .00mw, burnup=  12064.mwd, flux= 9.22E+07n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.45E-03  5.45E-03  5.45E-03  5.45E-03  5.45E-03  5.45E-03
     eu151     1.20E-03  1.23E-03  1.26E-03  1.28E-03  1.31E-03  1.31E-03
     nd143     1.05E-03  1.08E-03  1.11E-03  1.14E-03  1.17E-03  1.17E-03
     rh103     5.01E-04  5.17E-04  5.32E-04  5.48E-04  5.64E-04  5.64E-04
     xe131     3.38E-04  3.48E-04  3.58E-04  3.69E-04  3.79E-04  3.79E-04
     cs133     2.62E-04  2.70E-04  2.78E-04  2.86E-04  2.94E-04  2.94E-04
     sm147     1.93E-04  1.99E-04  2.05E-04  2.11E-04  2.17E-04  2.17E-04
     gd155     2.07E-04  2.08E-04  2.09E-04  2.10E-04  2.11E-04  2.11E-04
     tc 99     1.86E-04  1.92E-04  1.98E-04  2.03E-04  2.09E-04  2.09E-04
     nd145     1.48E-04  1.53E-04  1.57E-04  1.62E-04  1.66E-04  1.66E-04
     sm152     1.02E-04  1.06E-04  1.09E-04  1.13E-04  1.17E-04  1.17E-04
     mo 95     1.03E-04  1.06E-04  1.09E-04  1.12E-04  1.15E-04  1.15E-04
     cd113     9.77E-05  9.80E-05  9.84E-05  9.87E-05  9.90E-05  9.90E-05
     sm150     7.30E-05  7.55E-05  7.81E-05  8.06E-05  8.31E-05  8.31E-05
     kr 83     6.37E-05  6.56E-05  6.75E-05  6.95E-05  7.14E-05  7.14E-05
     cs135     5.92E-05  6.11E-05  6.29E-05  6.48E-05  6.66E-05  6.66E-05
     gd157     5.53E-05  5.57E-05  5.62E-05  5.66E-05  5.70E-05  5.70E-05
     ru101     4.60E-05  4.75E-05  4.89E-05  5.03E-05  5.18E-05  5.18E-05
     eu153     4.40E-05  4.54E-05  4.69E-05  4.84E-05  4.99E-05  4.99E-05
     pr141     4.41E-05  4.54E-05  4.68E-05  4.81E-05  4.95E-05  4.95E-05
     la139     3.60E-05  3.71E-05  3.83E-05  3.94E-05  4.05E-05  4.05E-05
```

pd105	1.73E-05	1.79E-05	1.85E-05	1.91E-05	1.97E-05	1.97E-05
ba137	1.73E-05	1.79E-05	1.84E-05	1.89E-05	1.95E-05	1.95E-05
sm151	1.78E-05	1.81E-05	1.81E-05	1.82E-05	1.82E-05	1.79E-05
ag109	1.41E-05	1.48E-05	1.54E-05	1.61E-05	1.67E-05	1.67E-05
zr 93	1.44E-05	1.48E-05	1.52E-05	1.57E-05	1.61E-05	1.61E-05
i129	1.16E-05	1.20E-05	1.23E-05	1.27E-05	1.31E-05	1.31E-05
nd144	1.10E-05	1.13E-05	1.17E-05	1.20E-05	1.23E-05	1.23E-05
mo 97	8.18E-06	8.44E-06	8.69E-06	8.94E-06	9.20E-06	9.20E-06
gd152	5.51E-06	5.82E-06	6.14E-06	6.47E-06	6.80E-06	6.80E-06
zr 91	3.79E-06	3.91E-06	4.02E-06	4.14E-06	4.26E-06	4.26E-06
pd108	3.58E-06	3.73E-06	3.88E-06	4.04E-06	4.20E-06	4.20E-06
y 89	3.63E-06	3.74E-06	3.85E-06	3.96E-06	4.07E-06	4.07E-06
ru102	3.39E-06	3.50E-06	3.60E-06	3.71E-06	3.82E-06	3.82E-06
ce142	3.00E-06	3.09E-06	3.18E-06	3.28E-06	3.37E-06	3.37E-06
nd148	2.89E-06	2.98E-06	3.07E-06	3.16E-06	3.25E-06	3.25E-06
nd146	2.43E-06	2.50E-06	2.58E-06	2.65E-06	2.73E-06	2.73E-06
in115	2.10E-06	2.17E-06	2.24E-06	2.31E-06	2.37E-06	2.37E-06
ba138	2.07E-06	2.13E-06	2.20E-06	2.26E-06	2.33E-06	2.33E-06
ce140	1.94E-06	2.00E-06	2.06E-06	2.12E-06	2.18E-06	2.18E-06
pd107	1.86E-06	1.93E-06	2.01E-06	2.08E-06	2.16E-06	2.16E-06
xe132	1.77E-06	1.82E-06	1.88E-06	1.93E-06	1.99E-06	1.99E-06
mo 98	1.20E-06	1.24E-06	1.27E-06	1.31E-06	1.35E-06	1.35E-06
mo100	1.16E-06	1.20E-06	1.24E-06	1.27E-06	1.31E-06	1.31E-06
xe134	1.15E-06	1.18E-06	1.22E-06	1.25E-06	1.29E-06	1.29E-06
ru 99	9.75E-07	1.04E-06	1.10E-06	1.16E-06	1.23E-06	1.23E-06
zr 92	9.16E-07	9.44E-07	9.72E-07	1.00E-06	1.03E-06	1.03E-06
i127	8.26E-07	8.53E-07	8.81E-07	9.09E-07	9.36E-07	9.36E-07
ru104	7.64E-07	7.89E-07	8.14E-07	8.39E-07	8.64E-07	8.64E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 79

0 fraction of total absorption rate

power= .00mw, burnup= 12064.mwd, flux= 9.22E+07n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	7.23E-07	7.45E-07	7.68E-07	7.90E-07	8.12E-07	8.12E-07
nd150	6.50E-07	6.70E-07	6.91E-07	7.11E-07	7.31E-07	7.31E-07
xe136	6.20E-07	6.40E-07	6.59E-07	6.78E-07	6.98E-07	6.98E-07
br 81	4.62E-07	4.77E-07	4.91E-07	5.05E-07	5.20E-07	5.20E-07
rb 85	4.46E-07	4.59E-07	4.73E-07	4.87E-07	5.00E-07	5.00E-07
cd111	4.31E-07	4.48E-07	4.65E-07	4.82E-07	4.99E-07	4.99E-07
zr 94	3.89E-07	4.01E-07	4.12E-07	4.24E-07	4.36E-07	4.36E-07
zr 90	3.57E-07	3.68E-07	3.79E-07	3.90E-07	4.01E-07	4.01E-07
sm154	2.96E-07	3.05E-07	3.15E-07	3.25E-07	3.35E-07	3.35E-07
te130	2.85E-07	2.94E-07	3.03E-07	3.12E-07	3.21E-07	3.21E-07
rb 87	2.57E-07	2.65E-07	2.73E-07	2.80E-07	2.88E-07	2.88E-07
gd154	2.10E-07	2.24E-07	2.38E-07	2.52E-07	2.67E-07	2.67E-07
se 77	1.86E-07	1.92E-07	1.97E-07	2.03E-07	2.09E-07	2.09E-07
pd106	1.69E-07	1.75E-07	1.82E-07	1.88E-07	1.94E-07	1.94E-07
gd156	1.54E-07	1.60E-07	1.66E-07	1.72E-07	1.78E-07	1.78E-07
kr 84	1.22E-07	1.26E-07	1.30E-07	1.33E-07	1.37E-07	1.37E-07
ba135	9.54E-08	1.01E-07	1.08E-07	1.14E-07	1.21E-07	1.21E-07
eu152	1.03E-07	1.17E-07	1.19E-07	1.22E-07	1.24E-07	1.10E-07
sb121	9.60E-08	9.92E-08	1.02E-07	1.05E-07	1.09E-07	1.09E-07
se 79	9.40E-08	9.69E-08	9.97E-08	1.03E-07	1.05E-07	1.05E-07
dy161	8.66E-08	9.05E-08	9.43E-08	9.83E-08	1.02E-07	1.02E-07
sb123	7.78E-08	8.03E-08	8.28E-08	8.53E-08	8.78E-08	8.78E-08
ru100	6.15E-08	6.53E-08	6.93E-08	7.34E-08	7.76E-08	7.76E-08
kr 86	6.78E-08	6.99E-08	7.19E-08	7.40E-08	7.61E-08	7.61E-08
te128	6.38E-08	6.59E-08	6.79E-08	6.99E-08	7.20E-08	7.20E-08
nd142	4.39E-08	4.67E-08	4.95E-08	5.25E-08	5.55E-08	5.55E-08
pm147	5.84E-08	9.79E-08	9.79E-08	9.78E-08	9.78E-08	5.46E-08

ba134	4.22E-08	4.48E-08	4.76E-08	5.04E-08	5.33E-08	5.33E-08
se 80	4.45E-08	4.58E-08	4.72E-08	4.86E-08	5.00E-08	5.00E-08
sm148	3.86E-08	4.10E-08	4.35E-08	4.61E-08	4.87E-08	4.87E-08
te125	4.24E-08	4.38E-08	4.52E-08	4.66E-08	4.80E-08	4.80E-08
eu155	4.89E-08	6.60E-08	6.62E-08	6.65E-08	6.67E-08	4.78E-08
tb159	4.02E-08	4.18E-08	4.34E-08	4.51E-08	4.67E-08	4.67E-08
gd158	3.23E-08	3.36E-08	3.49E-08	3.61E-08	3.74E-08	3.74E-08
pd104	2.88E-08	3.06E-08	3.25E-08	3.45E-08	3.65E-08	3.65E-08
cd112	3.09E-08	3.20E-08	3.32E-08	3.43E-08	3.54E-08	3.54E-08
li 6	2.42E-08	2.49E-08	2.56E-08	2.63E-08	2.70E-08	2.70E-08
sn117	2.26E-08	2.34E-08	2.42E-08	2.49E-08	2.57E-08	2.57E-08
dy164	1.88E-08	1.97E-08	2.07E-08	2.16E-08	2.25E-08	2.25E-08
cd114	1.85E-08	1.92E-08	1.99E-08	2.06E-08	2.13E-08	2.13E-08
dy162	1.76E-08	1.85E-08	1.94E-08	2.03E-08	2.12E-08	2.12E-08
sn119	1.76E-08	1.82E-08	1.88E-08	1.94E-08	2.00E-08	2.00E-08
nb 93	1.53E-08	1.63E-08	1.73E-08	1.83E-08	1.93E-08	1.93E-08
sn115	1.62E-08	1.67E-08	1.72E-08	1.77E-08	1.83E-08	1.83E-08
pd110	1.41E-08	1.47E-08	1.52E-08	1.58E-08	1.64E-08	1.64E-08
sr 88	1.25E-08	1.28E-08	1.32E-08	1.36E-08	1.40E-08	1.40E-08
mo 96	9.94E-09	1.05E-08	1.12E-08	1.18E-08	1.25E-08	1.25E-08
cd110	7.69E-09	8.29E-09	8.91E-09	9.55E-09	1.02E-08	1.02E-08
br 79	7.70E-09	8.18E-09	8.68E-09	9.19E-09	9.72E-09	9.72E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 80
0 fraction of total absorption rate
power= .00mw, burnup= 12064.mwd, flux= 9.22E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

se 82	8.52E-09	8.78E-09	9.04E-09	9.31E-09	9.57E-09	9.57E-09
sn126	7.53E-09	7.77E-09	8.01E-09	8.26E-09	8.50E-09	8.50E-09
ag107	5.90E-09	6.32E-09	6.76E-09	7.22E-09	7.69E-09	7.69E-09
se 78	6.61E-09	6.81E-09	7.02E-09	7.23E-09	7.44E-09	7.44E-09
eu154	6.02E-09	7.32E-09	7.55E-09	7.79E-09	8.03E-09	6.70E-09
ba136	5.38E-09	5.65E-09	5.92E-09	6.20E-09	6.48E-09	6.48E-09
xe130	5.14E-09	5.44E-09	5.75E-09	6.07E-09	6.39E-09	6.39E-09
sn124	5.63E-09	5.82E-09	6.00E-09	6.19E-09	6.38E-09	6.38E-09
xe129	4.51E-09	4.80E-09	5.09E-09	5.40E-09	5.71E-09	5.71E-09
sr 90	5.67E-09	5.95E-09	5.95E-09	5.94E-09	5.93E-09	5.61E-09
dy163	4.41E-09	4.63E-09	4.85E-09	5.08E-09	5.32E-09	5.32E-09
kr 82	4.12E-09	4.32E-09	4.54E-09	4.75E-09	4.97E-09	4.97E-09
as 75	3.90E-09	4.02E-09	4.15E-09	4.27E-09	4.39E-09	4.39E-09
in113	3.19E-09	3.29E-09	3.40E-09	3.51E-09	3.61E-09	3.61E-09
te126	2.68E-09	2.85E-09	3.02E-09	3.20E-09	3.38E-09	3.38E-09
sn118	2.28E-09	2.36E-09	2.43E-09	2.51E-09	2.58E-09	2.58E-09
sn122	1.94E-09	2.01E-09	2.07E-09	2.14E-09	2.20E-09	2.20E-09
cd116	1.92E-09	1.99E-09	2.05E-09	2.11E-09	2.17E-09	2.17E-09
sn120	1.44E-09	1.49E-09	1.53E-09	1.58E-09	1.63E-09	1.63E-09
cs137	1.30E-09	1.36E-09	1.36E-09	1.36E-09	1.36E-09	1.29E-09
ge 73	1.10E-09	1.13E-09	1.17E-09	1.20E-09	1.24E-09	1.24E-09
gd160	4.31E-10	4.49E-10	4.67E-10	4.85E-10	5.04E-10	5.04E-10
ho165	3.66E-10	3.86E-10	4.07E-10	4.28E-10	4.50E-10	4.50E-10
ge 76	3.82E-10	3.94E-10	4.06E-10	4.18E-10	4.29E-10	4.29E-10
cs134	3.60E-10	7.27E-10	7.49E-10	7.71E-10	7.93E-10	3.72E-10
dy160	2.51E-10	2.68E-10	2.86E-10	3.05E-10	3.24E-10	3.24E-10
xe128	1.63E-10	1.74E-10	1.84E-10	1.96E-10	2.07E-10	2.07E-10
kr 85	1.76E-10	2.00E-10	2.00E-10	2.00E-10	2.00E-10	1.73E-10
sr 86	8.73E-11	9.23E-11	9.75E-11	1.03E-10	1.08E-10	1.08E-10
te124	8.27E-11	8.64E-11	9.02E-11	9.41E-11	9.80E-11	9.80E-11
sn116	6.28E-11	6.69E-11	7.10E-11	7.53E-11	7.98E-11	7.98E-11
sr 87	5.02E-11	5.19E-11	5.37E-11	5.54E-11	5.72E-11	5.72E-11
nb 94	3.45E-11	3.63E-11	3.81E-11	4.00E-11	4.19E-11	4.19E-11

te122	2.62E-11	2.79E-11	2.96E-11	3.14E-11	3.33E-11	3.33E-11
se 76	2.68E-11	2.82E-11	2.96E-11	3.11E-11	3.27E-11	3.27E-11
ce144	3.60E-11	2.13E-10	2.13E-10	2.13E-10	2.12E-10	2.87E-11
ge 74	2.20E-11	2.27E-11	2.34E-11	2.41E-11	2.48E-11	2.48E-11
er166	1.92E-11	2.02E-11	2.13E-11	2.24E-11	2.35E-11	2.35E-11
ge 72	1.58E-11	1.63E-11	1.68E-11	1.73E-11	1.78E-11	1.78E-11
kr 80	5.13E-12	5.57E-12	6.03E-12	6.52E-12	7.03E-12	7.03E-12
y 90	5.40E-12	5.66E-12	5.66E-12	5.65E-12	5.65E-12	5.34E-12
sb125	3.77E-12	6.27E-12	6.29E-12	6.30E-12	6.32E-12	3.58E-12
ru106	3.47E-12	1.37E-11	1.38E-11	1.38E-11	1.39E-11	3.00E-12
er167	1.10E-12	1.19E-12	1.29E-12	1.39E-12	1.49E-12	1.49E-12
te123	6.83E-13	7.43E-13	8.07E-13	8.74E-13	9.44E-13	9.44E-13
cd108	2.51E-13	2.76E-13	3.04E-13	3.33E-13	3.65E-13	3.65E-13
be 9	4.81E-14	4.96E-14	5.11E-14	5.26E-14	5.41E-14	5.41E-14
li 7	1.96E-14	2.02E-14	2.08E-14	2.14E-14	2.20E-14	2.20E-14
sn114	1.60E-14	1.71E-14	1.82E-14	1.93E-14	2.04E-14	2.04E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 81
0 fraction of total absorption rate
power= .00mw, burnup= 12064.mwd, flux= 9.22E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

te127m	3.13E-14	3.17E-12	3.18E-12	3.19E-12	3.19E-12	1.78E-14
nb 95	4.36E-14	5.43E-11	5.43E-11	5.43E-11	5.42E-11	1.63E-14
sb126	8.66E-15	1.11E-14	1.14E-14	1.17E-14	1.20E-14	9.78E-15
zr 95	2.14E-14	5.86E-11	5.86E-11	5.85E-11	5.85E-11	7.96E-15
y 91	8.73E-15	5.01E-11	5.00E-11	5.00E-11	4.99E-11	2.96E-15
sr 89	4.73E-16	1.07E-11	1.07E-11	1.07E-11	1.06E-11	1.35E-16
ru103	3.42E-16	1.39E-10	1.39E-10	1.39E-10	1.39E-10	6.90E-17
sn123	7.55E-17	3.82E-15	3.82E-15	3.83E-15	3.83E-15	4.64E-17
tb160	3.30E-17	3.80E-14	3.94E-14	4.08E-14	4.23E-14	1.59E-17
ce141	9.75E-17	5.74E-10	5.74E-10	5.74E-10	5.74E-10	1.40E-17
cd109	2.07E-18	6.61E-18	7.04E-18	7.51E-18	7.99E-18	2.33E-18
pm148m	6.71E-18	1.44E-12	1.44E-12	1.44E-12	1.45E-12	1.47E-18
cd115m	1.13E-18	9.73E-14	9.75E-14	9.77E-14	9.79E-14	2.75E-19
sb124	4.49E-19	2.08E-15	2.12E-15	2.16E-15	2.19E-15	1.74E-19
te129m	1.92E-19	6.90E-13	6.90E-13	6.91E-13	6.92E-13	2.75E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 82
power= 1.468E-03mw, burnup=1.2064E+04mwd, flux= 9.22E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly
charge ******* d ******* d ******* d ******* d ******* d

h 1	6.36E-04	6.56E-04	6.76E-04	6.95E-04	7.15E-04	7.15E-04
h 2	1.89E-06	1.95E-06	2.01E-06	2.07E-06	2.13E-06	2.13E-06
h 3	1.61E-11	1.82E-11	1.84E-11	1.85E-11	1.86E-11	1.64E-11
h 4	.00E+00	2.68E-35	2.70E-35	2.72E-35	2.74E-35	.00E+00
he 3	1.09E-08	1.11E-08	1.14E-08	1.16E-08	1.19E-08	1.19E-08
he 4	1.05E-04	1.09E-04	1.12E-04	1.15E-04	1.19E-04	1.19E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.27E-05	1.31E-05	1.34E-05	1.38E-05	1.42E-05	1.42E-05
ne 21	2.60E-09	2.76E-09	2.92E-09	3.09E-09	3.26E-09	3.26E-09
ne 22	8.33E-08	8.59E-08	8.85E-08	9.11E-08	9.38E-08	9.38E-08
ne 23	2.64E-30	2.64E-15	2.64E-15	2.64E-15	2.64E-15	2.64E-30
na 22	9.16E-12	1.57E-11	1.57E-11	1.57E-11	1.57E-11	8.60E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	9.58E-24	9.58E-09	9.58E-09	9.58E-09	9.58E-09	9.58E-24
na 24m	1.57E-30	1.57E-15	1.57E-15	1.57E-15	1.57E-15	1.57E-30
na 25	2.86E-39	3.03E-24	3.20E-24	3.38E-24	3.56E-24	3.56E-39
mg 24	8.54E-02	8.79E-02	9.03E-02	9.28E-02	9.53E-02	9.53E-02
mg 25	2.75E-07	2.91E-07	3.08E-07	3.25E-07	3.43E-07	3.43E-07

	mg 26	1.89E-06	1.95E-06	2.01E-06	2.07E-06	2.13E-06	2.13E-06
	mg 27	7.87E-28	7.88E-13	7.88E-13	7.89E-13	7.89E-13	7.89E-28
	mg 28	.00E+00	5.81E-25	5.81E-25	5.82E-25	5.82E-25	.00E+00
	al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
	al 28	7.10E-26	7.10E-11	7.10E-11	7.10E-11	7.10E-11	7.10E-26
	al 29	2.27E-37	2.40E-22	2.54E-22	2.69E-22	2.84E-22	2.84E-37
	al 30	.00E+00	3.44E-32	3.75E-32	4.08E-32	4.43E-32	.00E+00
	si 28	2.48E-01	2.56E-01	2.63E-01	2.70E-01	2.77E-01	2.77E-01
	si 29	2.44E-06	2.58E-06	2.74E-06	2.89E-06	3.05E-06	3.05E-06
	si 30	2.53E-11	2.77E-11	3.02E-11	3.28E-11	3.56E-11	3.56E-11
	si 31	6.56E-39	7.18E-24	7.83E-24	8.52E-24	9.24E-24	9.24E-39
	si 32	4.01E-30	4.42E-30	4.83E-30	5.26E-30	5.72E-30	5.67E-30
	totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0	flux		9.21E+07	9.22E+07	9.22E+07	9.22E+07	9.22E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 83
power= 1.468E-03mw, burnup=1.2064E+04mwd, flux= 9.22E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	1.10E+01	1.16E+01	1.22E+01	1.28E+01	1.34E+01	1.34E+01
pb206	3.63E-02	3.89E-02	4.15E-02	4.42E-02	4.70E-02	4.70E-02
pb207	2.82E-03	2.99E-03	3.17E-03	3.35E-03	3.54E-03	3.54E-03
pb208	1.61E-04	1.71E-04	1.81E-04	1.91E-04	2.02E-04	2.02E-04
pb209	3.16E-10	3.31E-10	3.46E-10	3.61E-10	3.76E-10	3.76E-10
pb210	1.27E-04	1.32E-04	1.36E-04	1.40E-04	1.44E-04	1.44E-04
pb211	2.70E-11	2.77E-11	2.85E-11	2.92E-11	2.99E-11	3.00E-11
pb212	2.70E-11	2.78E-11	2.86E-11	2.94E-11	3.01E-11	3.00E-11
pb214	2.91E-10	3.01E-10	3.11E-10	3.20E-10	3.30E-10	3.30E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	4.53E-03	4.90E-03	5.30E-03	5.71E-03	6.14E-03	6.14E-03
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	7.84E-08	8.10E-08	8.36E-08	8.63E-08	8.89E-08	8.89E-08
bi211	1.60E-12	1.64E-12	1.69E-12	1.73E-12	1.78E-12	1.78E-12
bi212	2.56E-12	2.64E-12	2.71E-12	2.78E-12	2.86E-12	2.84E-12
bi213	7.39E-11	7.73E-11	8.08E-11	8.43E-11	8.78E-11	8.79E-11
bi214	2.16E-10	2.23E-10	2.31E-10	2.38E-10	2.45E-10	2.45E-10
po210	2.15E-06	2.24E-06	2.31E-06	2.38E-06	2.45E-06	2.44E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	1.77E-17	1.82E-17	1.86E-17	1.91E-17	1.96E-17	1.97E-17
po212	1.35E-22	1.39E-22	1.43E-22	1.46E-22	1.50E-22	1.49E-22
po213	1.11E-19	1.16E-19	1.21E-19	1.27E-19	1.32E-19	1.32E-19
po214	2.97E-17	3.07E-17	3.17E-17	3.27E-17	3.37E-17	3.37E-17
po215	2.22E-17	2.28E-17	2.34E-17	2.40E-17	2.46E-17	2.47E-17
po216	1.02E-16	1.05E-16	1.08E-16	1.11E-16	1.14E-16	1.13E-16
po218	3.37E-11	3.48E-11	3.59E-11	3.71E-11	3.82E-11	3.82E-11
rn218	3.73E-39	1.47E-28	1.51E-28	1.55E-28	1.59E-28	2.00E-40
rn219	4.94E-14	5.07E-14	5.20E-14	5.34E-14	5.47E-14	5.49E-14
rn220	3.92E-14	4.04E-14	4.15E-14	4.26E-14	4.37E-14	4.35E-14
rn222	5.98E-08	6.18E-08	6.38E-08	6.58E-08	6.78E-08	6.78E-08
ra222	4.05E-36	1.59E-25	1.64E-25	1.68E-25	1.72E-25	2.17E-37
ra223	1.23E-08	1.26E-08	1.30E-08	1.33E-08	1.37E-08	1.37E-08
ra224	2.23E-10	2.30E-10	2.36E-10	2.42E-10	2.49E-10	2.47E-10
ra225	3.45E-08	3.62E-08	3.78E-08	3.94E-08	4.11E-08	4.11E-08
ra226	9.14E-03	9.45E-03	9.76E-03	1.01E-02	1.04E-02	1.04E-02
ra228	4.32E-11	4.46E-11	4.60E-11	4.74E-11	4.87E-11	4.87E-11
ac225	2.33E-08	2.44E-08	2.55E-08	2.66E-08	2.78E-08	2.78E-08
ac227	8.55E-06	8.79E-06	9.03E-06	9.26E-06	9.50E-06	9.50E-06
ac228	5.27E-15	5.44E-15	5.61E-15	5.78E-15	5.95E-15	5.95E-15
th226	1.97E-34	7.78E-24	7.99E-24	8.20E-24	8.41E-24	1.06E-35

th227	1.99E-08	2.04E-08	2.10E-08	2.15E-08	2.20E-08	2.21E-08
th228	4.24E-08	4.39E-08	4.51E-08	4.63E-08	4.74E-08	4.71E-08
th229	6.72E-03	7.03E-03	7.35E-03	7.67E-03	7.99E-03	7.99E-03
th230	4.84E-01	4.99E-01	5.13E-01	5.27E-01	5.41E-01	5.41E-01
th231	2.83E-09	3.65E-09	3.67E-09	3.69E-09	3.70E-09	2.81E-09
th232	1.06E-01	1.09E-01	1.12E-01	1.16E-01	1.19E-01	1.19E-01
th233	3.50E-28	3.61E-13	3.72E-13	3.84E-13	3.95E-13	3.95E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	1.29E-02	1.32E-02	1.36E-02	1.39E-02	1.43E-02	1.43E-02
pa232	7.99E-26	8.21E-11	8.43E-11	8.66E-11	8.88E-11	8.88E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 84
power= 1.468E-03mw, burnup=1.2064E+04mwd, flux= 9.22E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge *******	d *******	d *******	d *******	d *******	d *******
pa233	1.43E-06	1.43E-06	1.43E-06	1.43E-06	1.43E-06	1.43E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.91E-31	7.54E-21	7.74E-21	7.95E-21	8.16E-21	1.03E-32
u231	6.91E-32	7.11E-17	7.31E-17	7.50E-17	7.70E-17	7.70E-32
u232	1.53E-06	1.60E-06	1.64E-06	1.69E-06	1.73E-06	1.69E-06
u233	2.51E-01	2.58E-01	2.66E-01	2.73E-01	2.80E-01	2.80E-01
u234	9.77E+00	9.79E+00	9.82E+00	9.84E+00	9.86E+00	9.86E+00
u235	6.85E+02	6.84E+02	6.83E+02	6.81E+02	6.80E+02	6.80E+02
u236	1.83E+02	1.83E+02	1.83E+02	1.83E+02	1.84E+02	1.84E+02
u237	1.71E-12	1.17E-06	1.17E-06	1.17E-06	1.17E-06	1.94E-12
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	1.12E-22	1.12E-07	1.12E-07	1.12E-07	1.12E-07	1.12E-22
u240	3.73E-37	4.74E-37	5.99E-37	7.51E-37	9.36E-37	9.36E-37
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.67E-13	3.12E-12	3.12E-12	3.12E-12	3.12E-12	7.40E-13
np236m	7.40E-28	7.41E-13	7.41E-13	7.41E-13	7.40E-13	7.41E-28
np236	1.34E-06	1.38E-06	1.41E-06	1.45E-06	1.49E-06	1.49E-06
np237	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01
np238	5.38E-14	5.47E-07	5.47E-07	5.46E-07	5.46E-07	6.21E-14
np239	5.64E-14	1.62E-05	1.62E-05	1.62E-05	1.62E-05	7.97E-14
np240m	3.18E-39	4.05E-39	5.11E-39	6.41E-39	7.98E-39	7.99E-39
np240	4.17E-39	1.19E-15	1.19E-15	1.19E-15	1.19E-15	5.94E-39
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	2.52E-10	4.05E-10	4.05E-10	4.05E-10	4.05E-10	2.38E-10
pu237	1.43E-18	1.08E-13	1.10E-13	1.12E-13	1.13E-13	3.75E-19
pu238	8.14E-03	8.27E-03	8.27E-03	8.27E-03	8.27E-03	8.12E-03
pu239	2.46E+01	2.51E+01	2.56E+01	2.61E+01	2.65E+01	2.65E+01
pu240	4.16E-01	4.31E-01	4.46E-01	4.61E-01	4.76E-01	4.76E-01
pu241	5.56E-05	6.35E-05	6.58E-05	6.80E-05	7.02E-05	6.30E-05
pu242	1.39E-05	1.50E-05	1.61E-05	1.73E-05	1.85E-05	1.85E-05
pu243	1.07E-29	1.14E-14	1.23E-14	1.32E-14	1.41E-14	1.43E-29
pu244	1.86E-26	2.36E-26	2.98E-26	3.74E-26	4.66E-26	4.66E-26
pu245	.00E+00	3.50E-37	4.42E-37	5.54E-37	6.91E-37	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.75E-34	1.82E-19	1.89E-19	1.96E-19	2.03E-19	2.03E-34
am240	8.02E-32	8.33E-17	8.65E-17	8.96E-17	9.27E-17	9.27E-32
am241	1.75E-03	1.81E-03	1.88E-03	1.95E-03	2.01E-03	2.01E-03
am242m	2.91E-07	3.05E-07	3.16E-07	3.28E-07	3.40E-07	3.36E-07
am242	3.75E-12	2.47E-11	2.56E-11	2.66E-11	2.75E-11	4.33E-12
am243	6.44E-08	7.06E-08	7.71E-08	8.39E-08	9.11E-08	9.11E-08
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.76E-31	1.93E-16	2.11E-16	2.30E-16	2.50E-16	2.50E-31

```
     am245   2.54E-40  6.98E-38  8.81E-38  1.10E-37  1.38E-37  4.63E-40
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   9.87E-29  5.27E-22  5.47E-22  5.67E-22  5.87E-22  1.67E-29
     cm242   9.40E-10  4.98E-09  5.18E-09  5.36E-09  5.55E-09  1.02E-09
     cm243   3.79E-14  4.13E-14  4.28E-14  4.44E-14  4.59E-14  4.35E-14
     cm244   2.57E-12  3.04E-12  3.32E-12  3.61E-12  3.92E-12  3.60E-12
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page   85
       power= 1.468E-03mw, burnup=1.2064E+04mwd, flux= 9.22E+07n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
            charge ******* d ******* d ******* d ******* d ******* d
     cm245   3.77E-15  4.24E-15  4.74E-15  5.28E-15  5.87E-15  5.87E-15
     cm246   2.13E-17  2.44E-17  2.79E-17  3.18E-17  3.60E-17  3.60E-17
     cm247   2.92E-21  3.47E-21  4.11E-21  4.84E-21  5.66E-21  5.66E-21
     cm248   3.90E-24  4.80E-24  5.87E-24  7.13E-24  8.62E-24  8.62E-24
     cm249    .00E+00  5.46E-35  6.68E-35  8.12E-35  9.81E-35   .00E+00
     cm250   1.55E-39  1.97E-39  2.48E-39  3.10E-39  3.85E-39  3.85E-39
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              9.21E+07  9.22E+07  9.22E+07  9.22E+07  9.22E-08
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number 10 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *      data from the light element, actinide, and fission product libraries    *
          *        decay data, including gamma and total energy, are from endf/b-vi      *
          *                                                                              *
          *     neutron flux spectrum factors and cross sections were produced from      *
          *    the "presas2" case updating all nuclides on the scale "burnup" library    *
          *                                                                              *
          *                  fission product yields are from endf/b-v                    *
          *                                                                              *
          *             photon libraries use an 18-energy-group structure                *
          *            the photon data are from the master photon data base,             *
          *             produced to include bremsstrahlung from uo2 matrix               *
```

```
         *                                                                          *
         *        see information above this box (if present) for later updates     *
         *                                                                          *
         ****************************************************************************
         *                                                                          *
0        ****************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/29/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ****************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   86
        power=    .00mw, burnup=  13405.mwd, flux= 9.22E+07n/cm**2-sec
0                                                basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.234425E+06   1.234251E+06   1.234056E+06   1.233841E+06   1.233607E+06   1.233607E+06
     absorptions   1.000585E+06   1.000699E+06   1.000800E+06   1.000889E+06   1.000967E+06   1.000967E+06
     k infinity    1.233703E+00   1.233389E+00   1.233069E+00   1.232746E+00   1.232415E+00   1.232415E+00
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   9.864043E+05   9.863852E+05   9.863549E+05   9.863136E+05   9.862617E+05   9.862617E+05
     non-actinide
     abs. fracs.   1.417267E-02   1.430368E-02   1.443362E-02   1.456237E-02   1.469141E-02   1.469141E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products    page   87
0                                  fraction of total absorption rate
        power=    .00mw, burnup=  13405.mwd, flux= 9.22E+07n/cm**2-sec
0                initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.45E-03  5.44E-03  5.44E-03  5.44E-03  5.44E-03  5.44E-03
     eu151     1.31E-03  1.33E-03  1.35E-03  1.38E-03  1.40E-03  1.40E-03
     nd143     1.17E-03  1.20E-03  1.24E-03  1.27E-03  1.30E-03  1.30E-03
     rh103     5.64E-04  5.80E-04  5.96E-04  6.12E-04  6.27E-04  6.27E-04
     xe131     3.79E-04  3.90E-04  4.00E-04  4.11E-04  4.21E-04  4.21E-04
     cs133     2.94E-04  3.02E-04  3.11E-04  3.19E-04  3.27E-04  3.27E-04
     sm147     2.17E-04  2.23E-04  2.29E-04  2.35E-04  2.40E-04  2.40E-04
     tc 99     2.09E-04  2.14E-04  2.20E-04  2.25E-04  2.31E-04  2.31E-04
     gd155     2.11E-04  2.12E-04  2.13E-04  2.14E-04  2.15E-04  2.15E-04
     nd145     1.66E-04  1.71E-04  1.75E-04  1.80E-04  1.85E-04  1.85E-04
     sm152     1.17E-04  1.21E-04  1.25E-04  1.28E-04  1.32E-04  1.32E-04
     mo 95     1.15E-04  1.19E-04  1.22E-04  1.25E-04  1.28E-04  1.28E-04
     cd113     9.90E-05  9.93E-05  9.96E-05  9.99E-05  1.00E-04  1.00E-04
     sm150     8.31E-05  8.57E-05  8.82E-05  9.08E-05  9.33E-05  9.33E-05
     kr 83     7.14E-05  7.33E-05  7.52E-05  7.71E-05  7.90E-05  7.90E-05
     cs135     6.66E-05  6.85E-05  7.03E-05  7.21E-05  7.40E-05  7.40E-05
     gd157     5.70E-05  5.74E-05  5.78E-05  5.81E-05  5.85E-05  5.85E-05
     ru101     5.18E-05  5.32E-05  5.47E-05  5.61E-05  5.75E-05  5.75E-05
     eu153     4.99E-05  5.13E-05  5.28E-05  5.43E-05  5.58E-05  5.58E-05
     pr141     4.95E-05  5.09E-05  5.22E-05  5.36E-05  5.50E-05  5.50E-05
     la139     4.05E-05  4.16E-05  4.27E-05  4.38E-05  4.49E-05  4.49E-05
     pd105     1.97E-05  2.03E-05  2.09E-05  2.15E-05  2.21E-05  2.21E-05
     ba137     1.95E-05  2.00E-05  2.06E-05  2.11E-05  2.16E-05  2.16E-05
     ag109     1.67E-05  1.74E-05  1.81E-05  1.88E-05  1.95E-05  1.95E-05
     sm151     1.79E-05  1.82E-05  1.83E-05  1.83E-05  1.83E-05  1.83E-05
     zr 93     1.61E-05  1.66E-05  1.70E-05  1.74E-05  1.79E-05  1.79E-05
      i129     1.31E-05  1.34E-05  1.38E-05  1.42E-05  1.45E-05  1.45E-05
```

nd144	1.23E-05	1.27E-05	1.30E-05	1.34E-05	1.37E-05	1.37E-05
mo 97	9.20E-06	9.45E-06	9.70E-06	9.96E-06	1.02E-05	1.02E-05
gd152	6.80E-06	7.14E-06	7.49E-06	7.84E-06	8.20E-06	8.20E-06
pd108	4.20E-06	4.35E-06	4.52E-06	4.68E-06	4.84E-06	4.84E-06
zr 91	4.25E-06	4.37E-06	4.49E-06	4.60E-06	4.72E-06	4.72E-06
y 89	4.07E-06	4.18E-06	4.29E-06	4.40E-06	4.51E-06	4.51E-06
ru102	3.81E-06	3.92E-06	4.03E-06	4.14E-06	4.24E-06	4.24E-06
ce142	3.37E-06	3.46E-06	3.55E-06	3.65E-06	3.74E-06	3.74E-06
nd148	3.25E-06	3.34E-06	3.43E-06	3.52E-06	3.61E-06	3.61E-06
nd146	2.73E-06	2.80E-06	2.88E-06	2.95E-06	3.03E-06	3.03E-06
in115	2.37E-06	2.44E-06	2.51E-06	2.58E-06	2.65E-06	2.65E-06
ba138	2.33E-06	2.39E-06	2.45E-06	2.52E-06	2.58E-06	2.58E-06
pd107	2.16E-06	2.24E-06	2.32E-06	2.40E-06	2.48E-06	2.48E-06
ce140	2.18E-06	2.24E-06	2.30E-06	2.36E-06	2.42E-06	2.42E-06
xe132	1.99E-06	2.04E-06	2.10E-06	2.16E-06	2.21E-06	2.21E-06
ru 99	1.23E-06	1.30E-06	1.37E-06	1.44E-06	1.51E-06	1.51E-06
mo 98	1.35E-06	1.38E-06	1.42E-06	1.46E-06	1.50E-06	1.50E-06
mo100	1.31E-06	1.35E-06	1.38E-06	1.42E-06	1.45E-06	1.45E-06
xe134	1.29E-06	1.32E-06	1.36E-06	1.39E-06	1.43E-06	1.43E-06
zr 92	1.03E-06	1.06E-06	1.08E-06	1.11E-06	1.14E-06	1.14E-06
i127	9.36E-07	9.64E-07	9.92E-07	1.02E-06	1.05E-06	1.05E-06
ru104	8.64E-07	8.89E-07	9.14E-07	9.40E-07	9.65E-07	9.65E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 88
0 fraction of total absorption rate
power= .00mw, burnup= 13405.mwd, flux= 9.22E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	8.12E-07	8.35E-07	8.57E-07	8.79E-07	9.02E-07	9.02E-07
xe135	.00E+00	8.44E-07	8.44E-07	8.44E-07	8.45E-07	8.45E-07
nd150	7.31E-07	7.52E-07	7.72E-07	7.93E-07	8.13E-07	8.13E-07
xe136	6.98E-07	7.17E-07	7.36E-07	7.56E-07	7.75E-07	7.75E-07
br 81	5.20E-07	5.34E-07	5.48E-07	5.62E-07	5.77E-07	5.77E-07
cd111	4.99E-07	5.16E-07	5.33E-07	5.51E-07	5.68E-07	5.68E-07
rb 85	5.00E-07	5.14E-07	5.27E-07	5.41E-07	5.54E-07	5.54E-07
zr 94	4.36E-07	4.48E-07	4.60E-07	4.72E-07	4.84E-07	4.84E-07
zr 90	4.01E-07	4.12E-07	4.23E-07	4.34E-07	4.44E-07	4.44E-07
sm154	3.35E-07	3.45E-07	3.55E-07	3.65E-07	3.74E-07	3.74E-07
te130	3.21E-07	3.29E-07	3.38E-07	3.47E-07	3.56E-07	3.56E-07
gd154	2.67E-07	2.82E-07	2.98E-07	3.15E-07	3.31E-07	3.31E-07
rb 87	2.88E-07	2.96E-07	3.04E-07	3.12E-07	3.19E-07	3.19E-07
se 77	2.09E-07	2.14E-07	2.20E-07	2.26E-07	2.32E-07	2.32E-07
pd106	1.94E-07	2.00E-07	2.07E-07	2.13E-07	2.20E-07	2.20E-07
gd156	1.78E-07	1.84E-07	1.91E-07	1.97E-07	2.03E-07	2.03E-07
kr 84	1.37E-07	1.41E-07	1.45E-07	1.48E-07	1.52E-07	1.52E-07
ba135	1.21E-07	1.28E-07	1.34E-07	1.42E-07	1.49E-07	1.49E-07
eu152	1.10E-07	1.26E-07	1.29E-07	1.31E-07	1.33E-07	1.33E-07
sb121	1.09E-07	1.12E-07	1.15E-07	1.18E-07	1.21E-07	1.21E-07
dy161	1.02E-07	1.06E-07	1.10E-07	1.14E-07	1.19E-07	1.19E-07
se 79	1.05E-07	1.08E-07	1.11E-07	1.14E-07	1.17E-07	1.17E-07
sb123	8.78E-08	9.04E-08	9.29E-08	9.55E-08	9.80E-08	9.80E-08
pm147	5.46E-08	9.78E-08	9.77E-08	9.77E-08	9.77E-08	9.77E-08
ru100	7.76E-08	8.19E-08	8.63E-08	9.08E-08	9.55E-08	9.55E-08
kr 86	7.60E-08	7.81E-08	8.02E-08	8.22E-08	8.43E-08	8.43E-08
te128	7.20E-08	7.40E-08	7.61E-08	7.81E-08	8.02E-08	8.02E-08
nd142	5.55E-08	5.86E-08	6.18E-08	6.51E-08	6.85E-08	6.85E-08
eu155	4.78E-08	6.69E-08	6.71E-08	6.73E-08	6.76E-08	6.76E-08
ba134	5.33E-08	5.63E-08	5.94E-08	6.26E-08	6.58E-08	6.58E-08
sm148	4.87E-08	5.15E-08	5.43E-08	5.71E-08	6.01E-08	6.01E-08
se 80	5.00E-08	5.13E-08	5.27E-08	5.41E-08	5.54E-08	5.54E-08
te125	4.80E-08	4.94E-08	5.08E-08	5.23E-08	5.37E-08	5.37E-08

tb159	4.67E-08	4.84E-08	5.00E-08	5.17E-08	5.34E-08	5.34E-08
pd104	3.65E-08	3.86E-08	4.07E-08	4.29E-08	4.51E-08	4.51E-08
gd158	3.74E-08	3.87E-08	4.00E-08	4.14E-08	4.27E-08	4.27E-08
cd112	3.54E-08	3.65E-08	3.77E-08	3.88E-08	3.99E-08	3.99E-08
li 6	2.70E-08	2.77E-08	2.84E-08	2.91E-08	2.98E-08	2.98E-08
sn117	2.57E-08	2.65E-08	2.73E-08	2.80E-08	2.88E-08	2.88E-08
dy164	2.25E-08	2.35E-08	2.44E-08	2.54E-08	2.64E-08	2.64E-08
dy162	2.12E-08	2.21E-08	2.31E-08	2.41E-08	2.50E-08	2.50E-08
cd114	2.13E-08	2.20E-08	2.26E-08	2.33E-08	2.40E-08	2.40E-08
nb 93	1.93E-08	2.04E-08	2.15E-08	2.27E-08	2.38E-08	2.38E-08
sn119	2.00E-08	2.05E-08	2.11E-08	2.17E-08	2.23E-08	2.23E-08
sn115	1.83E-08	1.88E-08	1.93E-08	1.99E-08	2.04E-08	2.04E-08
pd110	1.64E-08	1.70E-08	1.76E-08	1.82E-08	1.88E-08	1.88E-08
sr 88	1.40E-08	1.43E-08	1.47E-08	1.51E-08	1.55E-08	1.55E-08
mo 96	1.25E-08	1.32E-08	1.39E-08	1.46E-08	1.53E-08	1.53E-08
cd110	1.02E-08	1.09E-08	1.17E-08	1.24E-08	1.32E-08	1.32E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 89
0 fraction of total absorption rate
power= .00mw, burnup= 13405.mwd, flux= 9.22E+07n/cm**2-sec
0

	initial	******* d	******* d	******* d	******* d	******* d
br 79	9.72E-09	1.03E-08	1.08E-08	1.14E-08	1.20E-08	1.20E-08
se 82	9.57E-09	9.83E-09	1.01E-08	1.04E-08	1.06E-08	1.06E-08
ag107	7.69E-09	8.18E-09	8.69E-09	9.21E-09	9.75E-09	9.75E-09
sn126	8.50E-09	8.75E-09	8.99E-09	9.24E-09	9.48E-09	9.48E-09
eu154	6.70E-09	8.27E-09	8.52E-09	8.76E-09	9.01E-09	9.01E-09
se 78	7.44E-09	7.64E-09	7.85E-09	8.06E-09	8.27E-09	8.27E-09
xe130	6.39E-09	6.73E-09	7.07E-09	7.42E-09	7.78E-09	7.78E-09
ba136	6.48E-09	6.77E-09	7.07E-09	7.37E-09	7.67E-09	7.67E-09
sn124	6.38E-09	6.56E-09	6.75E-09	6.94E-09	7.13E-09	7.13E-09
xe129	5.71E-09	6.04E-09	6.37E-09	6.71E-09	7.06E-09	7.06E-09
dy163	5.32E-09	5.55E-09	5.79E-09	6.04E-09	6.29E-09	6.29E-09
sr 90	5.61E-09	5.93E-09	5.92E-09	5.92E-09	5.91E-09	5.91E-09
kr 82	4.97E-09	5.20E-09	5.42E-09	5.65E-09	5.89E-09	5.89E-09
as 75	4.39E-09	4.51E-09	4.63E-09	4.75E-09	4.88E-09	4.88E-09
te126	3.38E-09	3.56E-09	3.76E-09	3.95E-09	4.15E-09	4.15E-09
in113	3.61E-09	3.72E-09	3.83E-09	3.94E-09	4.04E-09	4.04E-09
rh105	.00E+00	3.82E-09	3.83E-09	3.84E-09	3.86E-09	3.86E-09
sn118	2.58E-09	2.66E-09	2.73E-09	2.81E-09	2.88E-09	2.88E-09
sn122	2.20E-09	2.26E-09	2.33E-09	2.39E-09	2.46E-09	2.46E-09
cd116	2.17E-09	2.24E-09	2.30E-09	2.36E-09	2.43E-09	2.43E-09
sn120	1.63E-09	1.67E-09	1.72E-09	1.77E-09	1.82E-09	1.82E-09
ge 73	1.24E-09	1.27E-09	1.31E-09	1.34E-09	1.38E-09	1.38E-09
cs137	1.29E-09	1.36E-09	1.36E-09	1.36E-09	1.36E-09	1.36E-09
pr143	.00E+00	9.47E-10	9.46E-10	9.46E-10	9.45E-10	9.45E-10
cs134	3.72E-10	8.15E-10	8.37E-10	8.59E-10	8.81E-10	8.81E-10
xe133	.00E+00	7.30E-10	7.30E-10	7.30E-10	7.30E-10	7.30E-10
gd160	5.04E-10	5.23E-10	5.42E-10	5.61E-10	5.81E-10	5.81E-10
ce141	1.40E-17	5.74E-10	5.73E-10	5.73E-10	5.73E-10	5.73E-10
ho165	4.50E-10	4.72E-10	4.95E-10	5.18E-10	5.42E-10	5.42E-10
ge 76	4.29E-10	4.41E-10	4.53E-10	4.65E-10	4.76E-10	4.76E-10
dy160	3.24E-10	3.44E-10	3.65E-10	3.86E-10	4.08E-10	4.08E-10
pm149	.00E+00	3.56E-10	3.56E-10	3.56E-10	3.56E-10	3.56E-10
nd147	.00E+00	3.34E-10	3.34E-10	3.34E-10	3.34E-10	3.34E-10
xe128	2.07E-10	2.19E-10	2.31E-10	2.44E-10	2.57E-10	2.57E-10
ce144	2.87E-11	2.12E-10	2.12E-10	2.12E-10	2.12E-10	2.12E-10
kr 85	1.73E-10	2.00E-10	2.00E-10	1.99E-10	1.99E-10	1.99E-10
ru103	6.90E-17	1.39E-10	1.39E-10	1.40E-10	1.40E-10	1.40E-10
sr 86	1.08E-10	1.14E-10	1.20E-10	1.26E-10	1.32E-10	1.32E-10
te124	9.80E-11	1.02E-10	1.06E-10	1.10E-10	1.15E-10	1.15E-10

sn116	7.98E-11	8.43E-11	8.90E-11	9.38E-11	9.88E-11	9.88E-11
sr 87	5.72E-11	5.89E-11	6.07E-11	6.25E-11	6.43E-11	6.43E-11
zr 95	7.96E-15	5.85E-11	5.84E-11	5.84E-11	5.84E-11	5.84E-11
nb 95	1.63E-14	5.42E-11	5.42E-11	5.42E-11	5.41E-11	5.41E-11
nb 94	4.19E-11	4.39E-11	4.60E-11	4.81E-11	5.03E-11	5.03E-11
y 91	2.96E-15	4.99E-11	4.99E-11	4.98E-11	4.98E-11	4.98E-11
pm151	.00E+00	4.18E-11	4.19E-11	4.19E-11	4.19E-11	4.19E-11
te122	3.33E-11	3.52E-11	3.71E-11	3.91E-11	4.12E-11	4.12E-11
se 76	3.27E-11	3.42E-11	3.58E-11	3.74E-11	3.91E-11	3.91E-11
er166	2.35E-11	2.46E-11	2.57E-11	2.69E-11	2.81E-11	2.81E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 90
0 fraction of total absorption rate
power= .00mw, burnup= 13405.mwd, flux= 9.22E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

ge 74	2.48E-11	2.55E-11	2.62E-11	2.69E-11	2.76E-11	2.76E-11
ge 72	1.78E-11	1.84E-11	1.89E-11	1.94E-11	2.00E-11	2.00E-11
eu156	.00E+00	1.80E-11	1.81E-11	1.82E-11	1.83E-11	1.83E-11
sm153	.00E+00	1.68E-11	1.69E-11	1.69E-11	1.70E-11	1.70E-11
ba140	.00E+00	1.69E-11	1.69E-11	1.69E-11	1.69E-11	1.69E-11
ru106	3.00E-12	1.40E-11	1.41E-11	1.42E-11	1.43E-11	1.43E-11
sr 89	1.35E-16	1.06E-11	1.06E-11	1.06E-11	1.06E-11	1.06E-11
kr 80	7.03E-12	7.57E-12	8.14E-12	8.74E-12	9.37E-12	9.37E-12
kr 87	.00E+00	7.97E-12	7.96E-12	7.96E-12	7.95E-12	7.95E-12
sb125	3.58E-12	6.33E-12	6.35E-12	6.37E-12	6.38E-12	6.38E-12
ce143	.00E+00	6.21E-12	6.20E-12	6.20E-12	6.20E-12	6.20E-12
y 90	5.34E-12	5.64E-12	5.64E-12	5.63E-12	5.63E-12	5.63E-12
la140	.00E+00	5.48E-12	5.47E-12	5.47E-12	5.47E-12	5.47E-12
mo 99	.00E+00	4.73E-12	4.73E-12	4.73E-12	4.73E-12	4.73E-12
te127m	1.78E-14	3.20E-12	3.21E-12	3.22E-12	3.23E-12	3.23E-12
i131	.00E+00	2.49E-12	2.49E-12	2.49E-12	2.49E-12	2.49E-12
er167	1.49E-12	1.60E-12	1.71E-12	1.83E-12	1.95E-12	1.95E-12
pm148m	1.47E-18	1.45E-12	1.46E-12	1.46E-12	1.46E-12	1.46E-12
te123	9.44E-13	1.02E-12	1.10E-12	1.18E-12	1.27E-12	1.27E-12
te129m	2.74E-20	6.92E-13	6.93E-13	6.94E-13	6.94E-13	6.94E-13
cd108	3.65E-13	3.98E-13	4.34E-13	4.72E-13	5.12E-13	5.12E-13
ag111	.00E+00	2.11E-13	2.12E-13	2.14E-13	2.16E-13	2.16E-13
eu157	.00E+00	1.73E-13	1.75E-13	1.76E-13	1.77E-13	1.77E-13
cd115m	2.74E-19	9.81E-14	9.84E-14	9.86E-14	9.88E-14	9.88E-14
cs136	.00E+00	9.04E-14	9.21E-14	9.38E-14	9.55E-14	9.55E-14
be 9	5.41E-14	5.56E-14	5.71E-14	5.86E-14	6.01E-14	6.01E-14
pm148	.00E+00	5.03E-14	5.04E-14	5.04E-14	5.05E-14	5.05E-14
tb160	1.59E-17	4.37E-14	4.52E-14	4.67E-14	4.81E-14	4.81E-14
sn114	2.04E-14	2.16E-14	2.28E-14	2.41E-14	2.54E-14	2.54E-14
li 7	2.20E-14	2.26E-14	2.32E-14	2.38E-14	2.44E-14	2.44E-14
pr142	.00E+00	2.09E-14	2.14E-14	2.20E-14	2.26E-14	2.26E-14
ru105	.00E+00	1.35E-14	1.35E-14	1.36E-14	1.36E-14	1.36E-14
sb126	9.78E-15	1.23E-14	1.26E-14	1.29E-14	1.32E-14	1.32E-14
sn125	.00E+00	1.17E-14	1.17E-14	1.17E-14	1.18E-14	1.18E-14
rb 88	.00E+00	4.48E-15	4.47E-15	4.47E-15	4.47E-15	4.47E-15
i130	.00E+00	3.89E-15	3.99E-15	4.09E-15	4.18E-15	4.18E-15
sn123	4.64E-17	3.83E-15	3.84E-15	3.84E-15	3.84E-15	3.84E-15
i135	.00E+00	3.67E-15	3.67E-15	3.67E-15	3.67E-15	3.67E-15
te132	.00E+00	3.50E-15	3.50E-15	3.50E-15	3.50E-15	3.50E-15
sb124	1.74E-19	2.23E-15	2.27E-15	2.31E-15	2.35E-15	2.35E-15
te134	.00E+00	2.07E-15	2.07E-15	2.07E-15	2.07E-15	2.07E-15
rb 86	.00E+00	1.28E-15	1.31E-15	1.34E-15	1.37E-15	1.37E-15
in117m	.00E+00	9.41E-16	9.44E-16	9.47E-16	9.50E-16	9.50E-16
dy165	.00E+00	7.31E-16	7.47E-16	7.64E-16	7.80E-16	7.80E-16
in117	.00E+00	2.81E-16	2.82E-16	2.83E-16	2.84E-16	2.84E-16

```
     cs134m      .00E+00  1.54E-16  1.58E-16  1.62E-16  1.66E-16  1.66E-16
     cd118       .00E+00  4.96E-17  4.97E-17  4.98E-17  4.99E-17  4.99E-17
     ge 75       .00E+00  3.14E-17  3.14E-17  3.14E-17  3.14E-17  3.14E-17
     in119m      .00E+00  1.22E-17  1.22E-17  1.22E-17  1.22E-17  1.22E-17
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2          fission products          page   91
0                              fraction of total absorption rate
         power=     .00mw, burnup=  13405.mwd, flux= 9.22E+07n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     cd109      2.33E-18  8.50E-18  9.04E-18  9.61E-18  1.02E-17  1.02E-17
     ag110       .00E+00  8.29E-18  8.62E-18  8.96E-18  9.30E-18  9.30E-18
     in119       .00E+00  9.87E-19  9.96E-19  9.96E-19  9.96E-19  9.96E-19
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2            light elements          page   92
       power= 1.468E-03mw, burnup=1.3405E+04mwd, flux= 9.22E+07n/cm**2-sec
0                                      nuclide concentrations, gram atoms
                                       basis = single reactor assembly
             charge ******* d ******* d ******* d ******* d ******* d
      h  1   7.15E-04  7.35E-04  7.55E-04  7.75E-04  7.95E-04  7.95E-04
      h  2   2.13E-06  2.19E-06  2.25E-06  2.31E-06  2.37E-06  2.37E-06
      h  3   1.64E-11  1.88E-11  1.89E-11  1.90E-11  1.92E-11  1.92E-11
      h  4    .00E+00  2.76E-35  2.78E-35  2.80E-35  2.82E-35  2.82E-35
     he  3   1.19E-08  1.21E-08  1.23E-08  1.26E-08  1.28E-08  1.28E-08
     he  4   1.19E-04  1.22E-04  1.25E-04  1.29E-04  1.32E-04  1.32E-04
     he  6    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     ne 20   1.42E-05  1.46E-05  1.50E-05  1.54E-05  1.58E-05  1.58E-05
     ne 21   3.26E-09  3.43E-09  3.61E-09  3.80E-09  3.99E-09  3.99E-09
     ne 22   9.38E-08  9.64E-08  9.90E-08  1.02E-07  1.04E-07  1.04E-07
     ne 23   2.64E-30  2.65E-15  2.65E-15  2.65E-15  2.65E-15  2.65E-15
     na 22   8.60E-12  1.57E-11  1.57E-11  1.57E-11  1.57E-11  1.57E-11
     na 23   7.53E+03  7.53E+03  7.53E+03  7.53E+03  7.53E+03  7.53E+03
     na 24   9.58E-24  9.58E-09  9.59E-09  9.59E-09  9.59E-09  9.59E-09
     na 24m  1.57E-30  1.57E-15  1.58E-15  1.58E-15  1.58E-15  1.58E-15
     na 25   3.56E-39  3.75E-24  3.94E-24  4.14E-24  4.34E-24  4.34E-24
     mg 24   9.53E-02  9.78E-02  1.00E-01  1.03E-01  1.05E-01  1.05E-01
     mg 25   3.43E-07  3.61E-07  3.79E-07  3.98E-07  4.17E-07  4.17E-07
     mg 26   2.13E-06  2.19E-06  2.25E-06  2.31E-06  2.37E-06  2.37E-06
     mg 27   7.89E-28  7.90E-13  7.90E-13  7.91E-13  7.91E-13  7.91E-13
     mg 28    .00E+00  5.83E-25  5.83E-25  5.84E-25  5.84E-25  5.84E-25
     al 27   4.99E+04  4.99E+04  4.99E+04  4.99E+04  4.99E+04  4.99E+04
     al 28   7.10E-26  7.10E-11  7.11E-11  7.11E-11  7.11E-11  7.11E-11
     al 29   2.84E-37  2.99E-22  3.15E-22  3.31E-22  3.48E-22  3.48E-22
     al 30    .00E+00  4.79E-32  5.18E-32  5.59E-32  6.02E-32  6.02E-32
     si 28   2.77E-01  2.85E-01  2.92E-01  2.99E-01  3.06E-01  3.06E-01
     si 29   3.05E-06  3.21E-06  3.38E-06  3.55E-06  3.73E-06  3.73E-06
     si 30   3.56E-11  3.85E-11  4.16E-11  4.49E-11  4.83E-11  4.83E-11
     si 31   9.24E-39  1.00E-23  1.08E-23  1.17E-23  1.26E-23  1.26E-23
     si 32   5.67E-30  6.20E-30  6.71E-30  7.24E-30  7.80E-30  7.80E-30
   totals    5.75E+04  5.75E+04  5.75E+04  5.75E+04  5.75E+04  5.75E+04
0    flux              9.22E+07  9.22E+07  9.22E+07  9.23E+07  9.23E-08
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              actinides             page   93
       power= 1.468E-03mw, burnup=1.3405E+04mwd, flux= 9.22E+07n/cm**2-sec
0                                      nuclide concentrations, gram atoms
                                       basis = single reactor assembly
             charge ******* d ******* d ******* d ******* d ******* d
     he  4   1.34E+01  1.40E+01  1.46E+01  1.52E+01  1.59E+01  1.59E+01
     pb206   4.70E-02  4.98E-02  5.28E-02  5.58E-02  5.89E-02  5.89E-02
     pb207   3.54E-03  3.73E-03  3.93E-03  4.13E-03  4.33E-03  4.33E-03
     pb208   2.02E-04  2.13E-04  2.24E-04  2.36E-04  2.47E-04  2.47E-04
```

pb209	3.76E-10	3.91E-10	4.07E-10	4.22E-10	4.37E-10	4.37E-10
pb210	1.44E-04	1.49E-04	1.53E-04	1.57E-04	1.61E-04	1.61E-04
pb211	3.00E-11	3.07E-11	3.14E-11	3.21E-11	3.29E-11	3.29E-11
pb212	3.00E-11	3.08E-11	3.16E-11	3.23E-11	3.31E-11	3.31E-11
pb214	3.30E-10	3.40E-10	3.49E-10	3.59E-10	3.69E-10	3.69E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	6.14E-03	6.59E-03	7.06E-03	7.54E-03	8.04E-03	8.04E-03
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	8.89E-08	9.15E-08	9.41E-08	9.67E-08	9.92E-08	9.92E-08
bi211	1.78E-12	1.82E-12	1.86E-12	1.91E-12	1.95E-12	1.95E-12
bi212	2.84E-12	2.93E-12	3.00E-12	3.07E-12	3.14E-12	3.14E-12
bi213	8.79E-11	9.14E-11	9.49E-11	9.85E-11	1.02E-10	1.02E-10
bi214	2.45E-10	2.52E-10	2.59E-10	2.67E-10	2.74E-10	2.74E-10
po210	2.44E-06	2.53E-06	2.60E-06	2.67E-06	2.74E-06	2.74E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	1.97E-17	2.01E-17	2.06E-17	2.11E-17	2.15E-17	2.15E-17
po212	1.49E-22	1.54E-22	1.57E-22	1.61E-22	1.65E-22	1.65E-22
po213	1.32E-19	1.37E-19	1.43E-19	1.48E-19	1.53E-19	1.53E-19
po214	3.37E-17	3.47E-17	3.57E-17	3.67E-17	3.76E-17	3.76E-17
po215	2.47E-17	2.52E-17	2.58E-17	2.64E-17	2.70E-17	2.70E-17
po216	1.13E-16	1.17E-16	1.20E-16	1.22E-16	1.25E-16	1.25E-16
po218	3.82E-11	3.93E-11	4.04E-11	4.15E-11	4.26E-11	4.26E-11
rn218	2.00E-40	1.63E-28	1.67E-28	1.71E-28	1.75E-28	1.75E-28
rn219	5.49E-14	5.61E-14	5.74E-14	5.88E-14	6.01E-14	6.01E-14
rn220	4.35E-14	4.48E-14	4.59E-14	4.69E-14	4.80E-14	4.80E-14
rn222	6.78E-08	6.98E-08	7.18E-08	7.38E-08	7.57E-08	7.57E-08
ra222	2.17E-37	1.77E-25	1.81E-25	1.85E-25	1.90E-25	1.90E-25
ra223	1.37E-08	1.40E-08	1.43E-08	1.47E-08	1.50E-08	1.50E-08
ra224	2.47E-10	2.55E-10	2.61E-10	2.67E-10	2.73E-10	2.73E-10
ra225	4.11E-08	4.27E-08	4.44E-08	4.61E-08	4.77E-08	4.77E-08
ra226	1.04E-02	1.07E-02	1.10E-02	1.13E-02	1.16E-02	1.16E-02
ra228	4.87E-11	5.01E-11	5.15E-11	5.29E-11	5.43E-11	5.43E-11
ac225	2.78E-08	2.89E-08	3.00E-08	3.11E-08	3.23E-08	3.23E-08
ac227	9.50E-06	9.73E-06	9.96E-06	1.02E-05	1.04E-05	1.04E-05
ac228	5.95E-15	6.12E-15	6.29E-15	6.46E-15	6.63E-15	6.63E-15
th226	1.06E-35	8.63E-24	8.84E-24	9.05E-24	9.26E-24	9.26E-24
th227	2.21E-08	2.26E-08	2.31E-08	2.37E-08	2.42E-08	2.42E-08
th228	4.71E-08	4.86E-08	4.98E-08	5.10E-08	5.21E-08	5.21E-08
th229	7.99E-03	8.31E-03	8.63E-03	8.96E-03	9.28E-03	9.28E-03
th230	5.41E-01	5.55E-01	5.69E-01	5.84E-01	5.97E-01	5.97E-01
th231	2.81E-09	3.72E-09	3.74E-09	3.76E-09	3.78E-09	3.78E-09
th232	1.19E-01	1.23E-01	1.26E-01	1.29E-01	1.33E-01	1.33E-01
th233	3.95E-28	4.06E-13	4.18E-13	4.29E-13	4.41E-13	4.41E-13
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	1.43E-02	1.46E-02	1.50E-02	1.53E-02	1.57E-02	1.57E-02
pa232	8.88E-26	9.10E-11	9.32E-11	9.54E-11	9.75E-11	9.75E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 94
power= 1.468E-03mw, burnup=1.3405E+04mwd, flux= 9.22E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.43E-06	1.43E-06	1.43E-06	1.43E-06	1.43E-06	1.43E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.03E-32	8.36E-21	8.57E-21	8.77E-21	8.97E-21	8.97E-21
u231	7.70E-32	7.90E-17	8.09E-17	8.29E-17	8.48E-17	8.48E-17
u232	1.69E-06	1.77E-06	1.82E-06	1.86E-06	1.90E-06	1.90E-06
u233	2.80E-01	2.87E-01	2.94E-01	3.01E-01	3.08E-01	3.08E-01

u234	9.86E+00	9.88E+00	9.90E+00	9.92E+00	9.94E+00	9.94E+00
u235	6.80E+02	6.79E+02	6.78E+02	6.77E+02	6.76E+02	6.76E+02
u236	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.85E+02	1.85E+02
u237	1.94E-12	1.17E-06	1.18E-06	1.18E-06	1.18E-06	1.18E-06
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	1.12E-22	1.12E-07	1.12E-07	1.12E-07	1.12E-07	1.12E-07
u240	9.36E-37	1.16E-36	1.42E-36	1.74E-36	2.12E-36	2.12E-36
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	7.40E-13	3.12E-12	3.12E-12	3.12E-12	3.12E-12	3.12E-12
np236m	7.41E-28	7.41E-13	7.41E-13	7.41E-13	7.41E-13	7.41E-13
np236	1.49E-06	1.53E-06	1.57E-06	1.61E-06	1.64E-06	1.64E-06
np237	4.14E+01	4.13E+01	4.13E+01	4.13E+01	4.13E+01	4.13E+01
np238	6.21E-14	5.46E-07	5.46E-07	5.46E-07	5.46E-07	5.46E-07
np239	7.97E-14	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05
np240m	7.99E-39	9.89E-39	1.22E-38	1.49E-38	1.81E-38	1.81E-38
np240	5.94E-39	1.19E-15	1.19E-15	1.19E-15	1.19E-15	1.19E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	2.38E-10	4.05E-10	4.05E-10	4.05E-10	4.05E-10	4.05E-10
pu237	3.75E-19	1.15E-13	1.16E-13	1.18E-13	1.19E-13	1.19E-13
pu238	8.12E-03	8.26E-03	8.26E-03	8.26E-03	8.26E-03	8.26E-03
pu239	2.65E+01	2.70E+01	2.74E+01	2.79E+01	2.83E+01	2.83E+01
pu240	4.76E-01	4.91E-01	5.05E-01	5.19E-01	5.33E-01	5.33E-01
pu241	6.30E-05	7.23E-05	7.45E-05	7.66E-05	7.87E-05	7.87E-05
pu242	1.85E-05	1.97E-05	2.10E-05	2.23E-05	2.37E-05	2.37E-05
pu243	1.43E-29	1.51E-14	1.60E-14	1.71E-14	1.81E-14	1.81E-14
pu244	4.66E-26	5.77E-26	7.09E-26	8.67E-26	1.05E-25	1.05E-25
pu245	.00E+00	8.55E-37	1.05E-36	1.29E-36	1.56E-36	1.56E-36
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	2.03E-34	2.09E-19	2.16E-19	2.23E-19	2.29E-19	2.29E-19
am240	9.27E-32	9.57E-17	9.88E-17	1.02E-16	1.05E-16	1.05E-16
am241	2.01E-03	2.08E-03	2.14E-03	2.21E-03	2.27E-03	2.27E-03
am242m	3.36E-07	3.50E-07	3.62E-07	3.73E-07	3.84E-07	3.84E-07
am242	4.33E-12	2.83E-11	2.92E-11	3.01E-11	3.10E-11	3.10E-11
am243	9.11E-08	9.86E-08	1.06E-07	1.15E-07	1.23E-07	1.23E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	2.50E-31	2.70E-16	2.92E-16	3.15E-16	3.38E-16	3.38E-16
am245	4.63E-40	1.70E-37	2.09E-37	2.56E-37	3.11E-37	3.11E-37
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	1.67E-29	6.06E-22	6.25E-22	6.45E-22	6.64E-22	6.64E-22
cm242	1.02E-09	5.72E-09	5.90E-09	6.08E-09	6.26E-09	6.26E-09
cm243	4.35E-14	4.74E-14	4.89E-14	5.04E-14	5.19E-14	5.19E-14
cm244	3.60E-12	4.24E-12	4.59E-12	4.94E-12	5.31E-12	5.31E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 95
power= 1.468E-03mw, burnup=1.3405E+04mwd, flux= 9.22E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d
cm245	5.87E-15	6.49E-15	7.15E-15	7.87E-15	8.62E-15	8.62E-15
cm246	3.60E-17	4.06E-17	4.56E-17	5.11E-17	5.70E-17	5.70E-17
cm247	5.66E-21	6.59E-21	7.64E-21	8.82E-21	1.01E-20	1.01E-20
cm248	8.62E-24	1.03E-23	1.24E-23	1.47E-23	1.74E-23	1.74E-23
cm249	.00E+00	1.18E-34	1.41E-34	1.67E-34	1.98E-34	1.98E-34
cm250	3.85E-39	4.76E-39	5.84E-39	7.12E-39	8.64E-39	8.64E-39
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		9.22E+07	9.22E+07	9.22E+07	9.23E+07	9.23E-08

0 1q array has 20 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.

```
0        3q array has      1 entries.
0        4q array has      1 entries.
0       54q array has     12 entries.
1library information...

          cross-section data taken from position number 11 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *          made from modified card-image origen-s libraries of scale 4.2       *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *               photon libraries use an 18-energy-group structure              *
          *              the photon data are from the master photon data base,           *
          *               produced to include bremsstrahlung from uo2 matrix             *
          *                                                                              *
          *         see information above this box (if present) for later updates        *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                  8/29/1996    date library was produced
0                       1697    total number of nuclides in library
                         689    number of light-element nuclides
                         129    number of actinide nuclides
                         879    number of fission product nuclides
0                       7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   96
         power=    .00mw, burnup=  14299.mwd, flux= 5.99E+07n/cm**2-sec
0                                      basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.269097E+06   1.268572E+06   1.268044E+06   1.267512E+06   1.266977E+06   1.266973E+06
     absorptions   1.026357E+06   1.026214E+06   1.026069E+06   1.025919E+06   1.025763E+06   1.025760E+06
     k infinity    1.236506E+00   1.236167E+00   1.235827E+00   1.235490E+00   1.235155E+00   1.235155E+00
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
```

actinide absorptions	1.011393E+06	1.011139E+06	1.010885E+06	1.010629E+06	1.010372E+06	1.010369E+06
non-actinide abs. fracs.	1.457953E-02	1.469040E-02	1.479900E-02	1.490355E-02	1.500481E-02	1.500428E-02

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 97
0 fraction of total absorption rate

power= .00mw, burnup= 14299.mwd, flux= 5.99E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sm149	5.31E-03	5.33E-03	5.35E-03	5.37E-03	5.38E-03	5.39E-03
eu151	1.40E-03	1.42E-03	1.44E-03	1.45E-03	1.47E-03	1.47E-03
nd143	1.30E-03	1.32E-03	1.34E-03	1.37E-03	1.39E-03	1.39E-03
rh103	6.26E-04	6.37E-04	6.48E-04	6.59E-04	6.69E-04	6.69E-04
xe131	4.22E-04	4.29E-04	4.36E-04	4.43E-04	4.50E-04	4.50E-04
cs133	3.27E-04	3.33E-04	3.38E-04	3.44E-04	3.49E-04	3.49E-04
sm147	2.41E-04	2.45E-04	2.49E-04	2.53E-04	2.57E-04	2.57E-04
tc 99	2.31E-04	2.35E-04	2.38E-04	2.42E-04	2.45E-04	2.45E-04
gd155	2.20E-04	2.20E-04	2.21E-04	2.21E-04	2.21E-04	2.21E-04
nd145	1.85E-04	1.88E-04	1.91E-04	1.94E-04	1.97E-04	1.97E-04
sm152	1.33E-04	1.35E-04	1.38E-04	1.40E-04	1.43E-04	1.43E-04
mo 95	1.28E-04	1.30E-04	1.32E-04	1.35E-04	1.37E-04	1.37E-04
cd113	1.00E-04	1.01E-04	1.01E-04	1.01E-04	1.01E-04	1.01E-04
sm150	9.36E-05	9.52E-05	9.69E-05	9.86E-05	1.00E-04	1.00E-04
kr 83	7.93E-05	8.06E-05	8.19E-05	8.32E-05	8.44E-05	8.44E-05
cs135	7.41E-05	7.53E-05	7.66E-05	7.78E-05	7.91E-05	7.91E-05
ru101	5.76E-05	5.86E-05	5.95E-05	6.05E-05	6.15E-05	6.15E-05
eu153	5.62E-05	5.72E-05	5.82E-05	5.93E-05	6.03E-05	6.03E-05
gd157	5.86E-05	5.87E-05	5.88E-05	5.89E-05	5.90E-05	5.90E-05
pr141	5.50E-05	5.60E-05	5.69E-05	5.78E-05	5.87E-05	5.87E-05
la139	4.50E-05	4.58E-05	4.65E-05	4.73E-05	4.80E-05	4.80E-05
pd105	2.22E-05	2.26E-05	2.30E-05	2.34E-05	2.38E-05	2.38E-05
ba137	2.17E-05	2.21E-05	2.24E-05	2.28E-05	2.32E-05	2.32E-05
ag109	1.95E-05	2.00E-05	2.05E-05	2.09E-05	2.14E-05	2.14E-05
zr 93	1.79E-05	1.82E-05	1.85E-05	1.88E-05	1.91E-05	1.91E-05
i129	1.46E-05	1.48E-05	1.51E-05	1.53E-05	1.56E-05	1.56E-05
nd144	1.38E-05	1.40E-05	1.42E-05	1.45E-05	1.47E-05	1.47E-05
sm151	1.89E-05	1.27E-05	1.27E-05	1.27E-05	1.27E-05	1.24E-05
mo 97	1.02E-05	1.04E-05	1.06E-05	1.07E-05	1.09E-05	1.09E-05
gd152	8.22E-06	8.46E-06	8.71E-06	8.96E-06	9.21E-06	9.21E-06
pd108	4.85E-06	4.96E-06	5.07E-06	5.18E-06	5.29E-06	5.29E-06
zr 91	4.72E-06	4.80E-06	4.88E-06	4.96E-06	5.04E-06	5.04E-06
y 89	4.52E-06	4.59E-06	4.67E-06	4.74E-06	4.82E-06	4.82E-06
ru102	4.25E-06	4.32E-06	4.39E-06	4.47E-06	4.54E-06	4.54E-06
ce142	3.75E-06	3.81E-06	3.87E-06	3.93E-06	4.00E-06	4.00E-06
nd148	3.61E-06	3.67E-06	3.73E-06	3.79E-06	3.85E-06	3.85E-06
nd146	3.03E-06	3.09E-06	3.14E-06	3.19E-06	3.24E-06	3.24E-06
in115	2.65E-06	2.70E-06	2.74E-06	2.79E-06	2.83E-06	2.83E-06
ba138	2.59E-06	2.63E-06	2.67E-06	2.72E-06	2.76E-06	2.76E-06
pd107	2.48E-06	2.54E-06	2.59E-06	2.64E-06	2.70E-06	2.70E-06
ce140	2.42E-06	2.46E-06	2.50E-06	2.54E-06	2.59E-06	2.59E-06
xe132	2.21E-06	2.25E-06	2.29E-06	2.33E-06	2.37E-06	2.37E-06
ru 99	1.51E-06	1.59E-06	1.67E-06	1.74E-06	1.82E-06	1.82E-06
mo 98	1.50E-06	1.52E-06	1.55E-06	1.57E-06	1.60E-06	1.60E-06
mo100	1.46E-06	1.48E-06	1.50E-06	1.53E-06	1.55E-06	1.55E-06
xe134	1.43E-06	1.46E-06	1.48E-06	1.50E-06	1.53E-06	1.53E-06
zr 92	1.14E-06	1.16E-06	1.18E-06	1.20E-06	1.22E-06	1.22E-06
i127	1.05E-06	1.07E-06	1.09E-06	1.11E-06	1.13E-06	1.13E-06
ru104	9.66E-07	9.83E-07	1.00E-06	1.02E-06	1.03E-06	1.03E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 98
0 fraction of total absorption rate

power= .00mw, burnup= 14299.mwd, flux= 5.99E+07n/cm**2-sec

0	initial ******* d	******* d	******* d	******* d	******* d
zr 96	9.02E-07	9.17E-07	9.32E-07	9.47E-07	9.62E-07	9.62E-07
nd150	8.14E-07	8.28E-07	8.42E-07	8.56E-07	8.70E-07	8.70E-07
xe136	7.76E-07	7.89E-07	8.02E-07	8.15E-07	8.28E-07	8.28E-07
cd111	5.69E-07	5.81E-07	5.93E-07	6.05E-07	6.17E-07	6.17E-07
br 81	5.77E-07	5.87E-07	5.97E-07	6.06E-07	6.16E-07	6.16E-07
rb 85	5.55E-07	5.64E-07	5.74E-07	5.83E-07	5.92E-07	5.92E-07
zr 94	4.85E-07	4.93E-07	5.01E-07	5.09E-07	5.17E-07	5.17E-07
zr 90	4.45E-07	4.53E-07	4.60E-07	4.67E-07	4.75E-07	4.75E-07
sm154	3.75E-07	3.82E-07	3.88E-07	3.95E-07	4.02E-07	4.02E-07
te130	3.57E-07	3.63E-07	3.69E-07	3.75E-07	3.81E-07	3.81E-07
gd154	3.32E-07	3.44E-07	3.55E-07	3.67E-07	3.80E-07	3.80E-07
rb 87	3.20E-07	3.25E-07	3.30E-07	3.36E-07	3.41E-07	3.41E-07
se 77	2.32E-07	2.36E-07	2.40E-07	2.44E-07	2.48E-07	2.48E-07
pd106	2.20E-07	2.24E-07	2.29E-07	2.33E-07	2.37E-07	2.37E-07
gd156	2.04E-07	2.08E-07	2.12E-07	2.17E-07	2.21E-07	2.21E-07
ba135	1.49E-07	1.57E-07	1.64E-07	1.72E-07	1.80E-07	1.80E-07
kr 84	1.52E-07	1.55E-07	1.57E-07	1.60E-07	1.62E-07	1.62E-07
dy161	1.19E-07	1.22E-07	1.24E-07	1.27E-07	1.30E-07	1.30E-07
sb121	1.21E-07	1.23E-07	1.26E-07	1.28E-07	1.30E-07	1.30E-07
se 79	1.17E-07	1.19E-07	1.21E-07	1.23E-07	1.24E-07	1.24E-07
ru100	9.56E-08	9.88E-08	1.02E-07	1.05E-07	1.09E-07	1.09E-07
sb123	9.81E-08	9.98E-08	1.02E-07	1.03E-07	1.05E-07	1.05E-07
kr 86	8.44E-08	8.58E-08	8.72E-08	8.86E-08	9.00E-08	9.00E-08
te128	8.03E-08	8.17E-08	8.31E-08	8.45E-08	8.59E-08	8.59E-08
eu152	1.33E-07	9.00E-08	9.10E-08	9.20E-08	9.30E-08	8.06E-08
nd142	6.86E-08	7.09E-08	7.33E-08	7.57E-08	7.81E-08	7.81E-08
ba134	6.59E-08	6.81E-08	7.04E-08	7.27E-08	7.50E-08	7.50E-08
sm148	6.02E-08	6.22E-08	6.43E-08	6.63E-08	6.85E-08	6.85E-08
se 80	5.56E-08	5.65E-08	5.74E-08	5.83E-08	5.93E-08	5.93E-08
tb159	5.35E-08	5.46E-08	5.58E-08	5.69E-08	5.81E-08	5.81E-08
te125	5.38E-08	5.47E-08	5.57E-08	5.67E-08	5.76E-08	5.76E-08
pd104	4.52E-08	4.67E-08	4.82E-08	4.98E-08	5.14E-08	5.14E-08
gd158	4.27E-08	4.36E-08	4.45E-08	4.54E-08	4.63E-08	4.63E-08
cd112	4.00E-08	4.08E-08	4.16E-08	4.23E-08	4.31E-08	4.31E-08
pm147	9.79E-08	6.53E-08	6.54E-08	6.54E-08	6.54E-08	3.20E-08
li 6	2.98E-08	3.03E-08	3.08E-08	3.12E-08	3.17E-08	3.17E-08
sn117	2.89E-08	2.94E-08	2.99E-08	3.05E-08	3.10E-08	3.10E-08
eu155	6.70E-08	4.45E-08	4.46E-08	4.46E-08	4.47E-08	2.97E-08
dy164	2.64E-08	2.71E-08	2.77E-08	2.84E-08	2.90E-08	2.90E-08
nb 93	2.39E-08	2.51E-08	2.63E-08	2.75E-08	2.88E-08	2.88E-08
dy162	2.51E-08	2.57E-08	2.64E-08	2.71E-08	2.77E-08	2.77E-08
cd114	2.40E-08	2.45E-08	2.50E-08	2.55E-08	2.59E-08	2.59E-08
sn119	2.23E-08	2.27E-08	2.31E-08	2.35E-08	2.39E-08	2.39E-08
sn115	2.04E-08	2.08E-08	2.12E-08	2.15E-08	2.19E-08	2.19E-08
pd110	1.88E-08	1.92E-08	1.96E-08	2.00E-08	2.04E-08	2.04E-08
mo 96	1.54E-08	1.59E-08	1.64E-08	1.69E-08	1.74E-08	1.74E-08
sr 88	1.55E-08	1.58E-08	1.60E-08	1.63E-08	1.65E-08	1.65E-08
cd110	1.32E-08	1.38E-08	1.43E-08	1.49E-08	1.55E-08	1.55E-08
br 79	1.20E-08	1.26E-08	1.32E-08	1.38E-08	1.45E-08	1.45E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 99
0 fraction of total absorption rate

power= .00mw, burnup= 14299.mwd, flux= 5.99E+07n/cm**2-sec

0	initial ******* d	******* d	******* d	******* d	******* d
ag107	9.77E-09	1.03E-08	1.09E-08	1.15E-08	1.21E-08	1.21E-08
se 82	1.06E-08	1.08E-08	1.10E-08	1.12E-08	1.13E-08	1.13E-08
sn126	9.50E-09	9.65E-09	9.80E-09	9.95E-09	1.01E-08	1.01E-08

se 78	8.28E-09	8.42E-09	8.56E-09	8.70E-09	8.84E-09	8.84E-09
xe130	7.80E-09	8.04E-09	8.29E-09	8.55E-09	8.80E-09	8.80E-09
xe129	7.07E-09	7.43E-09	7.80E-09	8.18E-09	8.55E-09	8.56E-09
ba136	7.68E-09	7.89E-09	8.10E-09	8.31E-09	8.53E-09	8.53E-09
sn124	7.13E-09	7.26E-09	7.39E-09	7.52E-09	7.64E-09	7.64E-09
dy163	6.30E-09	6.46E-09	6.63E-09	6.80E-09	6.96E-09	6.96E-09
kr 82	5.90E-09	6.06E-09	6.22E-09	6.38E-09	6.54E-09	6.54E-09
as 75	4.88E-09	4.96E-09	5.05E-09	5.13E-09	5.21E-09	5.21E-09
eu154	8.76E-09	5.96E-09	6.07E-09	6.18E-09	6.29E-09	5.04E-09
te126	4.16E-09	4.36E-09	4.57E-09	4.78E-09	4.99E-09	4.99E-09
in113	4.05E-09	4.12E-09	4.20E-09	4.27E-09	4.34E-09	4.34E-09
sr 90	5.92E-09	3.95E-09	3.95E-09	3.95E-09	3.95E-09	3.69E-09
sn118	2.89E-09	2.94E-09	2.99E-09	3.04E-09	3.09E-09	3.09E-09
sn122	2.46E-09	2.50E-09	2.55E-09	2.59E-09	2.64E-09	2.64E-09
cd116	2.43E-09	2.47E-09	2.51E-09	2.56E-09	2.60E-09	2.60E-09
sn120	1.82E-09	1.85E-09	1.88E-09	1.92E-09	1.95E-09	1.95E-09
ge 73	1.38E-09	1.41E-09	1.43E-09	1.45E-09	1.48E-09	1.48E-09
cs137	1.36E-09	9.10E-10	9.10E-10	9.11E-10	9.11E-10	8.55E-10
gd160	5.82E-10	5.95E-10	6.08E-10	6.21E-10	6.34E-10	6.34E-10
ho165	5.43E-10	5.59E-10	5.75E-10	5.91E-10	6.08E-10	6.08E-10
ge 76	4.77E-10	4.85E-10	4.93E-10	5.01E-10	5.09E-10	5.09E-10
dy160	4.08E-10	4.24E-10	4.39E-10	4.55E-10	4.71E-10	4.71E-10
xe128	2.57E-10	2.66E-10	2.75E-10	2.84E-10	2.93E-10	2.93E-10
cs134	8.83E-10	5.98E-10	6.08E-10	6.18E-10	6.28E-10	2.49E-10
sr 86	1.32E-10	1.36E-10	1.40E-10	1.45E-10	1.49E-10	1.49E-10
te124	1.15E-10	1.18E-10	1.21E-10	1.23E-10	1.26E-10	1.26E-10
sn116	9.88E-11	1.02E-10	1.06E-10	1.09E-10	1.13E-10	1.13E-10
kr 85	2.00E-10	1.33E-10	1.33E-10	1.33E-10	1.33E-10	1.12E-10
sr 87	6.44E-11	6.57E-11	6.71E-11	6.84E-11	6.97E-11	6.97E-11
nb 94	5.04E-11	5.15E-11	5.28E-11	5.40E-11	5.54E-11	5.54E-11
te122	4.13E-11	4.27E-11	4.41E-11	4.56E-11	4.71E-11	4.71E-11
se 76	3.92E-11	4.03E-11	4.15E-11	4.26E-11	4.38E-11	4.38E-11
er166	2.81E-11	2.89E-11	2.97E-11	3.05E-11	3.13E-11	3.13E-11
ge 74	2.77E-11	2.81E-11	2.86E-11	2.91E-11	2.96E-11	2.96E-11
ge 72	2.00E-11	2.04E-11	2.07E-11	2.11E-11	2.14E-11	2.14E-11
ce144	2.12E-10	1.42E-10	1.42E-10	1.42E-10	1.42E-10	1.23E-11
kr 80	9.38E-12	9.82E-12	1.03E-11	1.08E-11	1.13E-11	1.13E-11
y 90	5.64E-12	3.76E-12	3.76E-12	3.76E-12	3.76E-12	3.52E-12
er167	1.95E-12	2.04E-12	2.13E-12	2.22E-12	2.31E-12	2.31E-12
sb125	6.39E-12	4.25E-12	4.25E-12	4.26E-12	4.26E-12	2.12E-12
te123	1.27E-12	1.33E-12	1.39E-12	1.46E-12	1.52E-12	1.52E-12
ru106	1.43E-11	9.45E-12	9.47E-12	9.49E-12	9.50E-12	1.46E-12
cd108	5.12E-13	5.41E-13	5.71E-13	6.02E-13	6.35E-13	6.35E-13
be 9	6.02E-14	6.12E-14	6.22E-14	6.32E-14	6.42E-14	6.42E-14
sn114	2.54E-14	2.63E-14	2.72E-14	2.81E-14	2.91E-14	2.91E-14
li 7	2.45E-14	2.49E-14	2.53E-14	2.57E-14	2.61E-14	2.61E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 100
0 fraction of total absorption rate
power= .00mw, burnup= 14299.mwd, flux= 5.99E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sb126	1.32E-14	1.26E-14	1.28E-14	1.29E-14	1.31E-14	1.16E-14
te127m	3.23E-12	2.15E-12	2.15E-12	2.15E-12	2.16E-12	3.75E-15
nb 95	5.42E-11	3.62E-11	3.62E-11	3.62E-11	3.62E-11	1.50E-15
zr 95	5.85E-11	3.90E-11	3.90E-11	3.90E-11	3.90E-11	7.33E-16
y 91	4.99E-11	3.33E-11	3.33E-11	3.33E-11	3.33E-11	2.26E-16
sn123	3.84E-15	2.56E-15	2.56E-15	2.56E-15	2.56E-15	1.17E-17
sr 89	1.06E-11	7.09E-12	7.09E-12	7.09E-12	7.09E-12	7.35E-18
tb160	4.82E-14	3.27E-14	3.34E-14	3.40E-14	3.47E-14	2.27E-18
ru103	1.40E-10	9.32E-11	9.33E-11	9.33E-11	9.34E-11	1.84E-18

cd109	1.02E-17	7.04E-18	7.32E-18	7.62E-18	7.94E-18	1.76E-18
ce141	5.74E-10	3.83E-10	3.83E-10	3.83E-10	3.83E-10	1.92E-19
pm148m	1.47E-12	6.98E-13	6.99E-13	7.00E-13	7.01E-13	2.75E-20
sb124	2.35E-15	1.58E-15	1.60E-15	1.61E-15	1.63E-15	1.37E-20
cd115m	9.89E-14	6.58E-14	6.59E-14	6.59E-14	6.60E-14	1.37E-20

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 101
power= 9.790E-04mw, burnup=1.4299E+04mwd, flux= 5.99E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge *******	d *******	d *******	d *******	d *******	d
h 1	7.95E-04	8.09E-04	8.22E-04	8.35E-04	8.49E-04	8.49E-04
h 2	2.37E-06	2.41E-06	2.45E-06	2.49E-06	2.53E-06	2.53E-06
h 3	1.92E-11	1.28E-11	1.28E-11	1.29E-11	1.30E-11	1.11E-11
h 4	2.82E-35	1.25E-35	1.26E-35	1.27E-35	1.27E-35	.00E+00
he 3	1.28E-08	1.30E-08	1.31E-08	1.32E-08	1.34E-08	1.34E-08
he 4	1.32E-04	1.34E-04	1.36E-04	1.38E-04	1.41E-04	1.41E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.58E-05	1.61E-05	1.64E-05	1.66E-05	1.69E-05	1.69E-05
ne 21	3.99E-09	4.11E-09	4.24E-09	4.38E-09	4.51E-09	4.51E-09
ne 22	1.04E-07	1.06E-07	1.08E-07	1.10E-07	1.11E-07	1.11E-07
ne 23	2.65E-15	1.76E-15	1.76E-15	1.76E-15	1.76E-15	1.76E-30
na 22	1.57E-11	1.05E-11	1.05E-11	1.05E-11	1.05E-11	5.03E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	9.59E-09	6.39E-09	6.40E-09	6.40E-09	6.40E-09	6.40E-24
na 24m	1.58E-15	1.05E-15	1.05E-15	1.05E-15	1.05E-15	1.05E-30
na 25	4.34E-24	2.98E-24	3.07E-24	3.17E-24	3.27E-24	3.27E-39
mg 24	1.05E-01	1.07E-01	1.09E-01	1.10E-01	1.12E-01	1.12E-01
mg 25	4.17E-07	4.31E-07	4.44E-07	4.57E-07	4.71E-07	4.71E-07
mg 26	2.37E-06	2.41E-06	2.45E-06	2.49E-06	2.53E-06	2.53E-06
mg 27	7.91E-13	5.26E-13	5.26E-13	5.26E-13	5.26E-13	5.26E-28
mg 28	5.84E-25	2.59E-25	2.59E-25	2.59E-25	2.59E-25	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	7.11E-11	4.74E-11	4.74E-11	4.74E-11	4.75E-11	4.75E-26
al 29	3.48E-22	2.39E-22	2.46E-22	2.54E-22	2.62E-22	2.62E-37
al 30	6.02E-32	4.20E-32	4.40E-32	4.61E-32	4.83E-32	.00E+00
si 28	3.06E-01	3.11E-01	3.16E-01	3.21E-01	3.26E-01	3.26E-01
si 29	3.73E-06	3.85E-06	3.97E-06	4.10E-06	4.22E-06	4.22E-06
si 30	4.83E-11	5.07E-11	5.31E-11	5.56E-11	5.82E-11	5.82E-11
si 31	1.26E-23	8.78E-24	9.21E-24	9.65E-24	1.01E-23	1.01E-38
si 32	7.80E-30	4.02E-30	3.88E-30	4.04E-30	4.23E-30	4.19E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		5.98E+07	5.99E+07	5.99E+07	5.99E+07	5.99E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 102
power= 9.790E-04mw, burnup=1.4299E+04mwd, flux= 5.99E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge *******	d *******	d *******	d *******	d *******	d
he 4	1.59E+01	1.65E+01	1.71E+01	1.78E+01	1.84E+01	1.84E+01
pb206	5.89E-02	6.21E-02	6.54E-02	6.87E-02	7.22E-02	7.22E-02
pb207	4.33E-03	4.54E-03	4.75E-03	4.97E-03	5.19E-03	5.19E-03
pb208	2.47E-04	2.56E-04	2.64E-04	2.72E-04	2.81E-04	2.81E-04
pb209	4.37E-10	4.53E-10	4.68E-10	4.83E-10	4.99E-10	4.99E-10
pb210	1.61E-04	1.65E-04	1.70E-04	1.74E-04	1.78E-04	1.78E-04
pb211	3.29E-11	3.35E-11	3.41E-11	3.47E-11	3.53E-11	3.54E-11
pb212	3.31E-11	2.25E-11	2.29E-11	2.33E-11	2.37E-11	2.35E-11
pb214	3.69E-10	3.78E-10	3.88E-10	3.97E-10	4.06E-10	4.07E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	8.04E-03	8.56E-03	9.10E-03	9.65E-03	1.02E-02	1.02E-02

bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	9.92E-08	1.02E-07	1.04E-07	1.07E-07	1.09E-07	1.10E-07
bi211	1.95E-12	1.98E-12	2.02E-12	2.06E-12	2.09E-12	2.10E-12
bi212	3.14E-12	2.13E-12	2.17E-12	2.21E-12	2.25E-12	2.23E-12
bi213	1.02E-10	1.06E-10	1.09E-10	1.13E-10	1.17E-10	1.17E-10
bi214	2.74E-10	2.81E-10	2.88E-10	2.95E-10	3.02E-10	3.02E-10
po210	2.74E-06	2.81E-06	2.88E-06	2.95E-06	3.02E-06	3.00E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.15E-17	2.19E-17	2.23E-17	2.27E-17	2.31E-17	2.32E-17
po212	1.65E-22	1.12E-22	1.14E-22	1.16E-22	1.18E-22	1.17E-22
po213	1.53E-19	1.59E-19	1.64E-19	1.70E-19	1.75E-19	1.75E-19
po214	3.76E-17	3.86E-17	3.96E-17	4.06E-17	4.15E-17	4.15E-17
po215	2.70E-17	2.75E-17	2.80E-17	2.85E-17	2.90E-17	2.91E-17
po216	1.25E-16	8.51E-17	8.66E-17	8.82E-17	8.98E-17	8.91E-17
po218	4.26E-11	4.37E-11	4.48E-11	4.59E-11	4.70E-11	4.70E-11
rn218	1.75E-28	7.90E-29	8.05E-29	8.20E-29	8.35E-29	3.18E-43
rn219	6.01E-14	6.12E-14	6.24E-14	6.35E-14	6.46E-14	6.47E-14
rn220	4.80E-14	3.26E-14	3.32E-14	3.38E-14	3.44E-14	3.42E-14
rn222	7.57E-08	7.77E-08	7.96E-08	8.16E-08	8.35E-08	8.35E-08
ra222	1.90E-25	8.58E-26	8.74E-26	8.90E-26	9.07E-26	3.46E-40
ra223	1.50E-08	1.53E-08	1.56E-08	1.58E-08	1.61E-08	1.61E-08
ra224	2.73E-10	1.86E-10	1.89E-10	1.92E-10	1.96E-10	1.94E-10
ra225	4.77E-08	4.94E-08	5.11E-08	5.28E-08	5.45E-08	5.45E-08
ra226	1.16E-02	1.19E-02	1.22E-02	1.25E-02	1.28E-02	1.28E-02
ra228	5.43E-11	5.57E-11	5.71E-11	5.85E-11	5.99E-11	5.99E-11
ac225	3.23E-08	3.34E-08	3.45E-08	3.57E-08	3.68E-08	3.68E-08
ac227	1.04E-05	1.06E-05	1.08E-05	1.10E-05	1.12E-05	1.12E-05
ac228	6.63E-15	6.80E-15	6.97E-15	7.14E-15	7.31E-15	7.31E-15
th226	9.26E-24	4.19E-24	4.26E-24	4.34E-24	4.42E-24	1.69E-38
th227	2.42E-08	2.47E-08	2.51E-08	2.56E-08	2.60E-08	2.61E-08
th228	5.21E-08	3.54E-08	3.61E-08	3.67E-08	3.74E-08	3.70E-08
th229	9.28E-03	9.61E-03	9.94E-03	1.03E-02	1.06E-02	1.06E-02
th230	5.97E-01	6.11E-01	6.25E-01	6.39E-01	6.53E-01	6.53E-01
th231	3.78E-09	3.46E-09	3.48E-09	3.49E-09	3.50E-09	2.79E-09
th232	1.33E-01	1.36E-01	1.40E-01	1.43E-01	1.46E-01	1.46E-01
th233	4.41E-13	3.01E-13	3.09E-13	3.16E-13	3.24E-13	3.24E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	1.57E-02	1.60E-02	1.63E-02	1.66E-02	1.69E-02	1.69E-02
pa232	9.75E-11	6.62E-11	6.75E-11	6.87E-11	6.99E-11	7.00E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 103
power= 9.790E-04mw, burnup=1.4299E+04mwd, flux= 5.99E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.43E-06	1.43E-06	1.43E-06	1.42E-06	1.42E-06	1.42E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	8.97E-21	4.06E-21	4.13E-21	4.21E-21	4.29E-21	1.64E-35
u231	8.48E-17	5.77E-17	5.90E-17	6.03E-17	6.16E-17	6.16E-32
u232	1.90E-06	1.29E-06	1.32E-06	1.34E-06	1.36E-06	1.33E-06
u233	3.08E-01	3.15E-01	3.22E-01	3.29E-01	3.36E-01	3.36E-01
u234	9.94E+00	9.95E+00	9.96E+00	9.97E+00	9.98E+00	9.98E+00
u235	6.76E+02	6.75E+02	6.75E+02	6.74E+02	6.74E+02	6.74E+02
u236	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02
u237	1.18E-06	7.85E-07	7.86E-07	7.87E-07	7.88E-07	1.38E-12
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	1.12E-07	7.44E-08	7.44E-08	7.44E-08	7.45E-08	7.45E-23
u240	2.12E-36	2.55E-36	3.03E-36	3.56E-36	4.15E-36	4.15E-36

u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	3.12E-12	2.07E-12	2.08E-12	2.08E-12	2.08E-12	3.58E-13
np236m	7.41E-13	4.93E-13	4.93E-13	4.93E-13	4.93E-13	4.93E-28
np236	1.64E-06	1.67E-06	1.69E-06	1.71E-06	1.74E-06	1.74E-06
np237	4.13E+01	4.13E+01	4.12E+01	4.12E+01	4.12E+01	4.12E+01
np238	5.46E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.19E-14
np239	1.62E-05	1.07E-05	1.08E-05	1.08E-05	1.08E-05	1.18E-13
np240m	1.81E-38	2.17E-38	2.58E-38	3.04E-38	3.54E-38	3.54E-38
np240	1.19E-15	5.27E-16	5.27E-16	5.28E-16	5.28E-16	6.16E-39
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	4.05E-10	2.71E-10	2.71E-10	2.71E-10	2.71E-10	1.42E-10
pu237	1.19E-13	7.29E-14	7.31E-14	7.34E-14	7.37E-14	1.48E-20
pu238	8.26E-03	5.52E-03	5.50E-03	5.50E-03	5.50E-03	5.38E-03
pu239	2.83E+01	2.84E+01	2.85E+01	2.86E+01	2.87E+01	2.87E+01
pu240	5.33E-01	5.30E-01	5.27E-01	5.24E-01	5.22E-01	5.22E-01
pu241	7.87E-05	5.20E-05	5.17E-05	5.15E-05	5.13E-05	4.49E-05
pu242	2.37E-05	2.45E-05	2.51E-05	2.57E-05	2.63E-05	2.63E-05
pu243	1.81E-14	1.25E-14	1.28E-14	1.31E-14	1.34E-14	1.39E-29
pu244	1.05E-25	1.27E-25	1.51E-25	1.77E-25	2.07E-25	2.07E-25
pu245	1.56E-36	1.25E-36	1.49E-36	1.75E-36	2.05E-36	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	2.29E-19	1.22E-19	1.10E-19	1.06E-19	1.04E-19	1.04E-34
am240	1.05E-16	5.59E-17	5.04E-17	4.83E-17	4.74E-17	4.74E-32
am241	2.27E-03	1.82E-03	1.64E-03	1.57E-03	1.54E-03	1.54E-03
am242m	3.84E-07	2.24E-07	1.91E-07	1.80E-07	1.75E-07	1.73E-07
am242	3.10E-11	1.67E-11	1.49E-11	1.42E-11	1.39E-11	2.23E-12
am243	1.23E-07	1.26E-07	1.29E-07	1.32E-07	1.35E-07	1.35E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	3.38E-16	2.30E-16	2.36E-16	2.41E-16	2.47E-16	2.47E-31
am245	3.11E-37	2.49E-37	2.96E-37	3.47E-37	4.05E-37	6.27E-40
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	6.64E-22	2.37E-22	2.12E-22	2.03E-22	1.99E-22	1.19E-31
cm242	6.26E-09	3.37E-09	3.01E-09	2.87E-09	2.81E-09	4.84E-10
cm243	5.19E-14	1.86E-14	1.66E-14	1.59E-14	1.56E-14	1.46E-14
cm244	5.31E-12	3.62E-12	3.70E-12	3.79E-12	3.87E-12	3.49E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 104
power= 9.790E-04mw, burnup=1.4299E+04mwd, flux= 5.99E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d
cm245	8.62E-15	8.72E-15	8.82E-15	8.93E-15	9.04E-15	9.04E-15
cm246	5.70E-17	5.92E-17	6.14E-17	6.34E-17	6.54E-17	6.54E-17
cm247	1.01E-20	1.11E-20	1.21E-20	1.31E-20	1.41E-20	1.41E-20
cm248	1.74E-23	1.94E-23	2.15E-23	2.39E-23	2.64E-23	2.64E-23
cm249	1.98E-34	1.47E-34	1.63E-34	1.81E-34	2.01E-34	.00E+00
cm250	8.64E-39	9.29E-39	1.00E-38	1.08E-38	1.17E-38	1.17E-38
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		5.98E+07	5.99E+07	5.99E+07	5.99E+07	5.99E-08

0 1q array has 20 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 4q array has 1 entries.
0 54q array has 12 entries.
1library information...

cross-section data taken from position number 12 of library on unit 33.

```
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *      data from the light element, actinide, and fission product libraries    *
          *        decay data, including gamma and total energy, are from endf/b-vi      *
          *                                                                              *
          *      neutron flux spectrum factors and cross sections were produced from     *
          *     the "presas2" case updating all nuclides on the scale "burnup" library   *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *        see information above this box (if present) for later updates         *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                  8/29/1996    date library was produced
0                       1697    total number of nuclides in library
                         689    number of light-element nuclides
                         129    number of actinide nuclides
                         879    number of fission product nuclides
0                       7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page  105
         power=    .00mw, burnup=  15192.mwd, flux= 5.99E+07n/cm**2-sec
0                                    basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                     initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.268396E+06   1.267856E+06   1.267312E+06   1.266765E+06   1.266216E+06   1.266211E+06
     absorptions   1.026710E+06   1.026550E+06   1.026386E+06   1.026217E+06   1.026046E+06   1.026042E+06
     k infinity    1.235398E+00   1.235065E+00   1.234733E+00   1.234403E+00   1.234073E+00   1.234073E+00
0                     initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   1.011309E+06   1.011050E+06   1.010789E+06   1.010527E+06   1.010264E+06   1.010261E+06
     non-actinide
     abs. fracs.   1.500005E-02   1.509905E-02   1.519519E-02   1.528919E-02   1.538122E-02   1.538050E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              fission products         page  106
0                              fraction of total absorption rate
         power=    .00mw, burnup=  15192.mwd, flux= 5.99E+07n/cm**2-sec
```

0	initial ******* d	******* d	******* d	******* d	******* d	
sm149	5.39E-03	5.40E-03	5.41E-03	5.42E-03	5.42E-03	5.42E-03
eu151	1.47E-03	1.48E-03	1.50E-03	1.51E-03	1.52E-03	1.52E-03
nd143	1.39E-03	1.41E-03	1.43E-03	1.45E-03	1.47E-03	1.47E-03
rh103	6.69E-04	6.80E-04	6.90E-04	7.01E-04	7.12E-04	7.12E-04
xe131	4.50E-04	4.57E-04	4.64E-04	4.71E-04	4.78E-04	4.78E-04
cs133	3.49E-04	3.55E-04	3.60E-04	3.66E-04	3.71E-04	3.71E-04
sm147	2.57E-04	2.61E-04	2.65E-04	2.69E-04	2.73E-04	2.73E-04
tc 99	2.45E-04	2.49E-04	2.52E-04	2.56E-04	2.59E-04	2.59E-04
gd155	2.21E-04	2.21E-04	2.21E-04	2.21E-04	2.21E-04	2.21E-04
nd145	1.97E-04	2.00E-04	2.03E-04	2.06E-04	2.09E-04	2.09E-04
sm152	1.43E-04	1.46E-04	1.48E-04	1.51E-04	1.54E-04	1.54E-04
mo 95	1.37E-04	1.39E-04	1.41E-04	1.43E-04	1.45E-04	1.45E-04
sm150	1.00E-04	1.02E-04	1.04E-04	1.05E-04	1.07E-04	1.07E-04
cd113	1.01E-04	1.01E-04	1.01E-04	1.01E-04	1.01E-04	1.01E-04
kr 83	8.45E-05	8.58E-05	8.71E-05	8.83E-05	8.96E-05	8.96E-05
cs135	7.90E-05	8.03E-05	8.15E-05	8.28E-05	8.40E-05	8.40E-05
ru101	6.15E-05	6.24E-05	6.34E-05	6.44E-05	6.54E-05	6.54E-05
eu153	6.03E-05	6.13E-05	6.24E-05	6.34E-05	6.44E-05	6.44E-05
pr141	5.87E-05	5.97E-05	6.06E-05	6.15E-05	6.24E-05	6.24E-05
gd157	5.90E-05	5.91E-05	5.92E-05	5.93E-05	5.94E-05	5.94E-05
la139	4.80E-05	4.88E-05	4.95E-05	5.03E-05	5.11E-05	5.11E-05
pd105	2.38E-05	2.42E-05	2.46E-05	2.50E-05	2.54E-05	2.54E-05
ba137	2.32E-05	2.35E-05	2.39E-05	2.43E-05	2.46E-05	2.46E-05
ag109	2.14E-05	2.19E-05	2.24E-05	2.28E-05	2.33E-05	2.33E-05
zr 93	1.91E-05	1.94E-05	1.97E-05	2.00E-05	2.02E-05	2.02E-05
i129	1.56E-05	1.58E-05	1.61E-05	1.63E-05	1.66E-05	1.66E-05
nd144	1.47E-05	1.49E-05	1.52E-05	1.54E-05	1.56E-05	1.56E-05
sm151	1.24E-05	1.27E-05	1.27E-05	1.28E-05	1.28E-05	1.25E-05
mo 97	1.09E-05	1.11E-05	1.13E-05	1.14E-05	1.16E-05	1.16E-05
gd152	9.22E-06	9.47E-06	9.73E-06	9.99E-06	1.03E-05	1.03E-05
pd108	5.29E-06	5.40E-06	5.51E-06	5.62E-06	5.73E-06	5.73E-06
zr 91	5.04E-06	5.12E-06	5.19E-06	5.27E-06	5.35E-06	5.35E-06
y 89	4.82E-06	4.89E-06	4.97E-06	5.04E-06	5.12E-06	5.12E-06
ru102	4.54E-06	4.61E-06	4.68E-06	4.76E-06	4.83E-06	4.83E-06
ce142	4.00E-06	4.06E-06	4.12E-06	4.19E-06	4.25E-06	4.25E-06
nd148	3.85E-06	3.92E-06	3.98E-06	4.04E-06	4.10E-06	4.10E-06
nd146	3.24E-06	3.29E-06	3.34E-06	3.39E-06	3.44E-06	3.44E-06
in115	2.83E-06	2.88E-06	2.93E-06	2.97E-06	3.02E-06	3.02E-06
ba138	2.76E-06	2.81E-06	2.85E-06	2.89E-06	2.94E-06	2.94E-06
pd107	2.70E-06	2.75E-06	2.81E-06	2.86E-06	2.92E-06	2.92E-06
ce140	2.59E-06	2.63E-06	2.67E-06	2.71E-06	2.75E-06	2.75E-06
xe132	2.37E-06	2.40E-06	2.44E-06	2.48E-06	2.52E-06	2.52E-06
ru 99	1.82E-06	1.90E-06	1.98E-06	2.06E-06	2.15E-06	2.15E-06
mo 98	1.60E-06	1.62E-06	1.65E-06	1.67E-06	1.70E-06	1.70E-06
mo100	1.55E-06	1.58E-06	1.60E-06	1.63E-06	1.65E-06	1.65E-06
xe134	1.53E-06	1.55E-06	1.58E-06	1.60E-06	1.63E-06	1.63E-06
zr 92	1.22E-06	1.24E-06	1.26E-06	1.27E-06	1.29E-06	1.29E-06
i127	1.12E-06	1.14E-06	1.16E-06	1.18E-06	1.20E-06	1.20E-06
ru104	1.03E-06	1.05E-06	1.07E-06	1.09E-06	1.10E-06	1.10E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 107

0 fraction of total absorption rate

power= .00mw, burnup= 15192.mwd, flux= 5.99E+07n/cm**2-sec

0	initial ******* d	******* d	******* d	******* d	******* d	
zr 96	9.62E-07	9.77E-07	9.92E-07	1.01E-06	1.02E-06	1.02E-06
nd150	8.70E-07	8.84E-07	8.98E-07	9.12E-07	9.26E-07	9.26E-07
xe136	8.29E-07	8.42E-07	8.55E-07	8.68E-07	8.81E-07	8.81E-07
cd111	6.17E-07	6.29E-07	6.41E-07	6.53E-07	6.65E-07	6.65E-07

br 81	6.16E-07	6.26E-07	6.35E-07	6.45E-07	6.55E-07	6.55E-07
rb 85	5.92E-07	6.01E-07	6.10E-07	6.20E-07	6.29E-07	6.29E-07
zr 94	5.17E-07	5.25E-07	5.33E-07	5.41E-07	5.49E-07	5.49E-07
zr 90	4.75E-07	4.82E-07	4.90E-07	4.97E-07	5.04E-07	5.04E-07
gd154	3.80E-07	3.92E-07	4.05E-07	4.18E-07	4.31E-07	4.31E-07
sm154	4.02E-07	4.09E-07	4.15E-07	4.22E-07	4.29E-07	4.29E-07
te130	3.81E-07	3.87E-07	3.93E-07	3.99E-07	4.06E-07	4.06E-07
rb 87	3.41E-07	3.46E-07	3.52E-07	3.57E-07	3.62E-07	3.62E-07
se 77	2.48E-07	2.52E-07	2.55E-07	2.59E-07	2.63E-07	2.63E-07
pd106	2.37E-07	2.42E-07	2.46E-07	2.50E-07	2.55E-07	2.55E-07
gd156	2.21E-07	2.25E-07	2.30E-07	2.34E-07	2.38E-07	2.38E-07
ba135	1.80E-07	1.88E-07	1.96E-07	2.05E-07	2.13E-07	2.13E-07
kr 84	1.62E-07	1.65E-07	1.67E-07	1.70E-07	1.72E-07	1.72E-07
dy161	1.30E-07	1.33E-07	1.36E-07	1.38E-07	1.41E-07	1.41E-07
sb121	1.30E-07	1.32E-07	1.34E-07	1.36E-07	1.38E-07	1.38E-07
se 79	1.25E-07	1.26E-07	1.28E-07	1.30E-07	1.32E-07	1.32E-07
ru100	1.09E-07	1.12E-07	1.16E-07	1.19E-07	1.23E-07	1.23E-07
sb123	1.05E-07	1.07E-07	1.08E-07	1.10E-07	1.12E-07	1.12E-07
kr 86	9.00E-08	9.14E-08	9.28E-08	9.42E-08	9.56E-08	9.56E-08
te128	8.59E-08	8.73E-08	8.87E-08	9.00E-08	9.14E-08	9.14E-08
nd142	7.81E-08	8.06E-08	8.31E-08	8.57E-08	8.83E-08	8.83E-08
ba134	7.50E-08	7.74E-08	7.98E-08	8.22E-08	8.47E-08	8.47E-08
eu152	8.06E-08	9.39E-08	9.49E-08	9.58E-08	9.68E-08	8.28E-08
sm148	6.85E-08	7.06E-08	7.28E-08	7.51E-08	7.73E-08	7.73E-08
se 80	5.93E-08	6.02E-08	6.11E-08	6.21E-08	6.30E-08	6.30E-08
tb159	5.81E-08	5.92E-08	6.04E-08	6.15E-08	6.27E-08	6.27E-08
te125	5.76E-08	5.86E-08	5.96E-08	6.05E-08	6.15E-08	6.15E-08
pd104	5.14E-08	5.31E-08	5.47E-08	5.64E-08	5.81E-08	5.81E-08
gd158	4.63E-08	4.72E-08	4.81E-08	4.90E-08	4.99E-08	4.99E-08
cd112	4.31E-08	4.39E-08	4.47E-08	4.55E-08	4.62E-08	4.62E-08
nb 93	2.88E-08	3.01E-08	3.14E-08	3.27E-08	3.40E-08	3.40E-08
li 6	3.17E-08	3.22E-08	3.27E-08	3.31E-08	3.36E-08	3.36E-08
sn117	3.10E-08	3.15E-08	3.21E-08	3.26E-08	3.31E-08	3.31E-08
dy164	2.90E-08	2.97E-08	3.03E-08	3.10E-08	3.16E-08	3.16E-08
dy162	2.77E-08	2.84E-08	2.91E-08	2.98E-08	3.04E-08	3.04E-08
pm147	3.20E-08	6.54E-08	6.54E-08	6.54E-08	6.54E-08	2.99E-08
eu155	2.97E-08	4.47E-08	4.48E-08	4.48E-08	4.49E-08	2.88E-08
cd114	2.59E-08	2.64E-08	2.69E-08	2.73E-08	2.78E-08	2.78E-08
sn119	2.39E-08	2.43E-08	2.47E-08	2.51E-08	2.55E-08	2.55E-08
sn115	2.19E-08	2.23E-08	2.26E-08	2.30E-08	2.34E-08	2.34E-08
pd110	2.04E-08	2.08E-08	2.12E-08	2.17E-08	2.21E-08	2.21E-08
mo 96	1.74E-08	1.80E-08	1.85E-08	1.91E-08	1.96E-08	1.96E-08
cd110	1.55E-08	1.61E-08	1.67E-08	1.73E-08	1.80E-08	1.80E-08
sr 88	1.65E-08	1.68E-08	1.70E-08	1.73E-08	1.76E-08	1.76E-08
br 79	1.45E-08	1.51E-08	1.57E-08	1.64E-08	1.71E-08	1.71E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 108
0 fraction of total absorption rate
power= .00mw, burnup= 15192.mwd, flux= 5.99E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

ag107	1.21E-08	1.27E-08	1.33E-08	1.40E-08	1.46E-08	1.46E-08
se 82	1.13E-08	1.15E-08	1.17E-08	1.19E-08	1.20E-08	1.20E-08
sn126	1.01E-08	1.03E-08	1.04E-08	1.06E-08	1.07E-08	1.07E-08
xe129	8.56E-09	8.94E-09	9.33E-09	9.73E-09	1.01E-08	1.01E-08
xe130	8.80E-09	9.07E-09	9.33E-09	9.60E-09	9.87E-09	9.87E-09
ba136	8.53E-09	8.74E-09	8.96E-09	9.19E-09	9.41E-09	9.41E-09
se 78	8.84E-09	8.98E-09	9.12E-09	9.26E-09	9.40E-09	9.40E-09
sn124	7.64E-09	7.77E-09	7.89E-09	8.02E-09	8.15E-09	8.15E-09
dy163	6.96E-09	7.13E-09	7.30E-09	7.47E-09	7.64E-09	7.64E-09
kr 82	6.54E-09	6.70E-09	6.87E-09	7.03E-09	7.20E-09	7.20E-09

te126	4.99E-09	5.21E-09	5.42E-09	5.65E-09	5.87E-09	5.87E-09
as 75	5.21E-09	5.29E-09	5.38E-09	5.46E-09	5.54E-09	5.54E-09
eu154	5.04E-09	6.40E-09	6.51E-09	6.63E-09	6.74E-09	5.29E-09
in113	4.34E-09	4.42E-09	4.49E-09	4.56E-09	4.64E-09	4.64E-09
sr 90	3.69E-09	3.95E-09	3.95E-09	3.95E-09	3.95E-09	3.67E-09
sn118	3.09E-09	3.14E-09	3.19E-09	3.24E-09	3.30E-09	3.30E-09
sn122	2.64E-09	2.68E-09	2.72E-09	2.77E-09	2.81E-09	2.81E-09
cd116	2.60E-09	2.64E-09	2.68E-09	2.73E-09	2.77E-09	2.77E-09
sn120	1.95E-09	1.98E-09	2.01E-09	2.04E-09	2.08E-09	2.08E-09
ge 73	1.48E-09	1.50E-09	1.53E-09	1.55E-09	1.57E-09	1.57E-09
cs137	8.55E-10	9.11E-10	9.11E-10	9.11E-10	9.11E-10	8.50E-10
gd160	6.34E-10	6.47E-10	6.60E-10	6.74E-10	6.87E-10	6.87E-10
ho165	6.08E-10	6.25E-10	6.42E-10	6.59E-10	6.76E-10	6.76E-10
ge 76	5.09E-10	5.17E-10	5.25E-10	5.33E-10	5.41E-10	5.41E-10
dy160	4.71E-10	4.87E-10	5.04E-10	5.21E-10	5.38E-10	5.38E-10
xe128	2.93E-10	3.03E-10	3.13E-10	3.22E-10	3.32E-10	3.32E-10
cs134	2.49E-10	6.38E-10	6.48E-10	6.59E-10	6.69E-10	2.44E-10
sr 86	1.49E-10	1.53E-10	1.58E-10	1.62E-10	1.67E-10	1.67E-10
te124	1.26E-10	1.29E-10	1.32E-10	1.36E-10	1.39E-10	1.39E-10
sn116	1.13E-10	1.16E-10	1.20E-10	1.24E-10	1.28E-10	1.28E-10
kr 85	1.12E-10	1.33E-10	1.33E-10	1.33E-10	1.33E-10	1.10E-10
sr 87	6.97E-11	7.11E-11	7.24E-11	7.37E-11	7.51E-11	7.51E-11
nb 94	5.53E-11	5.67E-11	5.82E-11	5.97E-11	6.12E-11	6.12E-11
te122	4.71E-11	4.86E-11	5.01E-11	5.17E-11	5.33E-11	5.33E-11
se 76	4.38E-11	4.50E-11	4.63E-11	4.75E-11	4.88E-11	4.88E-11
er166	3.13E-11	3.21E-11	3.29E-11	3.38E-11	3.46E-11	3.46E-11
ge 74	2.96E-11	3.00E-11	3.05E-11	3.10E-11	3.15E-11	3.15E-11
ge 72	2.14E-11	2.18E-11	2.22E-11	2.25E-11	2.29E-11	2.29E-11
kr 80	1.13E-11	1.18E-11	1.23E-11	1.29E-11	1.35E-11	1.35E-11
ce144	1.23E-11	1.42E-10	1.42E-10	1.42E-10	1.42E-10	9.85E-12
y 90	3.52E-12	3.76E-12	3.76E-12	3.76E-12	3.76E-12	3.50E-12
er167	2.31E-12	2.40E-12	2.50E-12	2.59E-12	2.69E-12	2.69E-12
sb125	2.12E-12	4.26E-12	4.27E-12	4.27E-12	4.27E-12	2.00E-12
te123	1.52E-12	1.59E-12	1.66E-12	1.73E-12	1.81E-12	1.81E-12
ru106	1.46E-12	9.51E-12	9.53E-12	9.54E-12	9.56E-12	1.24E-12
cd108	6.35E-13	6.70E-13	7.07E-13	7.45E-13	7.86E-13	7.86E-13
be 9	6.42E-14	6.52E-14	6.62E-14	6.72E-14	6.82E-14	6.82E-14
sn114	2.91E-14	3.00E-14	3.10E-14	3.20E-14	3.30E-14	3.30E-14
li 7	2.61E-14	2.65E-14	2.70E-14	2.74E-14	2.78E-14	2.78E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 109
0 fraction of total absorption rate
power= .00mw, burnup= 15192.mwd, flux= 5.99E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sb126	1.16E-14	1.33E-14	1.35E-14	1.36E-14	1.38E-14	1.23E-14
te127m	3.75E-15	2.16E-12	2.16E-12	2.16E-12	2.16E-12	2.11E-15
nb 95	1.50E-15	3.62E-11	3.62E-11	3.62E-11	3.62E-11	5.59E-16
zr 95	7.33E-16	3.90E-11	3.90E-11	3.90E-11	3.90E-11	2.74E-16
y 91	2.26E-16	3.33E-11	3.33E-11	3.33E-11	3.33E-11	7.69E-17
sn123	1.17E-17	2.56E-15	2.56E-15	2.57E-15	2.57E-15	7.16E-18
sr 89	7.35E-18	7.09E-12	7.09E-12	7.09E-12	7.09E-12	2.11E-18
cd109	1.76E-18	8.27E-18	8.61E-18	8.99E-18	9.36E-18	1.81E-18
tb160	2.28E-18	3.54E-14	3.60E-14	3.67E-14	3.74E-14	1.02E-18
ru103	1.84E-18	9.34E-11	9.35E-11	9.35E-11	9.35E-11	3.70E-19
ce141	1.92E-19	3.83E-10	3.83E-10	3.83E-10	3.84E-10	2.74E-20
pm148m	2.74E-20	7.02E-13	7.03E-13	7.04E-13	7.05E-13	1.37E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 110
power= 9.790E-04mw, burnup=1.5192E+04mwd, flux= 5.99E+07n/cm**2-sec
0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
h 1	8.49E-04	8.62E-04	8.75E-04	8.89E-04	9.02E-04	9.02E-04
h 2	2.53E-06	2.57E-06	2.61E-06	2.65E-06	2.69E-06	2.69E-06
h 3	1.11E-11	1.30E-11	1.31E-11	1.31E-11	1.32E-11	1.11E-11
h 4	.00E+00	1.28E-35	1.28E-35	1.29E-35	1.30E-35	.00E+00
he 3	1.34E-08	1.35E-08	1.37E-08	1.38E-08	1.39E-08	1.39E-08
he 4	1.41E-04	1.43E-04	1.45E-04	1.47E-04	1.50E-04	1.50E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.69E-05	1.72E-05	1.74E-05	1.77E-05	1.80E-05	1.80E-05
ne 21	4.51E-09	4.65E-09	4.78E-09	4.92E-09	5.07E-09	5.07E-09
ne 22	1.11E-07	1.13E-07	1.15E-07	1.17E-07	1.18E-07	1.18E-07
ne 23	1.76E-30	1.76E-15	1.76E-15	1.76E-15	1.77E-15	1.77E-30
na 22	5.03E-12	1.05E-11	1.05E-11	1.05E-11	1.05E-11	4.71E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	6.40E-24	6.39E-09	6.40E-09	6.40E-09	6.40E-09	6.40E-24
na 24m	1.05E-30	1.05E-15	1.05E-15	1.05E-15	1.05E-15	1.05E-30
na 25	3.27E-39	3.36E-24	3.46E-24	3.56E-24	3.67E-24	3.67E-39
mg 24	1.12E-01	1.14E-01	1.15E-01	1.17E-01	1.19E-01	1.19E-01
mg 25	4.71E-07	4.85E-07	4.99E-07	5.14E-07	5.28E-07	5.28E-07
mg 26	2.53E-06	2.57E-06	2.61E-06	2.65E-06	2.69E-06	2.69E-06
mg 27	5.26E-28	5.26E-13	5.26E-13	5.26E-13	5.27E-13	5.27E-28
mg 28	.00E+00	2.59E-25	2.60E-25	2.60E-25	2.60E-25	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	4.75E-26	4.74E-11	4.74E-11	4.74E-11	4.75E-11	4.75E-26
al 29	2.62E-37	2.70E-22	2.78E-22	2.86E-22	2.95E-22	2.95E-37
al 30	.00E+00	5.05E-32	5.28E-32	5.52E-32	5.77E-32	.00E+00
si 28	3.26E-01	3.30E-01	3.35E-01	3.40E-01	3.45E-01	3.45E-01
si 29	4.22E-06	4.35E-06	4.48E-06	4.61E-06	4.74E-06	4.74E-06
si 30	5.82E-11	6.09E-11	6.37E-11	6.66E-11	6.95E-11	6.95E-11
si 31	1.01E-38	1.06E-23	1.11E-23	1.16E-23	1.21E-23	1.21E-38
si 32	4.19E-30	4.43E-30	4.64E-30	4.85E-30	5.07E-30	5.01E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		5.99E+07	5.99E+07	5.99E+07	6.00E+07	6.00E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 111
power= 9.790E-04mw, burnup=1.5192E+04mwd, flux= 5.99E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	1.84E+01	1.90E+01	1.97E+01	2.03E+01	2.10E+01	2.10E+01
pb206	7.22E-02	7.57E-02	7.93E-02	8.30E-02	8.67E-02	8.67E-02
pb207	5.19E-03	5.42E-03	5.65E-03	5.88E-03	6.11E-03	6.12E-03
pb208	2.81E-04	2.89E-04	2.98E-04	3.07E-04	3.16E-04	3.16E-04
pb209	4.99E-10	5.15E-10	5.30E-10	5.46E-10	5.62E-10	5.62E-10
pb210	1.78E-04	1.82E-04	1.86E-04	1.90E-04	1.94E-04	1.94E-04
pb211	3.54E-11	3.59E-11	3.65E-11	3.71E-11	3.77E-11	3.78E-11
pb212	2.35E-11	2.41E-11	2.46E-11	2.50E-11	2.54E-11	2.51E-11
pb214	4.07E-10	4.16E-10	4.25E-10	4.35E-10	4.44E-10	4.44E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.02E-02	1.08E-02	1.14E-02	1.21E-02	1.27E-02	1.27E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.10E-07	1.12E-07	1.15E-07	1.17E-07	1.20E-07	1.20E-07
bi211	2.10E-12	2.13E-12	2.17E-12	2.20E-12	2.24E-12	2.24E-12
bi212	2.23E-12	2.29E-12	2.33E-12	2.37E-12	2.41E-12	2.38E-12
bi213	1.17E-10	1.20E-10	1.24E-10	1.27E-10	1.31E-10	1.31E-10
bi214	3.02E-10	3.09E-10	3.16E-10	3.23E-10	3.30E-10	3.30E-10
po210	3.00E-06	3.09E-06	3.16E-06	3.23E-06	3.30E-06	3.28E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.32E-17	2.35E-17	2.39E-17	2.43E-17	2.47E-17	2.48E-17

po212	1.17E-22	1.20E-22	1.22E-22	1.24E-22	1.27E-22	1.25E-22
po213	1.75E-19	1.81E-19	1.86E-19	1.92E-19	1.97E-19	1.97E-19
po214	4.15E-17	4.25E-17	4.34E-17	4.44E-17	4.53E-17	4.54E-17
po215	2.91E-17	2.95E-17	3.00E-17	3.05E-17	3.10E-17	3.11E-17
po216	8.91E-17	9.14E-17	9.30E-17	9.45E-17	9.61E-17	9.52E-17
po218	4.70E-11	4.81E-11	4.92E-11	5.03E-11	5.14E-11	5.14E-11
rn218	3.18E-43	8.49E-29	8.64E-29	8.79E-29	8.94E-29	9.95E-44
rn219	6.47E-14	6.57E-14	6.68E-14	6.79E-14	6.90E-14	6.91E-14
rn220	3.42E-14	3.51E-14	3.57E-14	3.63E-14	3.68E-14	3.65E-14
rn222	8.35E-08	8.55E-08	8.74E-08	8.93E-08	9.12E-08	9.12E-08
ra222	3.46E-40	9.22E-26	9.38E-26	9.55E-26	9.71E-26	1.08E-40
ra223	1.61E-08	1.64E-08	1.67E-08	1.69E-08	1.72E-08	1.72E-08
ra224	1.94E-10	1.99E-10	2.03E-10	2.06E-10	2.10E-10	2.08E-10
ra225	5.45E-08	5.62E-08	5.79E-08	5.96E-08	6.13E-08	6.13E-08
ra226	1.28E-02	1.31E-02	1.34E-02	1.36E-02	1.39E-02	1.39E-02
ra228	5.99E-11	6.13E-11	6.27E-11	6.41E-11	6.55E-11	6.55E-11
ac225	3.68E-08	3.80E-08	3.91E-08	4.03E-08	4.14E-08	4.14E-08
ac227	1.12E-05	1.14E-05	1.16E-05	1.18E-05	1.20E-05	1.20E-05
ac228	7.31E-15	7.48E-15	7.65E-15	7.83E-15	8.00E-15	8.00E-15
th226	1.69E-38	4.50E-24	4.58E-24	4.66E-24	4.74E-24	5.25E-39
th227	2.61E-08	2.65E-08	2.69E-08	2.73E-08	2.78E-08	2.78E-08
th228	3.70E-08	3.81E-08	3.87E-08	3.94E-08	4.00E-08	3.96E-08
th229	1.06E-02	1.09E-02	1.13E-02	1.16E-02	1.19E-02	1.19E-02
th230	6.53E-01	6.67E-01	6.80E-01	6.94E-01	7.07E-01	7.08E-01
th231	2.79E-09	3.52E-09	3.53E-09	3.54E-09	3.55E-09	2.78E-09
th232	1.46E-01	1.50E-01	1.53E-01	1.57E-01	1.60E-01	1.60E-01
th233	3.24E-28	3.32E-13	3.40E-13	3.47E-13	3.55E-13	3.55E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	1.69E-02	1.71E-02	1.74E-02	1.77E-02	1.80E-02	1.80E-02
pa232	7.00E-26	7.12E-11	7.24E-11	7.36E-11	7.48E-11	7.48E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 112
power= 9.790E-04mw, burnup=1.5192E+04mwd, flux= 5.99E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.42E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.64E-35	4.36E-21	4.44E-21	4.51E-21	4.59E-21	5.09E-36
u231	6.16E-32	6.29E-17	6.42E-17	6.55E-17	6.68E-17	6.68E-32
u232	1.33E-06	1.39E-06	1.41E-06	1.44E-06	1.46E-06	1.42E-06
u233	3.36E-01	3.43E-01	3.50E-01	3.57E-01	3.63E-01	3.64E-01
u234	9.98E+00	9.99E+00	1.00E+01	1.00E+01	1.00E+01	1.00E+01
u235	6.74E+02	6.73E+02	6.73E+02	6.72E+02	6.71E+02	6.71E+02
u236	1.85E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02
u237	1.38E-12	7.89E-07	7.90E-07	7.91E-07	7.92E-07	1.35E-12
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	7.45E-23	7.45E-08	7.45E-08	7.45E-08	7.46E-08	7.46E-23
u240	4.15E-36	4.80E-36	5.52E-36	6.31E-36	7.18E-36	7.18E-36
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	3.58E-13	2.07E-12	2.07E-12	2.07E-12	2.07E-12	3.05E-13
np236m	4.93E-28	4.92E-13	4.93E-13	4.93E-13	4.93E-13	4.93E-28
np236	1.74E-06	1.76E-06	1.78E-06	1.80E-06	1.83E-06	1.83E-06
np237	4.12E+01	4.12E+01	4.12E+01	4.12E+01	4.11E+01	4.11E+01
np238	3.19E-14	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.11E-14
np239	1.18E-13	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.29E-13
np240m	3.54E-38	4.10E-38	4.71E-38	5.39E-38	6.13E-38	6.13E-38
np240	6.16E-39	5.28E-16	5.29E-16	5.29E-16	5.30E-16	6.95E-39

```
      np241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      pu236   1.42E-10  2.71E-10  2.71E-10  2.71E-10  2.71E-10  1.35E-10
      pu237   1.48E-20  7.39E-14  7.41E-14  7.43E-14  7.46E-14  3.70E-21
      pu238   5.38E-03  5.50E-03  5.50E-03  5.50E-03  5.50E-03  5.37E-03
      pu239   2.87E+01  2.88E+01  2.89E+01  2.90E+01  2.91E+01  2.91E+01
      pu240   5.22E-01  5.20E-01  5.18E-01  5.16E-01  5.15E-01  5.15E-01
      pu241   4.49E-05  5.10E-05  5.09E-05  5.08E-05  5.07E-05  4.38E-05
      pu242   2.63E-05  2.69E-05  2.75E-05  2.81E-05  2.87E-05  2.87E-05
      pu243   1.39E-29  1.37E-14  1.40E-14  1.43E-14  1.46E-14  1.53E-29
      pu244   2.07E-25  2.39E-25  2.75E-25  3.14E-25  3.58E-25  3.58E-25
      pu245    .00E+00  2.37E-36  2.73E-36  3.12E-36  3.55E-36   .00E+00
      pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am239   1.04E-34  1.02E-19  1.02E-19  1.02E-19  1.01E-19  1.01E-34
      am240   4.74E-32  4.68E-17  4.66E-17  4.65E-17  4.64E-17  4.64E-32
      am241   1.54E-03  1.52E-03  1.52E-03  1.51E-03  1.51E-03  1.51E-03
      am242m  1.73E-07  1.72E-07  1.72E-07  1.71E-07  1.71E-07  1.68E-07
      am242   2.23E-12  1.38E-11  1.37E-11  1.37E-11  1.36E-11  2.17E-12
      am243   1.35E-07  1.38E-07  1.41E-07  1.44E-07  1.47E-07  1.47E-07
      am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am244   2.47E-31  2.52E-16  2.58E-16  2.63E-16  2.69E-16  2.69E-31
      am245   6.27E-40  4.69E-37  5.39E-37  6.16E-37  7.01E-37  7.61E-40
      am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      cm241   1.19E-31  1.96E-22  1.95E-22  1.95E-22  1.95E-22  1.70E-32
      cm242   4.84E-10  2.78E-09  2.77E-09  2.76E-09  2.75E-09  4.61E-10
      cm243   1.46E-14  1.54E-14  1.53E-14  1.53E-14  1.53E-14  1.42E-14
      cm244   3.49E-12  3.96E-12  4.05E-12  4.14E-12  4.23E-12  3.77E-12
1
      sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page  113
        power= 9.790E-04mw, burnup=1.5192E+04mwd, flux= 5.99E+07n/cm**2-sec
0                                          nuclide concentrations, gram atoms
                                           basis = single reactor assembly
              charge ******* d ******* d ******* d ******* d ******* d
      cm245   9.04E-15  9.16E-15  9.28E-15  9.42E-15  9.56E-15  9.56E-15
      cm246   6.54E-17  6.73E-17  6.91E-17  7.09E-17  7.27E-17  7.26E-17
      cm247   1.41E-20  1.52E-20  1.63E-20  1.74E-20  1.86E-20  1.86E-20
      cm248   2.64E-23  2.92E-23  3.21E-23  3.53E-23  3.87E-23  3.87E-23
      cm249    .00E+00  2.22E-34  2.44E-34  2.68E-34  2.94E-34   .00E+00
      cm250   1.17E-38  1.28E-38  1.39E-38  1.51E-38  1.65E-38  1.65E-38
      cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
    totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0     flux              5.99E+07  5.99E+07  5.99E+07  6.00E+07  6.00E-08
0         1q array has      20 entries.
0         3q array has       1 entries.
0         3q array has       1 entries.
0         3q array has       1 entries.
0         4q array has       1 entries.
0        54q array has      12 entries.
1library information...

          cross-section data taken from position number 13 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
```

```
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         ********************************************************************************
         *                                                                              *
         *            prelim lwr origen-s binary working library--id = 1143             *
         *          made from modified card-image origen-s libraries of scale 4.2       *
         *       data from the light element, actinide, and fission product libraries   *
         *         decay data, including gamma and total energy, are from endf/b-vi     *
         *                                                                              *
         *       neutron flux spectrum factors and cross sections were produced from    *
         *      the "presas2" case updating all nuclides on the scale "burnup" library  *
         *                                                                              *
         *                    fission product yields are from endf/b-v                  *
         *                                                                              *
         *              photon libraries use an 18-energy-group structure               *
         *             the photon data are from the master photon data base,            *
         *              produced to include bremsstrahlung from uo2 matrix              *
         *                                                                              *
         *        see information above this box (if present) for later updates         *
         *                                                                              *
         ********************************************************************************
         *                                                                              *
0        ********************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/29/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page  114
         power=    .00mw, burnup=  16086.mwd, flux= 6.00E+07n/cm**2-sec
0                                    basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.267559E+06   1.267004E+06   1.266447E+06   1.265886E+06   1.265323E+06   1.265318E+06
     absorptions   1.026885E+06   1.026710E+06   1.026532E+06   1.026352E+06   1.026170E+06   1.026165E+06
     k infinity    1.234373E+00   1.234043E+00   1.233714E+00   1.233384E+00   1.233054E+00   1.233054E+00
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   1.011094E+06   1.010828E+06   1.010561E+06   1.010293E+06   1.010023E+06   1.010020E+06
     non-actinide
     abs. fracs.   1.537752E-02   1.546884E-02   1.555836E-02   1.564735E-02   1.573461E-02   1.573408E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              fission products        page  115
0                               fraction of total absorption rate
         power=    .00mw, burnup=  16086.mwd, flux= 6.00E+07n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.42E-03  5.43E-03  5.43E-03  5.43E-03  5.44E-03  5.44E-03
     eu151     1.52E-03  1.54E-03  1.55E-03  1.56E-03  1.58E-03  1.58E-03
     nd143     1.47E-03  1.49E-03  1.51E-03  1.54E-03  1.56E-03  1.56E-03
     rh103     7.12E-04  7.22E-04  7.33E-04  7.44E-04  7.54E-04  7.54E-04
     xe131     4.78E-04  4.85E-04  4.92E-04  4.99E-04  5.06E-04  5.06E-04
     cs133     3.71E-04  3.77E-04  3.82E-04  3.88E-04  3.93E-04  3.93E-04
     sm147     2.73E-04  2.77E-04  2.81E-04  2.85E-04  2.89E-04  2.89E-04
```

tc 99	2.59E-04	2.63E-04	2.66E-04	2.70E-04	2.73E-04	2.73E-04
gd155	2.21E-04	2.21E-04	2.22E-04	2.22E-04	2.22E-04	2.22E-04
nd145	2.09E-04	2.12E-04	2.15E-04	2.19E-04	2.22E-04	2.22E-04
sm152	1.54E-04	1.56E-04	1.59E-04	1.62E-04	1.64E-04	1.64E-04
mo 95	1.45E-04	1.47E-04	1.50E-04	1.52E-04	1.54E-04	1.54E-04
sm150	1.07E-04	1.09E-04	1.11E-04	1.12E-04	1.14E-04	1.14E-04
cd113	1.02E-04	1.02E-04	1.02E-04	1.02E-04	1.02E-04	1.02E-04
kr 83	8.97E-05	9.10E-05	9.22E-05	9.35E-05	9.48E-05	9.48E-05
cs135	8.40E-05	8.52E-05	8.65E-05	8.77E-05	8.90E-05	8.90E-05
ru101	6.53E-05	6.63E-05	6.73E-05	6.82E-05	6.92E-05	6.92E-05
eu153	6.44E-05	6.55E-05	6.65E-05	6.76E-05	6.86E-05	6.86E-05
pr141	6.24E-05	6.34E-05	6.43E-05	6.52E-05	6.61E-05	6.61E-05
gd157	5.94E-05	5.95E-05	5.96E-05	5.96E-05	5.97E-05	5.97E-05
la139	5.11E-05	5.18E-05	5.26E-05	5.33E-05	5.41E-05	5.41E-05
pd105	2.54E-05	2.58E-05	2.63E-05	2.67E-05	2.71E-05	2.71E-05
ba137	2.46E-05	2.50E-05	2.54E-05	2.57E-05	2.61E-05	2.61E-05
ag109	2.33E-05	2.38E-05	2.43E-05	2.48E-05	2.52E-05	2.52E-05
zr 93	2.02E-05	2.05E-05	2.08E-05	2.11E-05	2.14E-05	2.14E-05
i129	1.66E-05	1.68E-05	1.71E-05	1.73E-05	1.76E-05	1.76E-05
nd144	1.56E-05	1.59E-05	1.61E-05	1.64E-05	1.66E-05	1.66E-05
sm151	1.25E-05	1.28E-05	1.28E-05	1.28E-05	1.28E-05	1.25E-05
mo 97	1.16E-05	1.18E-05	1.19E-05	1.21E-05	1.23E-05	1.23E-05
gd152	1.03E-05	1.05E-05	1.08E-05	1.11E-05	1.13E-05	1.13E-05
pd108	5.73E-06	5.84E-06	5.96E-06	6.07E-06	6.18E-06	6.18E-06
zr 91	5.35E-06	5.43E-06	5.51E-06	5.59E-06	5.66E-06	5.66E-06
y 89	5.12E-06	5.19E-06	5.27E-06	5.34E-06	5.42E-06	5.42E-06
ru102	4.83E-06	4.90E-06	4.98E-06	5.05E-06	5.12E-06	5.12E-06
ce142	4.25E-06	4.31E-06	4.38E-06	4.44E-06	4.50E-06	4.50E-06
nd148	4.10E-06	4.16E-06	4.22E-06	4.28E-06	4.34E-06	4.34E-06
nd146	3.45E-06	3.50E-06	3.55E-06	3.60E-06	3.65E-06	3.65E-06
in115	3.02E-06	3.06E-06	3.11E-06	3.16E-06	3.20E-06	3.20E-06
pd107	2.92E-06	2.97E-06	3.03E-06	3.08E-06	3.14E-06	3.14E-06
ba138	2.94E-06	2.98E-06	3.02E-06	3.07E-06	3.11E-06	3.11E-06
ce140	2.75E-06	2.79E-06	2.83E-06	2.87E-06	2.91E-06	2.91E-06
xe132	2.52E-06	2.56E-06	2.59E-06	2.63E-06	2.67E-06	2.67E-06
ru 99	2.15E-06	2.23E-06	2.32E-06	2.40E-06	2.49E-06	2.49E-06
mo 98	1.70E-06	1.72E-06	1.75E-06	1.77E-06	1.80E-06	1.80E-06
mo100	1.65E-06	1.68E-06	1.70E-06	1.73E-06	1.75E-06	1.75E-06
xe134	1.63E-06	1.65E-06	1.67E-06	1.70E-06	1.72E-06	1.72E-06
zr 92	1.29E-06	1.31E-06	1.33E-06	1.35E-06	1.37E-06	1.37E-06
i127	1.20E-06	1.22E-06	1.24E-06	1.26E-06	1.28E-06	1.28E-06
ru104	1.10E-06	1.12E-06	1.14E-06	1.16E-06	1.17E-06	1.17E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 116

0 fraction of total absorption rate

power= .00mw, burnup= 16086.mwd, flux= 6.00E+07n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	1.02E-06	1.04E-06	1.05E-06	1.07E-06	1.08E-06	1.08E-06
nd150	9.25E-07	9.39E-07	9.53E-07	9.67E-07	9.81E-07	9.81E-07
xe136	8.81E-07	8.94E-07	9.07E-07	9.21E-07	9.34E-07	9.34E-07
cd111	6.65E-07	6.77E-07	6.89E-07	7.01E-07	7.13E-07	7.13E-07
br 81	6.55E-07	6.64E-07	6.74E-07	6.84E-07	6.94E-07	6.94E-07
rb 85	6.29E-07	6.38E-07	6.47E-07	6.56E-07	6.66E-07	6.66E-07
zr 94	5.49E-07	5.57E-07	5.65E-07	5.73E-07	5.82E-07	5.82E-07
zr 90	5.04E-07	5.12E-07	5.19E-07	5.27E-07	5.34E-07	5.34E-07
gd154	4.31E-07	4.44E-07	4.58E-07	4.72E-07	4.85E-07	4.86E-07
sm154	4.29E-07	4.36E-07	4.43E-07	4.49E-07	4.56E-07	4.56E-07
te130	4.06E-07	4.12E-07	4.18E-07	4.24E-07	4.30E-07	4.30E-07
rb 87	3.62E-07	3.67E-07	3.73E-07	3.78E-07	3.83E-07	3.83E-07
se 77	2.63E-07	2.67E-07	2.71E-07	2.75E-07	2.79E-07	2.79E-07

pd106	2.55E-07	2.59E-07	2.64E-07	2.68E-07	2.73E-07	2.73E-07
gd156	2.38E-07	2.43E-07	2.47E-07	2.51E-07	2.56E-07	2.56E-07
ba135	2.13E-07	2.22E-07	2.30E-07	2.39E-07	2.48E-07	2.48E-07
kr 84	1.72E-07	1.75E-07	1.77E-07	1.80E-07	1.83E-07	1.83E-07
dy161	1.41E-07	1.44E-07	1.47E-07	1.50E-07	1.53E-07	1.53E-07
sb121	1.38E-07	1.40E-07	1.43E-07	1.45E-07	1.47E-07	1.47E-07
se 79	1.32E-07	1.34E-07	1.36E-07	1.38E-07	1.39E-07	1.39E-07
ru100	1.23E-07	1.26E-07	1.30E-07	1.34E-07	1.37E-07	1.37E-07
sb123	1.12E-07	1.14E-07	1.15E-07	1.17E-07	1.19E-07	1.19E-07
kr 86	9.56E-08	9.70E-08	9.84E-08	9.98E-08	1.01E-07	1.01E-07
nd142	8.83E-08	9.09E-08	9.36E-08	9.63E-08	9.91E-08	9.91E-08
te128	9.14E-08	9.28E-08	9.42E-08	9.56E-08	9.70E-08	9.70E-08
ba134	8.47E-08	8.73E-08	8.98E-08	9.24E-08	9.51E-08	9.51E-08
sm148	7.73E-08	7.96E-08	8.19E-08	8.43E-08	8.67E-08	8.67E-08
eu152	8.28E-08	9.77E-08	9.86E-08	9.95E-08	1.00E-07	8.48E-08
tb159	6.27E-08	6.39E-08	6.50E-08	6.62E-08	6.74E-08	6.74E-08
se 80	6.30E-08	6.40E-08	6.49E-08	6.58E-08	6.68E-08	6.68E-08
te125	6.15E-08	6.25E-08	6.35E-08	6.44E-08	6.54E-08	6.54E-08
pd104	5.81E-08	5.99E-08	6.16E-08	6.34E-08	6.53E-08	6.53E-08
gd158	4.99E-08	5.09E-08	5.18E-08	5.27E-08	5.36E-08	5.36E-08
cd112	4.62E-08	4.70E-08	4.78E-08	4.86E-08	4.94E-08	4.94E-08
nb 93	3.40E-08	3.54E-08	3.68E-08	3.82E-08	3.96E-08	3.96E-08
li 6	3.36E-08	3.41E-08	3.45E-08	3.50E-08	3.54E-08	3.54E-08
sn117	3.32E-08	3.37E-08	3.42E-08	3.48E-08	3.53E-08	3.53E-08
dy164	3.17E-08	3.23E-08	3.30E-08	3.36E-08	3.43E-08	3.43E-08
dy162	3.04E-08	3.11E-08	3.18E-08	3.25E-08	3.32E-08	3.32E-08
cd114	2.78E-08	2.83E-08	2.87E-08	2.92E-08	2.97E-08	2.97E-08
pm147	2.99E-08	6.54E-08	6.54E-08	6.54E-08	6.54E-08	2.80E-08
eu155	2.88E-08	4.49E-08	4.49E-08	4.50E-08	4.50E-08	2.78E-08
sn119	2.55E-08	2.59E-08	2.63E-08	2.67E-08	2.71E-08	2.71E-08
sn115	2.34E-08	2.37E-08	2.41E-08	2.45E-08	2.48E-08	2.48E-08
pd110	2.21E-08	2.25E-08	2.29E-08	2.33E-08	2.37E-08	2.37E-08
mo 96	1.96E-08	2.02E-08	2.08E-08	2.14E-08	2.20E-08	2.20E-08
cd110	1.80E-08	1.86E-08	1.93E-08	2.00E-08	2.07E-08	2.07E-08
br 79	1.71E-08	1.78E-08	1.84E-08	1.91E-08	1.98E-08	1.98E-08
sr 88	1.76E-08	1.78E-08	1.81E-08	1.83E-08	1.86E-08	1.86E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 117
0 fraction of total absorption rate
power= .00mw, burnup= 16086.mwd, flux= 6.00E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

ag107	1.46E-08	1.53E-08	1.59E-08	1.66E-08	1.73E-08	1.73E-08
se 82	1.20E-08	1.22E-08	1.24E-08	1.26E-08	1.28E-08	1.28E-08
xe129	1.01E-08	1.05E-08	1.10E-08	1.14E-08	1.18E-08	1.18E-08
sn126	1.07E-08	1.09E-08	1.10E-08	1.11E-08	1.13E-08	1.13E-08
xe130	9.87E-09	1.02E-08	1.04E-08	1.07E-08	1.10E-08	1.10E-08
ba136	9.41E-09	9.63E-09	9.86E-09	1.01E-08	1.03E-08	1.03E-08
se 78	9.40E-09	9.55E-09	9.69E-09	9.83E-09	9.97E-09	9.97E-09
sn124	8.15E-09	8.27E-09	8.40E-09	8.53E-09	8.66E-09	8.66E-09
dy163	7.64E-09	7.82E-09	7.99E-09	8.16E-09	8.34E-09	8.34E-09
kr 82	7.20E-09	7.37E-09	7.54E-09	7.71E-09	7.88E-09	7.88E-09
te126	5.87E-09	6.10E-09	6.33E-09	6.56E-09	6.80E-09	6.80E-09
as 75	5.54E-09	5.62E-09	5.71E-09	5.79E-09	5.87E-09	5.87E-09
eu154	5.29E-09	6.85E-09	6.96E-09	7.07E-09	7.19E-09	5.53E-09
in113	4.64E-09	4.71E-09	4.78E-09	4.86E-09	4.93E-09	4.93E-09
sr 90	3.67E-09	3.95E-09	3.95E-09	3.95E-09	3.95E-09	3.65E-09
sn118	3.29E-09	3.35E-09	3.40E-09	3.45E-09	3.50E-09	3.50E-09
sn122	2.81E-09	2.86E-09	2.90E-09	2.94E-09	2.99E-09	2.99E-09
cd116	2.77E-09	2.81E-09	2.86E-09	2.90E-09	2.94E-09	2.94E-09
sn120	2.08E-09	2.11E-09	2.14E-09	2.17E-09	2.21E-09	2.21E-09

ge 73	1.57E-09	1.60E-09	1.62E-09	1.65E-09	1.67E-09	1.67E-09
cs137	8.50E-10	9.11E-10	9.11E-10	9.12E-10	9.12E-10	8.46E-10
ho165	6.76E-10	6.94E-10	7.11E-10	7.29E-10	7.47E-10	7.47E-10
gd160	6.87E-10	7.00E-10	7.13E-10	7.27E-10	7.40E-10	7.40E-10
dy160	5.38E-10	5.55E-10	5.73E-10	5.91E-10	6.10E-10	6.10E-10
ge 76	5.41E-10	5.49E-10	5.57E-10	5.65E-10	5.73E-10	5.73E-10
xe128	3.32E-10	3.43E-10	3.53E-10	3.63E-10	3.74E-10	3.74E-10
cs134	2.44E-10	6.79E-10	6.89E-10	6.99E-10	7.09E-10	2.38E-10
sr 86	1.67E-10	1.72E-10	1.76E-10	1.81E-10	1.86E-10	1.86E-10
te124	1.39E-10	1.42E-10	1.45E-10	1.48E-10	1.51E-10	1.51E-10
sn116	1.28E-10	1.31E-10	1.35E-10	1.39E-10	1.43E-10	1.43E-10
kr 85	1.10E-10	1.33E-10	1.33E-10	1.33E-10	1.33E-10	1.08E-10
sr 87	7.51E-11	7.65E-11	7.78E-11	7.92E-11	8.06E-11	8.06E-11
nb 94	6.12E-11	6.28E-11	6.45E-11	6.62E-11	6.79E-11	6.79E-11
te122	5.33E-11	5.49E-11	5.65E-11	5.82E-11	5.99E-11	5.99E-11
se 76	4.88E-11	5.00E-11	5.13E-11	5.26E-11	5.40E-11	5.40E-11
er166	3.46E-11	3.54E-11	3.62E-11	3.71E-11	3.79E-11	3.79E-11
ge 74	3.15E-11	3.20E-11	3.24E-11	3.29E-11	3.34E-11	3.34E-11
ge 72	2.29E-11	2.33E-11	2.36E-11	2.40E-11	2.44E-11	2.44E-11
kr 80	1.35E-11	1.41E-11	1.48E-11	1.54E-11	1.61E-11	1.61E-11
ce144	9.85E-12	1.42E-10	1.42E-10	1.42E-10	1.42E-10	7.88E-12
y 90	3.50E-12	3.76E-12	3.76E-12	3.76E-12	3.76E-12	3.47E-12
er167	2.69E-12	2.80E-12	2.90E-12	3.01E-12	3.12E-12	3.12E-12
te123	1.81E-12	1.88E-12	1.96E-12	2.04E-12	2.13E-12	2.13E-12
sb125	2.00E-12	4.28E-12	4.28E-12	4.28E-12	4.29E-12	1.88E-12
ru106	1.24E-12	9.57E-12	9.58E-12	9.60E-12	9.61E-12	1.05E-12
cd108	7.86E-13	8.28E-13	8.72E-13	9.18E-13	9.66E-13	9.66E-13
be 9	6.82E-14	6.92E-14	7.02E-14	7.12E-14	7.22E-14	7.22E-14
sn114	3.30E-14	3.40E-14	3.50E-14	3.61E-14	3.72E-14	3.72E-14
li 7	2.78E-14	2.82E-14	2.86E-14	2.90E-14	2.94E-14	2.94E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 118
0 fraction of total absorption rate
power= .00mw, burnup= 16086.mwd, flux= 6.00E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sb126	1.23E-14	1.40E-14	1.42E-14	1.43E-14	1.45E-14	1.30E-14
te127m	2.11E-15	2.17E-12	2.17E-12	2.17E-12	2.17E-12	1.18E-15
nb 95	5.59E-16	3.62E-11	3.62E-11	3.62E-11	3.62E-11	2.07E-16
zr 95	2.74E-16	3.90E-11	3.90E-11	3.90E-11	3.90E-11	1.01E-16
y 91	7.69E-17	3.33E-11	3.33E-11	3.33E-11	3.33E-11	2.59E-17
sn123	7.15E-18	2.57E-15	2.57E-15	2.57E-15	2.57E-15	4.37E-18
cd109	1.81E-18	9.77E-18	1.02E-17	1.06E-17	1.11E-17	1.86E-18
sr 89	2.11E-18	7.09E-12	7.09E-12	7.09E-12	7.09E-12	6.03E-19
tb160	1.03E-18	3.81E-14	3.87E-14	3.94E-14	4.01E-14	4.52E-19
ru103	3.70E-19	9.36E-11	9.36E-11	9.37E-11	9.37E-11	6.85E-20

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 119
power= 9.790E-04mw, burnup=1.6086E+04mwd, flux= 6.00E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
h 1	9.02E-04	9.15E-04	9.29E-04	9.42E-04	9.55E-04	9.55E-04
h 2	2.69E-06	2.73E-06	2.77E-06	2.81E-06	2.85E-06	2.85E-06
h 3	1.11E-11	1.32E-11	1.33E-11	1.33E-11	1.34E-11	1.11E-11
h 4	.00E+00	1.30E-35	1.31E-35	1.31E-35	1.32E-35	.00E+00
he 3	1.39E-08	1.41E-08	1.42E-08	1.43E-08	1.45E-08	1.45E-08
he 4	1.50E-04	1.52E-04	1.54E-04	1.56E-04	1.58E-04	1.58E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.80E-05	1.82E-05	1.85E-05	1.88E-05	1.90E-05	1.90E-05
ne 21	5.07E-09	5.21E-09	5.36E-09	5.51E-09	5.66E-09	5.66E-09

	ne 22	1.18E-07	1.20E-07	1.22E-07	1.24E-07	1.25E-07	1.25E-07
	ne 23	1.77E-30	1.76E-15	1.77E-15	1.77E-15	1.77E-15	1.77E-30
	na 22	4.71E-12	1.05E-11	1.05E-11	1.05E-11	1.05E-11	4.41E-12
	na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
	na 24	6.40E-24	6.39E-09	6.40E-09	6.40E-09	6.40E-09	6.40E-24
	na 24m	1.05E-30	1.05E-15	1.05E-15	1.05E-15	1.05E-15	1.05E-30
	na 25	3.67E-39	3.77E-24	3.87E-24	3.98E-24	4.09E-24	4.09E-39
	mg 24	1.19E-01	1.20E-01	1.22E-01	1.23E-01	1.25E-01	1.25E-01
	mg 25	5.28E-07	5.43E-07	5.58E-07	5.73E-07	5.89E-07	5.89E-07
	mg 26	2.69E-06	2.73E-06	2.77E-06	2.81E-06	2.85E-06	2.85E-06
	mg 27	5.27E-28	5.26E-13	5.27E-13	5.27E-13	5.27E-13	5.27E-28
	mg 28	.00E+00	2.60E-25	2.60E-25	2.61E-25	2.61E-25	.00E+00
	al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
	al 28	4.75E-26	4.74E-11	4.74E-11	4.74E-11	4.75E-11	4.75E-26
	al 29	2.95E-37	3.03E-22	3.12E-22	3.21E-22	3.30E-22	3.30E-37
	al 30	.00E+00	6.02E-32	6.28E-32	6.55E-32	6.82E-32	.00E+00
	si 28	3.45E-01	3.50E-01	3.55E-01	3.59E-01	3.64E-01	3.64E-01
	si 29	4.74E-06	4.88E-06	5.02E-06	5.16E-06	5.30E-06	5.30E-06
	si 30	6.95E-11	7.25E-11	7.56E-11	7.88E-11	8.21E-11	8.21E-11
	si 31	1.21E-38	1.26E-23	1.32E-23	1.37E-23	1.43E-23	1.43E-38
	si 32	5.01E-30	5.30E-30	5.54E-30	5.78E-30	6.03E-30	5.95E-30
	totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0	flux		5.99E+07	5.99E+07	6.00E+07	6.00E+07	6.00E-08
1							

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 120
power= 9.790E-04mw, burnup=1.6086E+04mwd, flux= 6.00E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	2.10E+01	2.16E+01	2.23E+01	2.29E+01	2.36E+01	2.36E+01
pb206	8.67E-02	9.06E-02	9.45E-02	9.85E-02	1.03E-01	1.03E-01
pb207	6.12E-03	6.35E-03	6.60E-03	6.85E-03	7.10E-03	7.10E-03
pb208	3.16E-04	3.25E-04	3.35E-04	3.44E-04	3.54E-04	3.54E-04
pb209	5.62E-10	5.77E-10	5.93E-10	6.09E-10	6.24E-10	6.24E-10
pb210	1.94E-04	1.98E-04	2.02E-04	2.06E-04	2.10E-04	2.10E-04
pb211	3.78E-11	3.83E-11	3.89E-11	3.95E-11	4.01E-11	4.01E-11
pb212	2.51E-11	2.58E-11	2.62E-11	2.66E-11	2.70E-11	2.67E-11
pb214	4.44E-10	4.53E-10	4.62E-10	4.72E-10	4.81E-10	4.81E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.27E-02	1.34E-02	1.41E-02	1.48E-02	1.55E-02	1.55E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.20E-07	1.22E-07	1.25E-07	1.27E-07	1.29E-07	1.30E-07
bi211	2.24E-12	2.27E-12	2.31E-12	2.34E-12	2.37E-12	2.38E-12
bi212	2.38E-12	2.45E-12	2.49E-12	2.52E-12	2.56E-12	2.53E-12
bi213	1.31E-10	1.35E-10	1.38E-10	1.42E-10	1.46E-10	1.46E-10
bi214	3.30E-10	3.37E-10	3.43E-10	3.50E-10	3.57E-10	3.57E-10
po210	3.28E-06	3.37E-06	3.44E-06	3.51E-06	3.57E-06	3.55E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.48E-17	2.51E-17	2.55E-17	2.59E-17	2.62E-17	2.63E-17
po212	1.25E-22	1.29E-22	1.31E-22	1.33E-22	1.35E-22	1.33E-22
po213	1.97E-19	2.03E-19	2.08E-19	2.14E-19	2.19E-19	2.19E-19
po214	4.54E-17	4.63E-17	4.72E-17	4.82E-17	4.91E-17	4.91E-17
po215	3.11E-17	3.15E-17	3.20E-17	3.24E-17	3.29E-17	3.30E-17
po216	9.52E-17	9.76E-17	9.92E-17	1.01E-16	1.02E-16	1.01E-16
po218	5.14E-11	5.24E-11	5.35E-11	5.46E-11	5.56E-11	5.56E-11
rn218	9.95E-44	9.08E-29	9.23E-29	9.37E-29	9.52E-29	9.25E-44
rn219	6.91E-14	7.01E-14	7.11E-14	7.22E-14	7.32E-14	7.34E-14
rn220	3.65E-14	3.74E-14	3.80E-14	3.86E-14	3.92E-14	3.87E-14
rn222	9.12E-08	9.31E-08	9.50E-08	9.69E-08	9.88E-08	9.88E-08
ra222	1.08E-40	9.86E-26	1.00E-25	1.02E-25	1.03E-25	1.01E-40

ra223	1.72E-08	1.75E-08	1.77E-08	1.80E-08	1.83E-08	1.83E-08
ra224	2.08E-10	2.13E-10	2.16E-10	2.20E-10	2.23E-10	2.20E-10
ra225	6.13E-08	6.31E-08	6.48E-08	6.65E-08	6.82E-08	6.82E-08
ra226	1.39E-02	1.42E-02	1.45E-02	1.48E-02	1.51E-02	1.51E-02
ra228	6.55E-11	6.69E-11	6.84E-11	6.98E-11	7.12E-11	7.12E-11
ac225	4.14E-08	4.26E-08	4.38E-08	4.49E-08	4.61E-08	4.61E-08
ac227	1.20E-05	1.22E-05	1.23E-05	1.25E-05	1.27E-05	1.27E-05
ac228	8.00E-15	8.17E-15	8.34E-15	8.51E-15	8.69E-15	8.69E-15
th226	5.25E-39	4.81E-24	4.89E-24	4.97E-24	5.04E-24	4.92E-39
th227	2.78E-08	2.82E-08	2.86E-08	2.91E-08	2.95E-08	2.96E-08
th228	3.96E-08	4.07E-08	4.13E-08	4.19E-08	4.26E-08	4.20E-08
th229	1.19E-02	1.23E-02	1.26E-02	1.29E-02	1.33E-02	1.33E-02
th230	7.08E-01	7.21E-01	7.34E-01	7.48E-01	7.61E-01	7.61E-01
th231	2.78E-09	3.57E-09	3.58E-09	3.59E-09	3.61E-09	2.77E-09
th232	1.60E-01	1.64E-01	1.67E-01	1.71E-01	1.74E-01	1.74E-01
th233	3.55E-28	3.63E-13	3.71E-13	3.79E-13	3.86E-13	3.87E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	1.80E-02	1.83E-02	1.86E-02	1.88E-02	1.91E-02	1.91E-02
pa232	7.48E-26	7.60E-11	7.72E-11	7.84E-11	7.96E-11	7.96E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 121
power= 9.790E-04mw, burnup=1.6086E+04mwd, flux= 6.00E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.42E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	5.09E-36	4.66E-21	4.74E-21	4.81E-21	4.89E-21	4.77E-36
u231	6.68E-32	6.80E-17	6.93E-17	7.05E-17	7.18E-17	7.18E-32
u232	1.42E-06	1.48E-06	1.51E-06	1.53E-06	1.55E-06	1.50E-06
u233	3.64E-01	3.70E-01	3.77E-01	3.84E-01	3.91E-01	3.91E-01
u234	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.01E+01	1.01E+01
u235	6.71E+02	6.71E+02	6.70E+02	6.70E+02	6.69E+02	6.69E+02
u236	1.86E+02	1.86E+02	1.86E+02	1.87E+02	1.87E+02	1.87E+02
u237	1.35E-12	7.92E-07	7.93E-07	7.94E-07	7.95E-07	1.33E-12
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	7.46E-23	7.46E-08	7.46E-08	7.46E-08	7.47E-08	7.47E-23
u240	7.18E-36	8.13E-36	9.17E-36	1.03E-35	1.15E-35	1.15E-35
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	3.05E-13	2.07E-12	2.07E-12	2.07E-12	2.07E-12	2.60E-13
np236m	4.93E-28	4.92E-13	4.92E-13	4.92E-13	4.92E-13	4.93E-28
np236	1.83E-06	1.85E-06	1.87E-06	1.89E-06	1.91E-06	1.91E-06
np237	4.11E+01	4.11E+01	4.11E+01	4.11E+01	4.11E+01	4.11E+01
np238	3.11E-14	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.09E-14
np239	1.29E-13	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.40E-13
np240m	6.13E-38	6.94E-38	7.83E-38	8.79E-38	9.84E-38	9.84E-38
np240	6.95E-39	5.30E-16	5.30E-16	5.31E-16	5.31E-16	7.90E-39
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.35E-10	2.71E-10	2.71E-10	2.71E-10	2.71E-10	1.27E-10
pu237	3.70E-21	7.48E-14	7.50E-14	7.52E-14	7.54E-14	9.16E-22
pu238	5.37E-03	5.50E-03	5.50E-03	5.50E-03	5.50E-03	5.36E-03
pu239	2.91E+01	2.92E+01	2.93E+01	2.94E+01	2.95E+01	2.95E+01
pu240	5.15E-01	5.14E-01	5.13E-01	5.12E-01	5.12E-01	5.11E-01
pu241	4.38E-05	5.05E-05	5.05E-05	5.04E-05	5.04E-05	4.30E-05
pu242	2.87E-05	2.92E-05	2.98E-05	3.04E-05	3.09E-05	3.09E-05
pu243	1.53E-29	1.49E-14	1.52E-14	1.55E-14	1.58E-14	1.66E-29
pu244	3.58E-25	4.05E-25	4.57E-25	5.13E-25	5.74E-25	5.74E-25
pu245	.00E+00	4.02E-36	4.53E-36	5.10E-36	5.70E-36	.00E+00

```
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239   1.01E-34  1.01E-19  1.01E-19  1.01E-19  1.01E-19  1.01E-34
     am240   4.64E-32  4.61E-17  4.61E-17  4.61E-17  4.61E-17  4.61E-32
     am241   1.51E-03  1.50E-03  1.50E-03  1.50E-03  1.50E-03  1.49E-03
     am242m  1.68E-07  1.70E-07  1.70E-07  1.70E-07  1.70E-07  1.67E-07
     am242   2.17E-12  1.36E-11  1.36E-11  1.36E-11  1.36E-11  2.15E-12
     am243   1.47E-07  1.50E-07  1.53E-07  1.57E-07  1.60E-07  1.60E-07
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   2.69E-31  2.75E-16  2.81E-16  2.87E-16  2.93E-16  2.93E-31
     am245   7.61E-40  7.94E-37  8.95E-37  1.01E-36  1.13E-36  8.80E-40
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   1.70E-32  1.94E-22  1.94E-22  1.94E-22  1.94E-22  2.43E-33
     cm242   4.61E-10  2.74E-09  2.74E-09  2.74E-09  2.74E-09  4.50E-10
     cm243   1.42E-14  1.52E-14  1.52E-14  1.52E-14  1.52E-14  1.40E-14
     cm244   3.77E-12  4.31E-12  4.41E-12  4.50E-12  4.60E-12  4.06E-12
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides         page  122
       power= 9.790E-04mw, burnup=1.6086E+04mwd, flux= 6.00E+07n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
          charge ******* d ******* d ******* d ******* d ******* d
     cm245   9.56E-15  9.70E-15  9.86E-15  1.00E-14  1.02E-14  1.02E-14
     cm246   7.26E-17  7.44E-17  7.61E-17  7.78E-17  7.94E-17  7.94E-17
     cm247   1.86E-20  1.98E-20  2.10E-20  2.22E-20  2.35E-20  2.35E-20
     cm248   3.87E-23  4.23E-23  4.61E-23  5.02E-23  5.45E-23  5.45E-23
     cm249    .00E+00  3.21E-34  3.51E-34  3.82E-34  4.15E-34   .00E+00
     cm250   1.65E-38  1.80E-38  1.97E-38  2.14E-38  2.34E-38  2.34E-38
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              5.99E+07  5.99E+07  6.00E+07  6.00E+07  6.00E-08
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number 14 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *          made from modified card-image origen-s libraries of scale 4.2       *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
```

```
         *                                                                          *
         *     neutron flux spectrum factors and cross sections were produced from  *
         *    the "presas2" case updating all nuclides on the scale "burnup" library *
         *                                                                          *
         *                 fission product yields are from endf/b-v                 *
         *                                                                          *
         *             photon libraries use an 18-energy-group structure            *
         *            the photon data are from the master photon data base,         *
         *             produced to include bremsstrahlung from uo2 matrix           *
         *                                                                          *
         *       see information above this box (if present) for later updates      *
         *                                                                          *
         ****************************************************************************
         *                                                                          *
0        ****************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/29/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ****************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page  123
        power=    .00mw, burnup=  16980.mwd, flux= 6.00E+07n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.266238E+06   1.265670E+06   1.265100E+06   1.264527E+06   1.263952E+06   1.263946E+06
     absorptions   1.026683E+06   1.026498E+06   1.026311E+06   1.026122E+06   1.025931E+06   1.025927E+06
     k infinity    1.233329E+00   1.232998E+00   1.232667E+00   1.232337E+00   1.232005E+00   1.232004E+00
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   1.010530E+06   1.010258E+06   1.009985E+06   1.009711E+06   1.009436E+06   1.009433E+06
     non-actinide
     abs. fracs.   1.573360E-02   1.582122E-02   1.590741E-02   1.599288E-02   1.607811E-02   1.607752E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products    page  124
0                                 fraction of total absorption rate
        power=    .00mw, burnup=  16980.mwd, flux= 6.00E+07n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.44E-03  5.44E-03  5.44E-03  5.44E-03  5.44E-03  5.44E-03
     nd143     1.56E-03  1.58E-03  1.60E-03  1.62E-03  1.64E-03  1.64E-03
     eu151     1.58E-03  1.59E-03  1.60E-03  1.62E-03  1.63E-03  1.63E-03
     rh103     7.54E-04  7.65E-04  7.76E-04  7.86E-04  7.97E-04  7.97E-04
     xe131     5.06E-04  5.13E-04  5.20E-04  5.27E-04  5.34E-04  5.34E-04
     cs133     3.93E-04  3.98E-04  4.04E-04  4.09E-04  4.15E-04  4.15E-04
     sm147     2.89E-04  2.93E-04  2.97E-04  3.01E-04  3.05E-04  3.05E-04
     tc 99     2.73E-04  2.76E-04  2.80E-04  2.83E-04  2.87E-04  2.87E-04
     nd145     2.22E-04  2.25E-04  2.28E-04  2.31E-04  2.34E-04  2.34E-04
     gd155     2.22E-04  2.22E-04  2.22E-04  2.22E-04  2.22E-04  2.22E-04
     sm152     1.64E-04  1.67E-04  1.70E-04  1.72E-04  1.75E-04  1.75E-04
     mo 95     1.54E-04  1.56E-04  1.58E-04  1.60E-04  1.62E-04  1.62E-04
     sm150     1.14E-04  1.16E-04  1.17E-04  1.19E-04  1.21E-04  1.21E-04
     cd113     1.02E-04  1.02E-04  1.02E-04  1.02E-04  1.02E-04  1.02E-04
     kr 83     9.49E-05  9.61E-05  9.74E-05  9.87E-05  1.00E-04  1.00E-04
     cs135     8.90E-05  9.02E-05  9.14E-05  9.27E-05  9.39E-05  9.39E-05
     ru101     6.92E-05  7.02E-05  7.11E-05  7.21E-05  7.31E-05  7.31E-05
     eu153     6.86E-05  6.97E-05  7.07E-05  7.18E-05  7.29E-05  7.29E-05
```

pr141	6.62E-05	6.71E-05	6.80E-05	6.89E-05	6.99E-05	6.99E-05
gd157	5.97E-05	5.98E-05	5.99E-05	5.99E-05	6.00E-05	6.00E-05
la139	5.41E-05	5.49E-05	5.56E-05	5.64E-05	5.71E-05	5.71E-05
pd105	2.71E-05	2.75E-05	2.79E-05	2.83E-05	2.87E-05	2.87E-05
ba137	2.61E-05	2.65E-05	2.68E-05	2.72E-05	2.76E-05	2.76E-05
ag109	2.52E-05	2.57E-05	2.62E-05	2.67E-05	2.72E-05	2.72E-05
zr 93	2.14E-05	2.17E-05	2.20E-05	2.23E-05	2.26E-05	2.26E-05
i129	1.76E-05	1.78E-05	1.81E-05	1.84E-05	1.86E-05	1.86E-05
nd144	1.66E-05	1.68E-05	1.71E-05	1.73E-05	1.76E-05	1.76E-05
mo 97	1.23E-05	1.25E-05	1.26E-05	1.28E-05	1.30E-05	1.30E-05
sm151	1.25E-05	1.28E-05	1.29E-05	1.29E-05	1.29E-05	1.25E-05
gd152	1.13E-05	1.16E-05	1.19E-05	1.22E-05	1.25E-05	1.25E-05
pd108	6.18E-06	6.29E-06	6.41E-06	6.52E-06	6.63E-06	6.63E-06
zr 91	5.66E-06	5.74E-06	5.82E-06	5.90E-06	5.98E-06	5.98E-06
y 89	5.42E-06	5.49E-06	5.57E-06	5.64E-06	5.72E-06	5.72E-06
ru102	5.12E-06	5.20E-06	5.27E-06	5.34E-06	5.41E-06	5.41E-06
ce142	4.50E-06	4.57E-06	4.63E-06	4.69E-06	4.76E-06	4.76E-06
nd148	4.34E-06	4.40E-06	4.46E-06	4.53E-06	4.59E-06	4.59E-06
nd146	3.65E-06	3.70E-06	3.75E-06	3.81E-06	3.86E-06	3.86E-06
in115	3.20E-06	3.25E-06	3.29E-06	3.34E-06	3.39E-06	3.39E-06
pd107	3.14E-06	3.19E-06	3.25E-06	3.31E-06	3.36E-06	3.36E-06
ba138	3.11E-06	3.16E-06	3.20E-06	3.24E-06	3.29E-06	3.29E-06
ce140	2.91E-06	2.95E-06	3.00E-06	3.04E-06	3.08E-06	3.08E-06
ru 99	2.49E-06	2.58E-06	2.67E-06	2.76E-06	2.86E-06	2.86E-06
xe132	2.67E-06	2.71E-06	2.75E-06	2.78E-06	2.82E-06	2.82E-06
mo 98	1.80E-06	1.82E-06	1.85E-06	1.87E-06	1.90E-06	1.90E-06
mo100	1.75E-06	1.77E-06	1.80E-06	1.82E-06	1.85E-06	1.85E-06
xe134	1.72E-06	1.75E-06	1.77E-06	1.80E-06	1.82E-06	1.82E-06
zr 92	1.37E-06	1.39E-06	1.41E-06	1.43E-06	1.45E-06	1.45E-06
i127	1.28E-06	1.30E-06	1.32E-06	1.33E-06	1.35E-06	1.35E-06
ru104	1.17E-06	1.19E-06	1.21E-06	1.22E-06	1.24E-06	1.24E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 125
0 fraction of total absorption rate
power= .00mw, burnup= 16980.mwd, flux= 6.00E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	1.08E-06	1.10E-06	1.11E-06	1.13E-06	1.14E-06	1.14E-06
nd150	9.81E-07	9.95E-07	1.01E-06	1.02E-06	1.04E-06	1.04E-06
xe136	9.34E-07	9.47E-07	9.60E-07	9.73E-07	9.86E-07	9.86E-07
cd111	7.14E-07	7.26E-07	7.38E-07	7.50E-07	7.62E-07	7.62E-07
br 81	6.94E-07	7.03E-07	7.13E-07	7.23E-07	7.32E-07	7.32E-07
rb 85	6.66E-07	6.75E-07	6.84E-07	6.93E-07	7.02E-07	7.02E-07
zr 94	5.81E-07	5.89E-07	5.98E-07	6.06E-07	6.14E-07	6.14E-07
zr 90	5.34E-07	5.41E-07	5.49E-07	5.56E-07	5.64E-07	5.64E-07
gd154	4.86E-07	5.00E-07	5.14E-07	5.29E-07	5.44E-07	5.44E-07
sm154	4.56E-07	4.63E-07	4.70E-07	4.77E-07	4.83E-07	4.83E-07
te130	4.30E-07	4.36E-07	4.42E-07	4.48E-07	4.55E-07	4.55E-07
rb 87	3.83E-07	3.89E-07	3.94E-07	3.99E-07	4.04E-07	4.04E-07
se 77	2.79E-07	2.83E-07	2.87E-07	2.91E-07	2.95E-07	2.95E-07
pd106	2.72E-07	2.77E-07	2.81E-07	2.86E-07	2.90E-07	2.90E-07
ba135	2.48E-07	2.57E-07	2.66E-07	2.76E-07	2.85E-07	2.85E-07
gd156	2.56E-07	2.60E-07	2.64E-07	2.69E-07	2.73E-07	2.73E-07
kr 84	1.82E-07	1.85E-07	1.88E-07	1.90E-07	1.93E-07	1.93E-07
dy161	1.53E-07	1.55E-07	1.58E-07	1.61E-07	1.64E-07	1.64E-07
sb121	1.47E-07	1.49E-07	1.51E-07	1.53E-07	1.56E-07	1.56E-07
ru100	1.37E-07	1.41E-07	1.45E-07	1.49E-07	1.53E-07	1.53E-07
se 79	1.39E-07	1.41E-07	1.43E-07	1.45E-07	1.47E-07	1.47E-07
sb123	1.19E-07	1.21E-07	1.22E-07	1.24E-07	1.26E-07	1.26E-07
nd142	9.91E-08	1.02E-07	1.05E-07	1.08E-07	1.11E-07	1.11E-07
kr 86	1.01E-07	1.03E-07	1.04E-07	1.05E-07	1.07E-07	1.07E-07

ba134	9.51E-08	9.78E-08	1.00E-07	1.03E-07	1.06E-07	1.06E-07
te128	9.70E-08	9.84E-08	9.98E-08	1.01E-07	1.03E-07	1.03E-07
sm148	8.67E-08	8.92E-08	9.16E-08	9.41E-08	9.67E-08	9.67E-08
eu152	8.48E-08	1.01E-07	1.02E-07	1.03E-07	1.04E-07	8.66E-08
pd104	6.52E-08	6.71E-08	6.90E-08	7.09E-08	7.28E-08	7.28E-08
tb159	6.74E-08	6.85E-08	6.97E-08	7.09E-08	7.21E-08	7.21E-08
se 80	6.68E-08	6.77E-08	6.87E-08	6.96E-08	7.05E-08	7.05E-08
te125	6.54E-08	6.64E-08	6.74E-08	6.83E-08	6.93E-08	6.93E-08
gd158	5.36E-08	5.45E-08	5.54E-08	5.63E-08	5.73E-08	5.73E-08
cd112	4.94E-08	5.02E-08	5.10E-08	5.18E-08	5.26E-08	5.26E-08
nb 93	3.96E-08	4.10E-08	4.25E-08	4.40E-08	4.54E-08	4.55E-08
sn117	3.53E-08	3.58E-08	3.64E-08	3.69E-08	3.75E-08	3.75E-08
li 6	3.55E-08	3.59E-08	3.64E-08	3.68E-08	3.73E-08	3.73E-08
dy164	3.43E-08	3.49E-08	3.56E-08	3.62E-08	3.69E-08	3.69E-08
dy162	3.32E-08	3.39E-08	3.46E-08	3.53E-08	3.60E-08	3.60E-08
cd114	2.97E-08	3.02E-08	3.06E-08	3.11E-08	3.16E-08	3.16E-08
sn119	2.71E-08	2.75E-08	2.79E-08	2.83E-08	2.87E-08	2.87E-08
eu155	2.78E-08	4.51E-08	4.51E-08	4.51E-08	4.52E-08	2.69E-08
sn115	2.48E-08	2.52E-08	2.56E-08	2.59E-08	2.63E-08	2.63E-08
pm147	2.80E-08	6.54E-08	6.54E-08	6.54E-08	6.54E-08	2.62E-08
pd110	2.37E-08	2.41E-08	2.45E-08	2.50E-08	2.54E-08	2.54E-08
mo 96	2.20E-08	2.26E-08	2.32E-08	2.38E-08	2.44E-08	2.44E-08
cd110	2.07E-08	2.14E-08	2.21E-08	2.28E-08	2.36E-08	2.36E-08
br 79	1.98E-08	2.06E-08	2.13E-08	2.20E-08	2.28E-08	2.28E-08
ag107	1.73E-08	1.80E-08	1.88E-08	1.95E-08	2.02E-08	2.02E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 126
0 fraction of total absorption rate
power= .00mw, burnup= 16980.mwd, flux= 6.00E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sr 88	1.86E-08	1.89E-08	1.91E-08	1.94E-08	1.96E-08	1.96E-08
xe129	1.18E-08	1.23E-08	1.27E-08	1.31E-08	1.36E-08	1.36E-08
se 82	1.28E-08	1.29E-08	1.31E-08	1.33E-08	1.35E-08	1.35E-08
xe130	1.10E-08	1.13E-08	1.16E-08	1.19E-08	1.22E-08	1.22E-08
sn126	1.13E-08	1.14E-08	1.16E-08	1.17E-08	1.19E-08	1.19E-08
ba136	1.03E-08	1.06E-08	1.08E-08	1.10E-08	1.13E-08	1.13E-08
se 78	9.97E-09	1.01E-08	1.03E-08	1.04E-08	1.05E-08	1.05E-08
sn124	8.66E-09	8.78E-09	8.91E-09	9.04E-09	9.17E-09	9.17E-09
dy163	8.34E-09	8.51E-09	8.69E-09	8.87E-09	9.04E-09	9.04E-09
kr 82	7.88E-09	8.05E-09	8.23E-09	8.40E-09	8.58E-09	8.58E-09
te126	6.80E-09	7.04E-09	7.28E-09	7.53E-09	7.78E-09	7.78E-09
as 75	5.87E-09	5.95E-09	6.04E-09	6.12E-09	6.20E-09	6.20E-09
eu154	5.53E-09	7.30E-09	7.42E-09	7.53E-09	7.65E-09	5.76E-09
in113	4.93E-09	5.01E-09	5.08E-09	5.15E-09	5.23E-09	5.23E-09
sn118	3.50E-09	3.55E-09	3.60E-09	3.65E-09	3.71E-09	3.71E-09
sr 90	3.65E-09	3.95E-09	3.95E-09	3.95E-09	3.95E-09	3.63E-09
sn122	2.99E-09	3.03E-09	3.08E-09	3.12E-09	3.17E-09	3.17E-09
cd116	2.94E-09	2.98E-09	3.03E-09	3.07E-09	3.11E-09	3.11E-09
sn120	2.21E-09	2.24E-09	2.27E-09	2.30E-09	2.34E-09	2.34E-09
ge 73	1.67E-09	1.69E-09	1.72E-09	1.74E-09	1.77E-09	1.77E-09
cs137	8.46E-10	9.12E-10	9.12E-10	9.12E-10	9.12E-10	8.41E-10
ho165	7.47E-10	7.65E-10	7.83E-10	8.02E-10	8.20E-10	8.20E-10
gd160	7.40E-10	7.54E-10	7.67E-10	7.81E-10	7.94E-10	7.94E-10
dy160	6.10E-10	6.29E-10	6.48E-10	6.67E-10	6.87E-10	6.87E-10
ge 76	5.73E-10	5.81E-10	5.89E-10	5.97E-10	6.05E-10	6.05E-10
xe128	3.74E-10	3.85E-10	3.96E-10	4.07E-10	4.18E-10	4.18E-10
cs134	2.38E-10	7.19E-10	7.30E-10	7.40E-10	7.50E-10	2.31E-10
sr 86	1.86E-10	1.91E-10	1.96E-10	2.01E-10	2.06E-10	2.06E-10
te124	1.51E-10	1.55E-10	1.58E-10	1.61E-10	1.65E-10	1.65E-10
sn116	1.43E-10	1.47E-10	1.52E-10	1.56E-10	1.60E-10	1.60E-10

kr 85	1.08E-10	1.33E-10	1.33E-10	1.33E-10	1.33E-10	1.06E-10
sr 87	8.06E-11	8.20E-11	8.34E-11	8.48E-11	8.62E-11	8.62E-11
nb 94	6.79E-11	6.97E-11	7.16E-11	7.36E-11	7.55E-11	7.55E-11
te122	5.99E-11	6.16E-11	6.34E-11	6.52E-11	6.70E-11	6.70E-11
se 76	5.40E-11	5.53E-11	5.67E-11	5.80E-11	5.94E-11	5.94E-11
er166	3.79E-11	3.88E-11	3.96E-11	4.05E-11	4.13E-11	4.13E-11
ge 74	3.34E-11	3.39E-11	3.44E-11	3.48E-11	3.53E-11	3.53E-11
ge 72	2.44E-11	2.47E-11	2.51E-11	2.55E-11	2.58E-11	2.58E-11
kr 80	1.61E-11	1.68E-11	1.75E-11	1.83E-11	1.91E-11	1.91E-11
ce144	7.88E-12	1.42E-10	1.42E-10	1.42E-10	1.42E-10	6.32E-12
er167	3.12E-12	3.23E-12	3.34E-12	3.46E-12	3.58E-12	3.58E-12
y 90	3.48E-12	3.76E-12	3.76E-12	3.76E-12	3.76E-12	3.45E-12
te123	2.13E-12	2.21E-12	2.30E-12	2.39E-12	2.48E-12	2.48E-12
sb125	1.88E-12	4.29E-12	4.29E-12	4.29E-12	4.30E-12	1.77E-12
cd108	9.66E-13	1.02E-12	1.07E-12	1.12E-12	1.18E-12	1.18E-12
ru106	1.05E-12	9.62E-12	9.64E-12	9.65E-12	9.66E-12	8.90E-13
be 9	7.22E-14	7.32E-14	7.42E-14	7.52E-14	7.63E-14	7.63E-14
sn114	3.72E-14	3.83E-14	3.94E-14	4.05E-14	4.16E-14	4.16E-14
li 7	2.95E-14	2.99E-14	3.03E-14	3.07E-14	3.11E-14	3.11E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 127
0 fraction of total absorption rate
power= .00mw, burnup= 16980.mwd, flux= 6.00E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sb126	1.30E-14	1.47E-14	1.48E-14	1.50E-14	1.52E-14	1.37E-14
te127m	1.18E-15	2.17E-12	2.17E-12	2.18E-12	2.18E-12	6.64E-16
nb 95	2.07E-16	3.62E-11	3.62E-11	3.62E-11	3.62E-11	7.73E-17
zr 95	1.01E-16	3.90E-11	3.90E-11	3.90E-11	3.90E-11	3.78E-17
y 91	2.59E-17	3.33E-11	3.33E-11	3.33E-11	3.33E-11	8.82E-18
sn123	4.38E-18	2.57E-15	2.57E-15	2.57E-15	2.57E-15	2.68E-18
cd109	1.86E-18	1.15E-17	1.20E-17	1.25E-17	1.31E-17	1.92E-18
tb160	4.52E-19	4.08E-14	4.15E-14	4.22E-14	4.29E-14	2.05E-19
sr 89	6.02E-19	7.09E-12	7.09E-12	7.09E-12	7.09E-12	1.78E-19
ru103	6.84E-20	9.38E-11	9.38E-11	9.38E-11	9.39E-11	1.37E-20

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 128
power= 9.790E-04mw, burnup=1.6980E+04mwd, flux= 6.00E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
h 1	9.55E-04	9.69E-04	9.82E-04	9.95E-04	1.01E-03	1.01E-03
h 2	2.85E-06	2.89E-06	2.93E-06	2.97E-06	3.01E-06	3.01E-06
h 3	1.11E-11	1.34E-11	1.35E-11	1.35E-11	1.36E-11	1.11E-11
h 4	.00E+00	1.32E-35	1.33E-35	1.33E-35	1.34E-35	.00E+00
he 3	1.45E-08	1.46E-08	1.47E-08	1.49E-08	1.50E-08	1.50E-08
he 4	1.58E-04	1.61E-04	1.63E-04	1.65E-04	1.67E-04	1.67E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.90E-05	1.93E-05	1.96E-05	1.98E-05	2.01E-05	2.01E-05
ne 21	5.66E-09	5.81E-09	5.96E-09	6.12E-09	6.28E-09	6.28E-09
ne 22	1.25E-07	1.27E-07	1.29E-07	1.31E-07	1.32E-07	1.32E-07
ne 23	1.77E-30	1.77E-15	1.77E-15	1.77E-15	1.77E-15	1.77E-30
na 22	4.41E-12	1.05E-11	1.05E-11	1.05E-11	1.05E-11	4.13E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	6.40E-24	6.40E-09	6.40E-09	6.41E-09	6.41E-09	6.41E-24
na 24m	1.05E-30	1.05E-15	1.05E-15	1.05E-15	1.05E-15	1.05E-30
na 25	4.09E-39	4.20E-24	4.31E-24	4.42E-24	4.54E-24	4.54E-39
mg 24	1.25E-01	1.27E-01	1.28E-01	1.30E-01	1.32E-01	1.32E-01
mg 25	5.89E-07	6.05E-07	6.20E-07	6.37E-07	6.53E-07	6.53E-07
mg 26	2.85E-06	2.89E-06	2.93E-06	2.97E-06	3.01E-06	3.01E-06
mg 27	5.27E-28	5.27E-13	5.27E-13	5.27E-13	5.28E-13	5.28E-28

	mg 28	.00E+00	2.61E-25	2.61E-25	2.61E-25	2.62E-25	.00E+00
	al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
	al 28	4.75E-26	4.74E-11	4.75E-11	4.75E-11	4.75E-11	4.75E-26
	al 29	3.30E-37	3.38E-22	3.47E-22	3.57E-22	3.66E-22	3.66E-37
	al 30	.00E+00	7.10E-32	7.39E-32	7.69E-32	8.00E-32	.00E+00
	si 28	3.64E-01	3.69E-01	3.74E-01	3.79E-01	3.84E-01	3.84E-01
	si 29	5.30E-06	5.44E-06	5.59E-06	5.73E-06	5.88E-06	5.88E-06
	si 30	8.21E-11	8.55E-11	8.90E-11	9.25E-11	9.62E-11	9.62E-11
	si 31	1.43E-38	1.49E-23	1.55E-23	1.61E-23	1.68E-23	1.68E-38
	si 32	5.95E-30	6.27E-30	6.54E-30	6.81E-30	7.09E-30	6.99E-30
	totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0	flux		6.00E+07	6.00E+07	6.00E+07	6.01E+07	6.01E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 129

power= 9.790E-04mw, burnup=1.6980E+04mwd, flux= 6.00E+07n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	2.36E+01	2.42E+01	2.49E+01	2.56E+01	2.62E+01	2.62E+01
pb206	1.03E-01	1.07E-01	1.11E-01	1.15E-01	1.20E-01	1.20E-01
pb207	7.10E-03	7.35E-03	7.61E-03	7.87E-03	8.14E-03	8.14E-03
pb208	3.54E-04	3.63E-04	3.73E-04	3.83E-04	3.93E-04	3.94E-04
pb209	6.24E-10	6.40E-10	6.56E-10	6.71E-10	6.87E-10	6.87E-10
pb210	2.10E-04	2.14E-04	2.18E-04	2.22E-04	2.26E-04	2.26E-04
pb211	4.01E-11	4.06E-11	4.12E-11	4.18E-11	4.23E-11	4.24E-11
pb212	2.67E-11	2.74E-11	2.78E-11	2.82E-11	2.86E-11	2.82E-11
pb214	4.81E-10	4.90E-10	4.99E-10	5.08E-10	5.17E-10	5.17E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.55E-02	1.62E-02	1.70E-02	1.78E-02	1.85E-02	1.85E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.30E-07	1.32E-07	1.34E-07	1.37E-07	1.39E-07	1.39E-07
bi211	2.38E-12	2.41E-12	2.44E-12	2.48E-12	2.51E-12	2.51E-12
bi212	2.53E-12	2.60E-12	2.64E-12	2.67E-12	2.71E-12	2.68E-12
bi213	1.46E-10	1.49E-10	1.53E-10	1.57E-10	1.60E-10	1.60E-10
bi214	3.57E-10	3.64E-10	3.70E-10	3.77E-10	3.84E-10	3.84E-10
po210	3.55E-06	3.64E-06	3.71E-06	3.78E-06	3.84E-06	3.82E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.63E-17	2.66E-17	2.70E-17	2.74E-17	2.77E-17	2.78E-17
po212	1.33E-22	1.37E-22	1.39E-22	1.41E-22	1.42E-22	1.41E-22
po213	2.19E-19	2.25E-19	2.30E-19	2.36E-19	2.41E-19	2.41E-19
po214	4.91E-17	5.00E-17	5.10E-17	5.19E-17	5.28E-17	5.28E-17
po215	3.30E-17	3.34E-17	3.39E-17	3.43E-17	3.48E-17	3.49E-17
po216	1.01E-16	1.04E-16	1.05E-16	1.07E-16	1.08E-16	1.07E-16
po218	5.56E-11	5.67E-11	5.77E-11	5.88E-11	5.98E-11	5.98E-11
rn218	9.25E-44	9.66E-29	9.80E-29	9.94E-29	1.01E-28	9.81E-44
rn219	7.34E-14	7.43E-14	7.53E-14	7.64E-14	7.74E-14	7.75E-14
rn220	3.87E-14	3.98E-14	4.04E-14	4.09E-14	4.15E-14	4.09E-14
rn222	9.88E-08	1.01E-07	1.03E-07	1.04E-07	1.06E-07	1.06E-07
ra222	1.01E-40	1.05E-25	1.06E-25	1.08E-25	1.10E-25	1.06E-40
ra223	1.83E-08	1.85E-08	1.88E-08	1.91E-08	1.93E-08	1.93E-08
ra224	2.20E-10	2.26E-10	2.30E-10	2.33E-10	2.36E-10	2.33E-10
ra225	6.82E-08	6.99E-08	7.16E-08	7.33E-08	7.51E-08	7.51E-08
ra226	1.51E-02	1.54E-02	1.57E-02	1.59E-02	1.62E-02	1.62E-02
ra228	7.12E-11	7.26E-11	7.40E-11	7.54E-11	7.68E-11	7.68E-11
ac225	4.61E-08	4.72E-08	4.84E-08	4.95E-08	5.07E-08	5.07E-08
ac227	1.27E-05	1.29E-05	1.31E-05	1.32E-05	1.34E-05	1.34E-05
ac228	8.69E-15	8.86E-15	9.03E-15	9.21E-15	9.38E-15	9.38E-15
th226	4.92E-39	5.11E-24	5.19E-24	5.27E-24	5.34E-24	5.17E-39
th227	2.96E-08	2.99E-08	3.03E-08	3.08E-08	3.12E-08	3.12E-08
th228	4.20E-08	4.32E-08	4.38E-08	4.44E-08	4.51E-08	4.44E-08

th229	1.33E-02	1.36E-02	1.39E-02	1.43E-02	1.46E-02	1.46E-02
th230	7.61E-01	7.74E-01	7.87E-01	8.00E-01	8.13E-01	8.14E-01
th231	2.77E-09	3.62E-09	3.63E-09	3.64E-09	3.66E-09	2.76E-09
th232	1.74E-01	1.77E-01	1.81E-01	1.84E-01	1.88E-01	1.88E-01
th233	3.87E-28	3.94E-13	4.02E-13	4.10E-13	4.18E-13	4.18E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	1.91E-02	1.94E-02	1.97E-02	1.99E-02	2.02E-02	2.02E-02
pa232	7.96E-26	8.08E-11	8.20E-11	8.31E-11	8.43E-11	8.43E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 130

power= 9.790E-04mw, burnup=1.6980E+04mwd, flux= 6.00E+07n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d
pa233	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.42E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.07E-12	8.07E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	4.77E-36	4.96E-21	5.03E-21	5.11E-21	5.18E-21	5.01E-36
u231	7.18E-32	7.30E-17	7.43E-17	7.55E-17	7.68E-17	7.68E-32
u232	1.50E-06	1.58E-06	1.60E-06	1.62E-06	1.64E-06	1.59E-06
u233	3.91E-01	3.97E-01	4.04E-01	4.11E-01	4.17E-01	4.17E-01
u234	1.01E+01	1.01E+01	1.01E+01	1.01E+01	1.01E+01	1.01E+01
u235	6.69E+02	6.69E+02	6.68E+02	6.68E+02	6.67E+02	6.67E+02
u236	1.87E+02	1.87E+02	1.87E+02	1.87E+02	1.88E+02	1.88E+02
u237	1.33E-12	7.96E-07	7.97E-07	7.98E-07	7.99E-07	1.31E-12
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	7.47E-23	7.47E-08	7.47E-08	7.47E-08	7.48E-08	7.48E-23
u240	1.15E-35	1.29E-35	1.43E-35	1.59E-35	1.75E-35	1.75E-35
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	2.60E-13	2.07E-12	2.07E-12	2.07E-12	2.07E-12	2.21E-13
np236m	4.93E-28	4.92E-13	4.92E-13	4.92E-13	4.92E-13	4.92E-28
np236	1.91E-06	1.94E-06	1.96E-06	1.98E-06	2.00E-06	2.00E-06
np237	4.11E+01	4.11E+01	4.11E+01	4.10E+01	4.10E+01	4.10E+01
np238	3.09E-14	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.08E-14
np239	1.40E-13	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.51E-13
np240m	9.84E-38	1.10E-37	1.22E-37	1.35E-37	1.50E-37	1.50E-37
np240	7.90E-39	5.31E-16	5.32E-16	5.32E-16	5.33E-16	9.01E-39
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.27E-10	2.71E-10	2.71E-10	2.71E-10	2.71E-10	1.20E-10
pu237	9.16E-22	7.56E-14	7.58E-14	7.60E-14	7.63E-14	2.29E-22
pu238	5.36E-03	5.50E-03	5.50E-03	5.50E-03	5.50E-03	5.35E-03
pu239	2.95E+01	2.96E+01	2.97E+01	2.98E+01	2.98E+01	2.98E+01
pu240	5.11E-01	5.11E-01	5.11E-01	5.11E-01	5.11E-01	5.10E-01
pu241	4.30E-05	5.03E-05	5.03E-05	5.03E-05	5.03E-05	4.25E-05
pu242	3.09E-05	3.15E-05	3.21E-05	3.26E-05	3.32E-05	3.32E-05
pu243	1.66E-29	1.61E-14	1.64E-14	1.67E-14	1.70E-14	1.80E-29
pu244	5.74E-25	6.41E-25	7.12E-25	7.90E-25	8.73E-25	8.74E-25
pu245	.00E+00	6.37E-36	7.09E-36	7.86E-36	8.70E-36	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.01E-34	1.00E-19	1.01E-19	1.01E-19	1.01E-19	1.01E-34
am240	4.61E-32	4.59E-17	4.60E-17	4.60E-17	4.61E-17	4.60E-32
am241	1.49E-03	1.49E-03	1.49E-03	1.49E-03	1.49E-03	1.49E-03
am242m	1.67E-07	1.69E-07	1.69E-07	1.69E-07	1.69E-07	1.67E-07
am242	2.15E-12	1.35E-11	1.35E-11	1.35E-11	1.35E-11	2.15E-12
am243	1.60E-07	1.63E-07	1.66E-07	1.70E-07	1.73E-07	1.73E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	2.93E-31	2.99E-16	3.05E-16	3.11E-16	3.17E-16	3.17E-31
am245	8.80E-40	1.26E-36	1.40E-36	1.55E-36	1.71E-36	9.85E-40
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

```
     cm241   2.43E-33  1.93E-22  1.93E-22  1.94E-22  1.94E-22  3.55E-34
     cm242   4.50E-10  2.73E-09  2.73E-09  2.73E-09  2.74E-09  4.45E-10
     cm243   1.40E-14  1.51E-14  1.52E-14  1.52E-14  1.52E-14  1.40E-14
     cm244   4.06E-12  4.69E-12  4.79E-12  4.89E-12  4.99E-12  4.36E-12
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page  131
       power= 9.790E-04mw, burnup=1.6980E+04mwd, flux= 6.00E+07n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
            charge ******* d ******* d ******* d ******* d ******* d
     cm245   1.02E-14  1.04E-14  1.05E-14  1.07E-14  1.09E-14  1.09E-14
     cm246   7.94E-17  8.11E-17  8.28E-17  8.45E-17  8.62E-17  8.62E-17
     cm247   2.35E-20  2.48E-20  2.61E-20  2.75E-20  2.89E-20  2.89E-20
     cm248   5.45E-23  5.90E-23  6.38E-23  6.88E-23  7.41E-23  7.41E-23
     cm249    .00E+00  4.49E-34  4.86E-34  5.24E-34  5.65E-34   .00E+00
     cm250   2.34E-38  2.55E-38  2.78E-38  3.02E-38  3.29E-38  3.29E-38
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              6.00E+07  6.00E+07  6.00E+07  6.01E+07  6.01E-08
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number 15 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *           prelim lwr origen-s binary working library--id = 1143              *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *               photon libraries use an 18-energy-group structure              *
          *              the photon data are from the master photon data base,           *
          *               produced to include bremsstrahlung from uo2 matrix             *
          *                                                                              *
          *         see information above this box (if present) for later updates        *
```

```
         *                                                                          *
         ******************************************************************************
         *                                                                          *
0        ******************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/29/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page  132
        power=    .00mw, burnup=  17874.mwd, flux= 6.01E+07n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.264834E+06   1.264255E+06   1.263673E+06   1.263090E+06   1.262504E+06   1.262498E+06
     absorptions   1.026414E+06   1.026221E+06   1.026026E+06   1.025829E+06   1.025631E+06   1.025627E+06
     k infinity    1.232285E+00   1.231952E+00   1.231620E+00   1.231287E+00   1.230953E+00   1.230952E+00
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   1.009912E+06   1.009635E+06   1.009357E+06   1.009077E+06   1.008797E+06   1.008793E+06
     non-actinide
     abs. fracs.   1.607716E-02   1.616246E-02   1.624632E-02   1.633036E-02   1.641381E-02   1.641315E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products    page  133
0                                  fraction of total absorption rate
        power=    .00mw, burnup=  17874.mwd, flux= 6.01E+07n/cm**2-sec
0                initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.44E-03  5.44E-03  5.44E-03  5.44E-03  5.44E-03  5.44E-03
     nd143     1.64E-03  1.66E-03  1.68E-03  1.71E-03  1.73E-03  1.73E-03
     eu151     1.63E-03  1.64E-03  1.65E-03  1.67E-03  1.68E-03  1.68E-03
     rh103     7.97E-04  8.08E-04  8.18E-04  8.29E-04  8.40E-04  8.40E-04
     xe131     5.34E-04  5.41E-04  5.48E-04  5.55E-04  5.62E-04  5.62E-04
     cs133     4.15E-04  4.20E-04  4.26E-04  4.31E-04  4.37E-04  4.37E-04
     sm147     3.05E-04  3.09E-04  3.13E-04  3.17E-04  3.21E-04  3.21E-04
     tc 99     2.87E-04  2.90E-04  2.94E-04  2.97E-04  3.00E-04  3.00E-04
     nd145     2.34E-04  2.37E-04  2.40E-04  2.43E-04  2.46E-04  2.46E-04
     gd155     2.23E-04  2.23E-04  2.23E-04  2.23E-04  2.23E-04  2.23E-04
     sm152     1.75E-04  1.78E-04  1.81E-04  1.83E-04  1.86E-04  1.86E-04
     mo 95     1.62E-04  1.64E-04  1.67E-04  1.69E-04  1.71E-04  1.71E-04
     sm150     1.21E-04  1.23E-04  1.24E-04  1.26E-04  1.28E-04  1.28E-04
     kr 83     1.00E-04  1.01E-04  1.03E-04  1.04E-04  1.05E-04  1.05E-04
     cd113     1.02E-04  1.02E-04  1.02E-04  1.02E-04  1.02E-04  1.02E-04
     cs135     9.39E-05  9.52E-05  9.64E-05  9.77E-05  9.89E-05  9.89E-05
     eu153     7.29E-05  7.39E-05  7.50E-05  7.61E-05  7.71E-05  7.71E-05
     ru101     7.31E-05  7.40E-05  7.50E-05  7.60E-05  7.70E-05  7.70E-05
     pr141     6.99E-05  7.08E-05  7.17E-05  7.27E-05  7.36E-05  7.36E-05
     gd157     6.00E-05  6.01E-05  6.02E-05  6.02E-05  6.03E-05  6.03E-05
     la139     5.71E-05  5.79E-05  5.87E-05  5.94E-05  6.02E-05  6.02E-05
     pd105     2.87E-05  2.92E-05  2.96E-05  3.00E-05  3.04E-05  3.04E-05
     ag109     2.72E-05  2.77E-05  2.82E-05  2.87E-05  2.92E-05  2.92E-05
     ba137     2.76E-05  2.80E-05  2.83E-05  2.87E-05  2.91E-05  2.91E-05
     zr 93     2.26E-05  2.29E-05  2.32E-05  2.35E-05  2.38E-05  2.38E-05
      i129     1.86E-05  1.89E-05  1.91E-05  1.94E-05  1.96E-05  1.96E-05
     nd144     1.76E-05  1.78E-05  1.80E-05  1.83E-05  1.85E-05  1.85E-05
     mo 97     1.30E-05  1.32E-05  1.33E-05  1.35E-05  1.37E-05  1.37E-05
     gd152     1.25E-05  1.27E-05  1.30E-05  1.33E-05  1.36E-05  1.36E-05
```

sm151	1.26E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.26E-05
pd108	6.63E-06	6.75E-06	6.86E-06	6.98E-06	7.09E-06	7.09E-06
zr 91	5.98E-06	6.06E-06	6.14E-06	6.22E-06	6.29E-06	6.29E-06
y 89	5.72E-06	5.79E-06	5.87E-06	5.94E-06	6.02E-06	6.02E-06
ru102	5.42E-06	5.49E-06	5.56E-06	5.63E-06	5.71E-06	5.71E-06
ce142	4.76E-06	4.82E-06	4.88E-06	4.95E-06	5.01E-06	5.01E-06
nd148	4.59E-06	4.65E-06	4.71E-06	4.77E-06	4.83E-06	4.83E-06
nd146	3.86E-06	3.91E-06	3.96E-06	4.01E-06	4.07E-06	4.07E-06
pd107	3.36E-06	3.42E-06	3.47E-06	3.53E-06	3.59E-06	3.59E-06
in115	3.39E-06	3.43E-06	3.48E-06	3.53E-06	3.57E-06	3.57E-06
ba138	3.29E-06	3.33E-06	3.38E-06	3.42E-06	3.46E-06	3.46E-06
ce140	3.08E-06	3.12E-06	3.16E-06	3.20E-06	3.24E-06	3.24E-06
ru 99	2.86E-06	2.95E-06	3.04E-06	3.14E-06	3.24E-06	3.24E-06
xe132	2.82E-06	2.86E-06	2.90E-06	2.94E-06	2.98E-06	2.98E-06
mo 98	1.90E-06	1.92E-06	1.95E-06	1.97E-06	2.00E-06	2.00E-06
mo100	1.85E-06	1.87E-06	1.90E-06	1.92E-06	1.95E-06	1.95E-06
xe134	1.82E-06	1.84E-06	1.87E-06	1.89E-06	1.92E-06	1.92E-06
zr 92	1.45E-06	1.47E-06	1.48E-06	1.50E-06	1.52E-06	1.52E-06
i127	1.35E-06	1.37E-06	1.39E-06	1.41E-06	1.43E-06	1.43E-06
ru104	1.24E-06	1.26E-06	1.28E-06	1.29E-06	1.31E-06	1.31E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 134
0 fraction of total absorption rate
power= .00mw, burnup= 17874.mwd, flux= 6.01E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	1.14E-06	1.16E-06	1.17E-06	1.19E-06	1.20E-06	1.20E-06
nd150	1.04E-06	1.05E-06	1.07E-06	1.08E-06	1.09E-06	1.09E-06
xe136	9.87E-07	1.00E-06	1.01E-06	1.03E-06	1.04E-06	1.04E-06
cd111	7.63E-07	7.75E-07	7.87E-07	7.99E-07	8.12E-07	8.12E-07
br 81	7.32E-07	7.42E-07	7.52E-07	7.62E-07	7.71E-07	7.71E-07
rb 85	7.02E-07	7.12E-07	7.21E-07	7.30E-07	7.39E-07	7.39E-07
zr 94	6.14E-07	6.22E-07	6.30E-07	6.38E-07	6.46E-07	6.46E-07
gd154	5.44E-07	5.59E-07	5.74E-07	5.90E-07	6.06E-07	6.06E-07
zr 90	5.64E-07	5.71E-07	5.78E-07	5.86E-07	5.93E-07	5.93E-07
sm154	4.83E-07	4.90E-07	4.97E-07	5.04E-07	5.11E-07	5.11E-07
te130	4.55E-07	4.61E-07	4.67E-07	4.73E-07	4.79E-07	4.79E-07
rb 87	4.04E-07	4.10E-07	4.15E-07	4.20E-07	4.26E-07	4.26E-07
ba135	2.85E-07	2.95E-07	3.04E-07	3.14E-07	3.24E-07	3.24E-07
se 77	2.95E-07	2.99E-07	3.02E-07	3.06E-07	3.10E-07	3.10E-07
pd106	2.90E-07	2.95E-07	2.99E-07	3.04E-07	3.08E-07	3.08E-07
gd156	2.73E-07	2.78E-07	2.82E-07	2.86E-07	2.91E-07	2.91E-07
kr 84	1.93E-07	1.95E-07	1.98E-07	2.00E-07	2.03E-07	2.03E-07
dy161	1.64E-07	1.67E-07	1.70E-07	1.73E-07	1.76E-07	1.76E-07
ru100	1.53E-07	1.57E-07	1.61E-07	1.65E-07	1.69E-07	1.69E-07
sb121	1.56E-07	1.58E-07	1.60E-07	1.62E-07	1.64E-07	1.64E-07
se 79	1.47E-07	1.49E-07	1.51E-07	1.52E-07	1.54E-07	1.54E-07
sb123	1.26E-07	1.27E-07	1.29E-07	1.31E-07	1.33E-07	1.33E-07
nd142	1.11E-07	1.14E-07	1.17E-07	1.20E-07	1.23E-07	1.23E-07
ba134	1.06E-07	1.09E-07	1.12E-07	1.15E-07	1.18E-07	1.18E-07
kr 86	1.07E-07	1.08E-07	1.10E-07	1.11E-07	1.13E-07	1.13E-07
te128	1.03E-07	1.04E-07	1.05E-07	1.07E-07	1.08E-07	1.08E-07
sm148	9.67E-08	9.93E-08	1.02E-07	1.05E-07	1.07E-07	1.07E-07
eu152	8.66E-08	1.05E-07	1.06E-07	1.06E-07	1.07E-07	8.82E-08
pd104	7.28E-08	7.47E-08	7.67E-08	7.87E-08	8.08E-08	8.08E-08
tb159	7.21E-08	7.33E-08	7.45E-08	7.56E-08	7.68E-08	7.68E-08
se 80	7.06E-08	7.15E-08	7.24E-08	7.34E-08	7.43E-08	7.43E-08
te125	6.93E-08	7.03E-08	7.13E-08	7.23E-08	7.33E-08	7.33E-08
gd158	5.73E-08	5.82E-08	5.91E-08	6.00E-08	6.10E-08	6.10E-08
cd112	5.26E-08	5.34E-08	5.41E-08	5.49E-08	5.57E-08	5.57E-08
nb 93	4.55E-08	4.70E-08	4.85E-08	5.01E-08	5.16E-08	5.17E-08

sn117	3.75E-08	3.80E-08	3.86E-08	3.91E-08	3.96E-08	3.96E-08
dy164	3.69E-08	3.76E-08	3.82E-08	3.89E-08	3.95E-08	3.95E-08
li 6	3.73E-08	3.78E-08	3.82E-08	3.87E-08	3.91E-08	3.91E-08
dy162	3.60E-08	3.67E-08	3.75E-08	3.82E-08	3.89E-08	3.89E-08
cd114	3.16E-08	3.21E-08	3.25E-08	3.30E-08	3.35E-08	3.35E-08
sn119	2.87E-08	2.91E-08	2.95E-08	2.99E-08	3.03E-08	3.03E-08
sn115	2.63E-08	2.67E-08	2.70E-08	2.74E-08	2.78E-08	2.78E-08
pd110	2.54E-08	2.58E-08	2.62E-08	2.66E-08	2.71E-08	2.71E-08
mo 96	2.44E-08	2.51E-08	2.57E-08	2.64E-08	2.71E-08	2.71E-08
cd110	2.36E-08	2.43E-08	2.51E-08	2.59E-08	2.67E-08	2.67E-08
eu155	2.69E-08	4.52E-08	4.53E-08	4.53E-08	4.53E-08	2.60E-08
br 79	2.28E-08	2.35E-08	2.43E-08	2.51E-08	2.58E-08	2.58E-08
pm147	2.62E-08	6.54E-08	6.54E-08	6.54E-08	6.54E-08	2.45E-08
ag107	2.03E-08	2.10E-08	2.18E-08	2.26E-08	2.34E-08	2.34E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 135
0 fraction of total absorption rate
power= .00mw, burnup= 17874.mwd, flux= 6.01E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sr 88	1.96E-08	1.99E-08	2.01E-08	2.04E-08	2.07E-08	2.07E-08
xe129	1.36E-08	1.41E-08	1.45E-08	1.50E-08	1.55E-08	1.55E-08
se 82	1.35E-08	1.37E-08	1.38E-08	1.40E-08	1.42E-08	1.42E-08
xe130	1.22E-08	1.25E-08	1.28E-08	1.31E-08	1.35E-08	1.35E-08
sn126	1.19E-08	1.20E-08	1.22E-08	1.23E-08	1.25E-08	1.25E-08
ba136	1.13E-08	1.15E-08	1.18E-08	1.20E-08	1.23E-08	1.23E-08
se 78	1.05E-08	1.07E-08	1.08E-08	1.10E-08	1.11E-08	1.11E-08
dy163	9.04E-09	9.22E-09	9.40E-09	9.58E-09	9.76E-09	9.76E-09
sn124	9.17E-09	9.30E-09	9.43E-09	9.55E-09	9.68E-09	9.68E-09
kr 82	8.58E-09	8.76E-09	8.93E-09	9.11E-09	9.29E-09	9.29E-09
te126	7.78E-09	8.03E-09	8.29E-09	8.55E-09	8.81E-09	8.81E-09
as 75	6.20E-09	6.28E-09	6.37E-09	6.45E-09	6.53E-09	6.53E-09
eu154	5.76E-09	7.76E-09	7.88E-09	7.99E-09	8.11E-09	5.99E-09
in113	5.23E-09	5.30E-09	5.38E-09	5.45E-09	5.53E-09	5.53E-09
sn118	3.70E-09	3.76E-09	3.81E-09	3.86E-09	3.91E-09	3.91E-09
sr 90	3.63E-09	3.96E-09	3.96E-09	3.96E-09	3.96E-09	3.61E-09
sn122	3.17E-09	3.21E-09	3.26E-09	3.30E-09	3.34E-09	3.34E-09
cd116	3.11E-09	3.16E-09	3.20E-09	3.24E-09	3.29E-09	3.29E-09
sn120	2.34E-09	2.37E-09	2.40E-09	2.43E-09	2.47E-09	2.47E-09
ge 73	1.77E-09	1.79E-09	1.81E-09	1.84E-09	1.86E-09	1.86E-09
ho165	8.20E-10	8.39E-10	8.58E-10	8.77E-10	8.96E-10	8.96E-10
gd160	7.94E-10	8.08E-10	8.22E-10	8.35E-10	8.49E-10	8.49E-10
cs137	8.41E-10	9.12E-10	9.13E-10	9.13E-10	9.13E-10	8.37E-10
dy160	6.87E-10	7.07E-10	7.28E-10	7.48E-10	7.69E-10	7.70E-10
ge 76	6.05E-10	6.13E-10	6.21E-10	6.29E-10	6.37E-10	6.37E-10
xe128	4.18E-10	4.30E-10	4.41E-10	4.53E-10	4.65E-10	4.65E-10
sr 86	2.06E-10	2.11E-10	2.17E-10	2.22E-10	2.27E-10	2.27E-10
cs134	2.31E-10	7.60E-10	7.70E-10	7.81E-10	7.91E-10	2.24E-10
te124	1.65E-10	1.68E-10	1.71E-10	1.75E-10	1.78E-10	1.78E-10
sn116	1.60E-10	1.64E-10	1.69E-10	1.73E-10	1.78E-10	1.78E-10
kr 85	1.06E-10	1.33E-10	1.33E-10	1.33E-10	1.33E-10	1.05E-10
sr 87	8.62E-11	8.76E-11	8.90E-11	9.05E-11	9.19E-11	9.19E-11
nb 94	7.55E-11	7.76E-11	7.97E-11	8.18E-11	8.41E-11	8.41E-11
te122	6.69E-11	6.88E-11	7.06E-11	7.25E-11	7.44E-11	7.44E-11
se 76	5.94E-11	6.08E-11	6.22E-11	6.37E-11	6.51E-11	6.51E-11
er166	4.13E-11	4.22E-11	4.31E-11	4.39E-11	4.48E-11	4.48E-11
ge 74	3.53E-11	3.58E-11	3.63E-11	3.68E-11	3.73E-11	3.73E-11
ge 72	2.58E-11	2.62E-11	2.66E-11	2.69E-11	2.73E-11	2.73E-11
kr 80	1.91E-11	1.99E-11	2.07E-11	2.16E-11	2.25E-11	2.25E-11
ce144	6.32E-12	1.42E-10	1.42E-10	1.42E-10	1.42E-10	5.05E-12
er167	3.58E-12	3.70E-12	3.82E-12	3.95E-12	4.07E-12	4.07E-12

y 90	3.45E-12	3.77E-12	3.77E-12	3.77E-12	3.77E-12	3.43E-12
te123	2.48E-12	2.58E-12	2.68E-12	2.78E-12	2.88E-12	2.88E-12
sb125	1.77E-12	4.30E-12	4.30E-12	4.31E-12	4.31E-12	1.67E-12
cd108	1.18E-12	1.24E-12	1.30E-12	1.36E-12	1.42E-12	1.42E-12
ru106	8.89E-13	9.67E-12	9.69E-12	9.70E-12	9.71E-12	7.52E-13
be 9	7.62E-14	7.72E-14	7.83E-14	7.93E-14	8.03E-14	8.03E-14
sn114	4.16E-14	4.28E-14	4.39E-14	4.51E-14	4.63E-14	4.63E-14
li 7	3.11E-14	3.15E-14	3.20E-14	3.24E-14	3.28E-14	3.28E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 136

0 fraction of total absorption rate

power= .00mw, burnup= 17874.mwd, flux= 6.01E+07n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

sb126	1.37E-14	1.54E-14	1.55E-14	1.57E-14	1.59E-14	1.43E-14
te127m	6.64E-16	2.18E-12	2.18E-12	2.18E-12	2.18E-12	3.70E-16
nb 95	7.73E-17	3.62E-11	3.62E-11	3.62E-11	3.62E-11	2.84E-17
zr 95	3.78E-17	3.90E-11	3.90E-11	3.90E-11	3.90E-11	1.39E-17
y 91	8.83E-18	3.33E-11	3.33E-11	3.33E-11	3.33E-11	2.96E-18
cd109	1.93E-18	1.36E-17	1.42E-17	1.48E-17	1.54E-17	1.97E-18
sn123	2.69E-18	2.57E-15	2.57E-15	2.57E-15	2.57E-15	1.64E-18
tb160	2.05E-19	4.36E-14	4.42E-14	4.49E-14	4.56E-14	9.58E-20
sr 89	1.78E-19	7.09E-12	7.09E-12	7.09E-12	7.09E-12	5.47E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 137

power= 9.790E-04mw, burnup=1.7874E+04mwd, flux= 6.01E+07n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
h 1	1.01E-03	1.02E-03	1.04E-03	1.05E-03	1.06E-03	1.06E-03
h 2	3.01E-06	3.05E-06	3.09E-06	3.13E-06	3.17E-06	3.17E-06
h 3	1.11E-11	1.36E-11	1.37E-11	1.37E-11	1.38E-11	1.11E-11
h 4	.00E+00	1.35E-35	1.35E-35	1.36E-35	1.36E-35	.00E+00
he 3	1.50E-08	1.51E-08	1.52E-08	1.53E-08	1.55E-08	1.55E-08
he 4	1.67E-04	1.70E-04	1.72E-04	1.74E-04	1.76E-04	1.76E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	2.01E-05	2.04E-05	2.06E-05	2.09E-05	2.12E-05	2.12E-05
ne 21	6.28E-09	6.44E-09	6.60E-09	6.77E-09	6.93E-09	6.93E-09
ne 22	1.32E-07	1.34E-07	1.36E-07	1.38E-07	1.39E-07	1.39E-07
ne 23	1.77E-30	1.77E-15	1.77E-15	1.77E-15	1.77E-15	1.77E-30
na 22	4.13E-12	1.05E-11	1.05E-11	1.05E-11	1.05E-11	3.87E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	6.41E-24	6.41E-09	6.41E-09	6.41E-09	6.42E-09	6.42E-24
na 24m	1.05E-30	1.05E-15	1.05E-15	1.05E-15	1.05E-15	1.05E-30
na 25	4.54E-39	4.65E-24	4.77E-24	4.89E-24	5.01E-24	5.01E-39
mg 24	1.32E-01	1.33E-01	1.35E-01	1.37E-01	1.38E-01	1.38E-01
mg 25	6.53E-07	6.69E-07	6.86E-07	7.03E-07	7.20E-07	7.20E-07
mg 26	3.01E-06	3.05E-06	3.09E-06	3.13E-06	3.17E-06	3.17E-06
mg 27	5.28E-28	5.28E-13	5.28E-13	5.28E-13	5.28E-13	5.29E-28
mg 28	.00E+00	2.62E-25	2.62E-25	2.62E-25	2.62E-25	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	4.75E-26	4.75E-11	4.75E-11	4.75E-11	4.76E-11	4.76E-26
al 29	3.66E-37	3.75E-22	3.85E-22	3.95E-22	4.05E-22	4.05E-37
al 30	.00E+00	8.31E-32	8.63E-32	8.97E-32	9.31E-32	.00E+00
si 28	3.84E-01	3.88E-01	3.93E-01	3.98E-01	4.03E-01	4.03E-01
si 29	5.88E-06	6.03E-06	6.19E-06	6.34E-06	6.50E-06	6.50E-06
si 30	9.62E-11	9.99E-11	1.04E-10	1.08E-10	1.12E-10	1.12E-10
si 31	1.68E-38	1.74E-23	1.81E-23	1.88E-23	1.95E-23	1.96E-38
si 32	6.99E-30	7.37E-30	7.67E-30	7.97E-30	8.28E-30	8.16E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		6.01E+07	6.01E+07	6.01E+07	6.01E+07	6.02E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 138
power= 9.790E-04mw, burnup=1.7874E+04mwd, flux= 6.01E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	2.62E+01	2.69E+01	2.76E+01	2.82E+01	2.89E+01	2.89E+01
pb206	1.20E-01	1.24E-01	1.29E-01	1.33E-01	1.38E-01	1.38E-01
pb207	8.14E-03	8.41E-03	8.68E-03	8.96E-03	9.24E-03	9.24E-03
pb208	3.94E-04	4.04E-04	4.14E-04	4.25E-04	4.36E-04	4.36E-04
pb209	6.87E-10	7.03E-10	7.18E-10	7.34E-10	7.50E-10	7.50E-10
pb210	2.26E-04	2.30E-04	2.34E-04	2.38E-04	2.42E-04	2.42E-04
pb211	4.24E-11	4.29E-11	4.34E-11	4.40E-11	4.45E-11	4.46E-11
pb212	2.82E-11	2.90E-11	2.94E-11	2.98E-11	3.01E-11	2.97E-11
pb214	5.17E-10	5.26E-10	5.35E-10	5.43E-10	5.52E-10	5.52E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.85E-02	1.94E-02	2.02E-02	2.10E-02	2.19E-02	2.19E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.39E-07	1.42E-07	1.44E-07	1.46E-07	1.49E-07	1.49E-07
bi211	2.51E-12	2.54E-12	2.58E-12	2.61E-12	2.64E-12	2.65E-12
bi212	2.68E-12	2.75E-12	2.79E-12	2.82E-12	2.86E-12	2.81E-12
bi213	1.60E-10	1.64E-10	1.68E-10	1.71E-10	1.75E-10	1.75E-10
bi214	3.84E-10	3.90E-10	3.97E-10	4.03E-10	4.10E-10	4.10E-10
po210	3.82E-06	3.91E-06	3.98E-06	4.04E-06	4.11E-06	4.09E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.78E-17	2.81E-17	2.85E-17	2.88E-17	2.92E-17	2.92E-17
po212	1.41E-22	1.44E-22	1.46E-22	1.48E-22	1.50E-22	1.48E-22
po213	2.41E-19	2.47E-19	2.52E-19	2.58E-19	2.63E-19	2.63E-19
po214	5.28E-17	5.37E-17	5.46E-17	5.55E-17	5.64E-17	5.64E-17
po215	3.49E-17	3.52E-17	3.57E-17	3.62E-17	3.66E-17	3.67E-17
po216	1.07E-16	1.10E-16	1.11E-16	1.13E-16	1.14E-16	1.12E-16
po218	5.98E-11	6.08E-11	6.18E-11	6.29E-11	6.39E-11	6.39E-11
rn218	9.81E-44	1.02E-28	1.04E-28	1.05E-28	1.06E-28	1.02E-43
rn219	7.75E-14	7.84E-14	7.94E-14	8.04E-14	8.14E-14	8.16E-14
rn220	4.09E-14	4.21E-14	4.26E-14	4.32E-14	4.37E-14	4.31E-14
rn222	1.06E-07	1.08E-07	1.10E-07	1.12E-07	1.13E-07	1.13E-07
ra222	1.06E-40	1.11E-25	1.13E-25	1.14E-25	1.16E-25	1.11E-40
ra223	1.93E-08	1.96E-08	1.98E-08	2.01E-08	2.03E-08	2.04E-08
ra224	2.33E-10	2.39E-10	2.42E-10	2.46E-10	2.49E-10	2.45E-10
ra225	7.51E-08	7.68E-08	7.85E-08	8.02E-08	8.19E-08	8.19E-08
ra226	1.62E-02	1.65E-02	1.68E-02	1.71E-02	1.73E-02	1.73E-02
ra228	7.68E-11	7.83E-11	7.97E-11	8.11E-11	8.25E-11	8.25E-11
ac225	5.07E-08	5.19E-08	5.30E-08	5.42E-08	5.53E-08	5.53E-08
ac227	1.34E-05	1.36E-05	1.38E-05	1.40E-05	1.41E-05	1.41E-05
ac228	9.38E-15	9.55E-15	9.73E-15	9.90E-15	1.01E-14	1.01E-14
th226	5.17E-39	5.41E-24	5.49E-24	5.56E-24	5.64E-24	5.44E-39
th227	3.12E-08	3.16E-08	3.20E-08	3.24E-08	3.28E-08	3.29E-08
th228	4.44E-08	4.57E-08	4.63E-08	4.69E-08	4.75E-08	4.67E-08
th229	1.46E-02	1.49E-02	1.53E-02	1.56E-02	1.59E-02	1.59E-02
th230	8.14E-01	8.26E-01	8.39E-01	8.52E-01	8.65E-01	8.65E-01
th231	2.76E-09	3.67E-09	3.68E-09	3.69E-09	3.71E-09	2.75E-09
th232	1.88E-01	1.91E-01	1.95E-01	1.98E-01	2.02E-01	2.02E-01
th233	4.18E-28	4.26E-13	4.34E-13	4.42E-13	4.50E-13	4.50E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	2.02E-02	2.05E-02	2.07E-02	2.10E-02	2.12E-02	2.12E-02
pa232	8.43E-26	8.54E-11	8.66E-11	8.77E-11	8.88E-11	8.89E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 139
power= 9.790E-04mw, burnup=1.7874E+04mwd, flux= 6.01E+07n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge *******	d *******	d *******	d *******	d *******	d
pa233	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.42E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	5.01E-36	5.25E-21	5.32E-21	5.39E-21	5.47E-21	5.27E-36
u231	7.68E-32	7.80E-17	7.92E-17	8.05E-17	8.17E-17	8.17E-32
u232	1.59E-06	1.67E-06	1.69E-06	1.71E-06	1.73E-06	1.67E-06
u233	4.17E-01	4.24E-01	4.31E-01	4.37E-01	4.44E-01	4.44E-01
u234	1.01E+01	1.01E+01	1.01E+01	1.01E+01	1.01E+01	1.01E+01
u235	6.67E+02	6.67E+02	6.66E+02	6.66E+02	6.65E+02	6.65E+02
u236	1.88E+02	1.88E+02	1.88E+02	1.88E+02	1.88E+02	1.88E+02
u237	1.31E-12	7.99E-07	8.00E-07	8.01E-07	8.03E-07	1.30E-12
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	7.48E-23	7.47E-08	7.48E-08	7.48E-08	7.48E-08	7.49E-23
u240	1.75E-35	1.93E-35	2.13E-35	2.34E-35	2.56E-35	2.56E-35
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	2.21E-13	2.07E-12	2.07E-12	2.07E-12	2.07E-12	1.88E-13
np236m	4.92E-28	4.92E-13	4.92E-13	4.92E-13	4.92E-13	4.92E-28
np236	2.00E-06	2.02E-06	2.04E-06	2.07E-06	2.09E-06	2.09E-06
np237	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01
np238	3.08E-14	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.09E-14
np239	1.51E-13	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.63E-13
np240m	1.50E-37	1.65E-37	1.82E-37	1.99E-37	2.18E-37	2.18E-37
np240	9.01E-39	5.33E-16	5.34E-16	5.34E-16	5.35E-16	1.03E-38
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.20E-10	2.71E-10	2.71E-10	2.72E-10	2.72E-10	1.14E-10
pu237	2.29E-22	7.64E-14	7.66E-14	7.68E-14	7.70E-14	5.59E-23
pu238	5.35E-03	5.50E-03	5.50E-03	5.50E-03	5.50E-03	5.34E-03
pu239	2.98E+01	2.99E+01	3.00E+01	3.01E+01	3.01E+01	3.01E+01
pu240	5.10E-01	5.11E-01	5.11E-01	5.11E-01	5.11E-01	5.11E-01
pu241	4.25E-05	5.03E-05	5.04E-05	5.04E-05	5.05E-05	4.21E-05
pu242	3.32E-05	3.38E-05	3.43E-05	3.49E-05	3.55E-05	3.55E-05
pu243	1.80E-29	1.73E-14	1.76E-14	1.79E-14	1.82E-14	1.94E-29
pu244	8.74E-25	9.64E-25	1.06E-24	1.16E-24	1.27E-24	1.27E-24
pu245	.00E+00	9.60E-36	1.06E-35	1.16E-35	1.27E-35	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.01E-34	1.00E-19	1.01E-19	1.01E-19	1.01E-19	1.01E-34
am240	4.60E-32	4.59E-17	4.60E-17	4.61E-17	4.62E-17	4.62E-32
am241	1.49E-03	1.49E-03	1.49E-03	1.49E-03	1.50E-03	1.49E-03
am242m	1.67E-07	1.69E-07	1.69E-07	1.70E-07	1.70E-07	1.67E-07
am242	2.15E-12	1.35E-11	1.35E-11	1.36E-11	1.36E-11	2.15E-12
am243	1.73E-07	1.76E-07	1.80E-07	1.83E-07	1.87E-07	1.87E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	3.17E-31	3.23E-16	3.30E-16	3.36E-16	3.43E-16	3.43E-31
am245	9.85E-40	1.89E-36	2.08E-36	2.29E-36	2.50E-36	1.06E-39
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	3.55E-34	1.93E-22	1.94E-22	1.94E-22	1.95E-22	5.06E-35
cm242	4.45E-10	2.73E-09	2.74E-09	2.74E-09	2.74E-09	4.43E-10
cm243	1.40E-14	1.52E-14	1.52E-14	1.52E-14	1.53E-14	1.39E-14
cm244	4.36E-12	5.08E-12	5.18E-12	5.28E-12	5.39E-12	4.67E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 140
power= 9.790E-04mw, burnup=1.7874E+04mwd, flux= 6.01E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge *******	d *******	d *******	d *******	d *******	d
cm245	1.09E-14	1.11E-14	1.13E-14	1.15E-14	1.17E-14	1.17E-14
cm246	8.62E-17	8.79E-17	8.97E-17	9.14E-17	9.32E-17	9.32E-17

```
     cm247   2.89E-20  3.03E-20  3.17E-20  3.32E-20  3.47E-20  3.47E-20
     cm248   7.41E-23  7.97E-23  8.55E-23  9.16E-23  9.79E-23  9.79E-23
     cm249    .00E+00  6.07E-34  6.52E-34  6.99E-34  7.48E-34   .00E+00
     cm250   3.29E-38  3.57E-38  3.88E-38  4.20E-38  4.55E-38  4.55E-38
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              6.01E+07  6.01E+07  6.01E+07  6.01E+07  6.02E-08
0        1q array has     20 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        4q array has      1 entries.
0       54q array has     12 entries.
1library information...

          cross-section data taken from position number 16 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *      data from the light element, actinide, and fission product libraries    *
          *        decay data, including gamma and total energy, are from endf/b-vi      *
          *                                                                              *
          *      neutron flux spectrum factors and cross sections were produced from     *
          *     the "presas2" case updating all nuclides on the scale "burnup" library   *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *        see information above this box (if present) for later updates         *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                 8/29/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
                        879    number of fission product nuclides
0                      7993    number of nonzero off-diagonal matrix elements
```

0 **

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 page 141

power= .00mw, burnup= 18768.mwd, flux= 6.02E+07n/cm**2-sec

0 basis =

0 (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)

0	initial	******* d	******* d	******* d	******* d	******* d
productions	1.263346E+06	1.262756E+06	1.262165E+06	1.261571E+06	1.260976E+06	1.260969E+06
absorptions	1.026080E+06	1.025880E+06	1.025679E+06	1.025476E+06	1.025272E+06	1.025267E+06
k infinity	1.231235E+00	1.230900E+00	1.230565E+00	1.230230E+00	1.229894E+00	1.229893E+00

0	initial	******* d	******* d	******* d	******* d	******* d
actinide absorptions	1.009239E+06	1.008957E+06	1.008673E+06	1.008389E+06	1.008104E+06	1.008100E+06
non-actinide abs. fracs.	1.641309E-02	1.649696E-02	1.657957E-02	1.666236E-02	1.674503E-02	1.674443E-02

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 142

0 fraction of total absorption rate

power= .00mw, burnup= 18768.mwd, flux= 6.02E+07n/cm**2-sec

0	initial ******* d	******* d	******* d	******* d	******* d
sm149	5.44E-03	5.44E-03	5.44E-03	5.44E-03	5.44E-03	5.44E-03
nd143	1.73E-03	1.75E-03	1.77E-03	1.79E-03	1.81E-03	1.81E-03
eu151	1.68E-03	1.69E-03	1.70E-03	1.71E-03	1.72E-03	1.72E-03
rh103	8.40E-04	8.50E-04	8.61E-04	8.72E-04	8.82E-04	8.82E-04
xe131	5.62E-04	5.69E-04	5.76E-04	5.83E-04	5.90E-04	5.90E-04
cs133	4.37E-04	4.42E-04	4.48E-04	4.53E-04	4.59E-04	4.59E-04
sm147	3.20E-04	3.24E-04	3.28E-04	3.32E-04	3.36E-04	3.36E-04
tc 99	3.00E-04	3.04E-04	3.07E-04	3.11E-04	3.14E-04	3.14E-04
nd145	2.46E-04	2.49E-04	2.52E-04	2.55E-04	2.59E-04	2.59E-04
gd155	2.23E-04	2.23E-04	2.23E-04	2.23E-04	2.23E-04	2.24E-04
sm152	1.86E-04	1.89E-04	1.92E-04	1.94E-04	1.97E-04	1.97E-04
mo 95	1.71E-04	1.73E-04	1.75E-04	1.77E-04	1.79E-04	1.79E-04
sm150	1.28E-04	1.29E-04	1.31E-04	1.33E-04	1.35E-04	1.35E-04
kr 83	1.05E-04	1.07E-04	1.08E-04	1.09E-04	1.10E-04	1.10E-04
cs135	9.89E-05	1.00E-04	1.01E-04	1.03E-04	1.04E-04	1.04E-04
cd113	1.02E-04	1.02E-04	1.02E-04	1.02E-04	1.03E-04	1.03E-04
eu153	7.71E-05	7.82E-05	7.93E-05	8.04E-05	8.15E-05	8.15E-05
ru101	7.69E-05	7.79E-05	7.89E-05	7.99E-05	8.08E-05	8.08E-05
pr141	7.36E-05	7.45E-05	7.55E-05	7.64E-05	7.73E-05	7.73E-05
la139	6.02E-05	6.10E-05	6.17E-05	6.25E-05	6.32E-05	6.32E-05
gd157	6.03E-05	6.04E-05	6.04E-05	6.05E-05	6.06E-05	6.06E-05
pd105	3.04E-05	3.08E-05	3.12E-05	3.17E-05	3.21E-05	3.21E-05
ag109	2.91E-05	2.96E-05	3.01E-05	3.06E-05	3.11E-05	3.11E-05
ba137	2.91E-05	2.94E-05	2.98E-05	3.02E-05	3.06E-05	3.06E-05
zr 93	2.37E-05	2.40E-05	2.43E-05	2.46E-05	2.49E-05	2.49E-05
i129	1.96E-05	1.99E-05	2.01E-05	2.04E-05	2.07E-05	2.07E-05
nd144	1.85E-05	1.88E-05	1.90E-05	1.92E-05	1.95E-05	1.95E-05
gd152	1.36E-05	1.39E-05	1.42E-05	1.45E-05	1.48E-05	1.48E-05
mo 97	1.37E-05	1.38E-05	1.40E-05	1.42E-05	1.44E-05	1.44E-05
sm151	1.26E-05	1.30E-05	1.30E-05	1.30E-05	1.30E-05	1.26E-05
pd108	7.09E-06	7.20E-06	7.32E-06	7.44E-06	7.55E-06	7.55E-06
zr 91	6.29E-06	6.37E-06	6.45E-06	6.53E-06	6.61E-06	6.61E-06
y 89	6.02E-06	6.09E-06	6.17E-06	6.24E-06	6.32E-06	6.32E-06
ru102	5.71E-06	5.78E-06	5.86E-06	5.93E-06	6.00E-06	6.00E-06
ce142	5.01E-06	5.08E-06	5.14E-06	5.20E-06	5.27E-06	5.27E-06
nd148	4.83E-06	4.89E-06	4.95E-06	5.02E-06	5.08E-06	5.08E-06
nd146	4.07E-06	4.12E-06	4.17E-06	4.22E-06	4.27E-06	4.27E-06
pd107	3.59E-06	3.64E-06	3.70E-06	3.76E-06	3.81E-06	3.81E-06
in115	3.57E-06	3.62E-06	3.66E-06	3.71E-06	3.76E-06	3.76E-06
ba138	3.46E-06	3.51E-06	3.55E-06	3.60E-06	3.64E-06	3.64E-06
ru 99	3.24E-06	3.33E-06	3.43E-06	3.53E-06	3.64E-06	3.64E-06

ce140	3.24E-06	3.28E-06	3.33E-06	3.37E-06	3.41E-06	3.41E-06
xe132	2.98E-06	3.01E-06	3.05E-06	3.09E-06	3.13E-06	3.13E-06
mo 98	2.00E-06	2.02E-06	2.05E-06	2.08E-06	2.10E-06	2.10E-06
mo100	1.95E-06	1.97E-06	2.00E-06	2.02E-06	2.05E-06	2.05E-06
xe134	1.92E-06	1.94E-06	1.97E-06	1.99E-06	2.02E-06	2.02E-06
zr 92	1.52E-06	1.54E-06	1.56E-06	1.58E-06	1.60E-06	1.60E-06
i127	1.43E-06	1.45E-06	1.47E-06	1.49E-06	1.51E-06	1.51E-06
ru104	1.31E-06	1.33E-06	1.35E-06	1.36E-06	1.38E-06	1.38E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 143
0 fraction of total absorption rate
power= .00mw, burnup= 18768.mwd, flux= 6.02E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	1.20E-06	1.22E-06	1.23E-06	1.25E-06	1.26E-06	1.26E-06
nd150	1.09E-06	1.11E-06	1.12E-06	1.14E-06	1.15E-06	1.15E-06
xe136	1.04E-06	1.05E-06	1.07E-06	1.08E-06	1.09E-06	1.09E-06
cd111	8.12E-07	8.24E-07	8.37E-07	8.49E-07	8.61E-07	8.61E-07
br 81	7.71E-07	7.81E-07	7.91E-07	8.01E-07	8.10E-07	8.10E-07
rb 85	7.39E-07	7.49E-07	7.58E-07	7.67E-07	7.76E-07	7.76E-07
zr 94	6.46E-07	6.54E-07	6.62E-07	6.70E-07	6.79E-07	6.79E-07
gd154	6.06E-07	6.22E-07	6.38E-07	6.55E-07	6.71E-07	6.71E-07
zr 90	5.93E-07	6.01E-07	6.08E-07	6.16E-07	6.23E-07	6.23E-07
sm154	5.11E-07	5.18E-07	5.25E-07	5.31E-07	5.38E-07	5.38E-07
te130	4.79E-07	4.85E-07	4.91E-07	4.98E-07	5.04E-07	5.04E-07
rb 87	4.26E-07	4.31E-07	4.36E-07	4.42E-07	4.47E-07	4.47E-07
ba135	3.24E-07	3.34E-07	3.44E-07	3.55E-07	3.65E-07	3.65E-07
pd106	3.08E-07	3.13E-07	3.17E-07	3.22E-07	3.26E-07	3.26E-07
se 77	3.10E-07	3.14E-07	3.18E-07	3.22E-07	3.26E-07	3.26E-07
gd156	2.91E-07	2.95E-07	3.00E-07	3.04E-07	3.09E-07	3.09E-07
kr 84	2.03E-07	2.05E-07	2.08E-07	2.11E-07	2.13E-07	2.13E-07
dy161	1.76E-07	1.79E-07	1.81E-07	1.84E-07	1.87E-07	1.87E-07
ru100	1.69E-07	1.73E-07	1.78E-07	1.82E-07	1.86E-07	1.86E-07
sb121	1.64E-07	1.66E-07	1.68E-07	1.71E-07	1.73E-07	1.73E-07
se 79	1.54E-07	1.56E-07	1.58E-07	1.60E-07	1.62E-07	1.62E-07
sb123	1.33E-07	1.34E-07	1.36E-07	1.38E-07	1.40E-07	1.40E-07
nd142	1.23E-07	1.26E-07	1.29E-07	1.32E-07	1.35E-07	1.35E-07
ba134	1.18E-07	1.21E-07	1.24E-07	1.27E-07	1.30E-07	1.30E-07
sm148	1.07E-07	1.10E-07	1.13E-07	1.15E-07	1.18E-07	1.18E-07
kr 86	1.13E-07	1.14E-07	1.15E-07	1.17E-07	1.18E-07	1.18E-07
te128	1.08E-07	1.10E-07	1.11E-07	1.13E-07	1.14E-07	1.14E-07
eu152	8.82E-08	1.08E-07	1.09E-07	1.10E-07	1.10E-07	8.96E-08
pd104	8.07E-08	8.28E-08	8.49E-08	8.70E-08	8.92E-08	8.92E-08
tb159	7.68E-08	7.80E-08	7.92E-08	8.04E-08	8.16E-08	8.16E-08
se 80	7.43E-08	7.53E-08	7.62E-08	7.71E-08	7.81E-08	7.81E-08
te125	7.33E-08	7.42E-08	7.52E-08	7.62E-08	7.72E-08	7.72E-08
gd158	6.10E-08	6.19E-08	6.28E-08	6.38E-08	6.47E-08	6.47E-08
cd112	5.58E-08	5.65E-08	5.74E-08	5.82E-08	5.90E-08	5.90E-08
nb 93	5.17E-08	5.33E-08	5.49E-08	5.65E-08	5.82E-08	5.82E-08
dy164	3.95E-08	4.02E-08	4.08E-08	4.15E-08	4.21E-08	4.21E-08
sn117	3.96E-08	4.02E-08	4.07E-08	4.13E-08	4.18E-08	4.18E-08
dy162	3.89E-08	3.96E-08	4.04E-08	4.11E-08	4.18E-08	4.18E-08
li 6	3.91E-08	3.96E-08	4.01E-08	4.05E-08	4.10E-08	4.10E-08
cd114	3.35E-08	3.40E-08	3.45E-08	3.49E-08	3.54E-08	3.54E-08
sn119	3.04E-08	3.08E-08	3.12E-08	3.16E-08	3.20E-08	3.20E-08
cd110	2.67E-08	2.75E-08	2.84E-08	2.92E-08	3.01E-08	3.01E-08
mo 96	2.71E-08	2.77E-08	2.84E-08	2.91E-08	2.98E-08	2.98E-08
sn115	2.78E-08	2.81E-08	2.85E-08	2.89E-08	2.93E-08	2.93E-08
br 79	2.58E-08	2.66E-08	2.74E-08	2.83E-08	2.91E-08	2.91E-08
pd110	2.70E-08	2.75E-08	2.79E-08	2.83E-08	2.87E-08	2.87E-08
ag107	2.34E-08	2.42E-08	2.50E-08	2.58E-08	2.67E-08	2.67E-08

	eu155	2.60E-08	4.54E-08	4.54E-08	4.54E-08	4.55E-08	2.51E-08
	pm147	2.45E-08	6.54E-08	6.54E-08	6.54E-08	6.55E-08	2.30E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 144
0 fraction of total absorption rate
power= .00mw, burnup= 18768.mwd, flux= 6.02E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sr 88	2.07E-08	2.09E-08	2.12E-08	2.14E-08	2.17E-08	2.17E-08
xe129	1.55E-08	1.60E-08	1.65E-08	1.70E-08	1.75E-08	1.75E-08
se 82	1.42E-08	1.44E-08	1.45E-08	1.47E-08	1.49E-08	1.49E-08
xe130	1.35E-08	1.38E-08	1.41E-08	1.44E-08	1.48E-08	1.48E-08
ba136	1.23E-08	1.25E-08	1.28E-08	1.30E-08	1.33E-08	1.33E-08
sn126	1.25E-08	1.26E-08	1.27E-08	1.29E-08	1.30E-08	1.30E-08
se 78	1.11E-08	1.12E-08	1.14E-08	1.15E-08	1.17E-08	1.17E-08
dy163	9.76E-09	9.94E-09	1.01E-08	1.03E-08	1.05E-08	1.05E-08
sn124	9.68E-09	9.81E-09	9.94E-09	1.01E-08	1.02E-08	1.02E-08
kr 82	9.30E-09	9.48E-09	9.66E-09	9.84E-09	1.00E-08	1.00E-08
te126	8.81E-09	9.07E-09	9.34E-09	9.61E-09	9.88E-09	9.88E-09
as 75	6.53E-09	6.62E-09	6.70E-09	6.78E-09	6.87E-09	6.87E-09
eu154	5.99E-09	8.22E-09	8.34E-09	8.46E-09	8.58E-09	6.21E-09
in113	5.53E-09	5.60E-09	5.68E-09	5.75E-09	5.83E-09	5.83E-09
sn118	3.91E-09	3.96E-09	4.01E-09	4.07E-09	4.12E-09	4.12E-09
sr 90	3.61E-09	3.96E-09	3.96E-09	3.96E-09	3.96E-09	3.59E-09
sn122	3.35E-09	3.39E-09	3.43E-09	3.48E-09	3.52E-09	3.52E-09
cd116	3.29E-09	3.33E-09	3.37E-09	3.42E-09	3.46E-09	3.46E-09
sn120	2.47E-09	2.50E-09	2.53E-09	2.57E-09	2.60E-09	2.60E-09
ge 73	1.86E-09	1.89E-09	1.91E-09	1.94E-09	1.96E-09	1.96E-09
ho165	8.97E-10	9.16E-10	9.36E-10	9.55E-10	9.75E-10	9.75E-10
gd160	8.49E-10	8.63E-10	8.76E-10	8.90E-10	9.04E-10	9.04E-10
dy160	7.69E-10	7.91E-10	8.13E-10	8.35E-10	8.57E-10	8.57E-10
cs137	8.37E-10	9.13E-10	9.13E-10	9.13E-10	9.14E-10	8.33E-10
ge 76	6.37E-10	6.45E-10	6.53E-10	6.61E-10	6.69E-10	6.69E-10
xe128	4.65E-10	4.77E-10	4.89E-10	5.02E-10	5.14E-10	5.14E-10
sr 86	2.27E-10	2.33E-10	2.38E-10	2.44E-10	2.50E-10	2.50E-10
cs134	2.24E-10	8.01E-10	8.12E-10	8.22E-10	8.32E-10	2.17E-10
sn116	1.78E-10	1.82E-10	1.87E-10	1.92E-10	1.97E-10	1.97E-10
te124	1.78E-10	1.82E-10	1.85E-10	1.89E-10	1.92E-10	1.92E-10
kr 85	1.05E-10	1.33E-10	1.33E-10	1.33E-10	1.33E-10	1.03E-10
sr 87	9.19E-11	9.33E-11	9.48E-11	9.62E-11	9.77E-11	9.77E-11
nb 94	8.40E-11	8.63E-11	8.86E-11	9.10E-11	9.35E-11	9.35E-11
te122	7.44E-11	7.63E-11	7.83E-11	8.03E-11	8.23E-11	8.23E-11
se 76	6.52E-11	6.66E-11	6.81E-11	6.96E-11	7.11E-11	7.11E-11
er166	4.48E-11	4.57E-11	4.66E-11	4.75E-11	4.83E-11	4.83E-11
ge 74	3.73E-11	3.77E-11	3.82E-11	3.87E-11	3.92E-11	3.92E-11
ge 72	2.73E-11	2.77E-11	2.80E-11	2.84E-11	2.88E-11	2.88E-11
kr 80	2.25E-11	2.34E-11	2.44E-11	2.53E-11	2.63E-11	2.63E-11
er167	4.07E-12	4.20E-12	4.34E-12	4.47E-12	4.61E-12	4.61E-12
ce144	5.05E-12	1.42E-10	1.42E-10	1.42E-10	1.42E-10	4.05E-12
y 90	3.43E-12	3.77E-12	3.77E-12	3.77E-12	3.77E-12	3.41E-12
te123	2.88E-12	2.98E-12	3.09E-12	3.20E-12	3.32E-12	3.32E-12
cd108	1.43E-12	1.49E-12	1.56E-12	1.63E-12	1.71E-12	1.71E-12
sb125	1.67E-12	4.31E-12	4.31E-12	4.32E-12	4.32E-12	1.57E-12
ru106	7.52E-13	9.72E-12	9.73E-12	9.75E-12	9.76E-12	6.38E-13
be 9	8.02E-14	8.13E-14	8.23E-14	8.33E-14	8.43E-14	8.43E-14
sn114	4.63E-14	4.76E-14	4.88E-14	5.01E-14	5.13E-14	5.13E-14
li 7	3.28E-14	3.32E-14	3.36E-14	3.40E-14	3.45E-14	3.45E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 145
0 fraction of total absorption rate
power= .00mw, burnup= 18768.mwd, flux= 6.02E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sb126	1.43E-14	1.60E-14	1.62E-14	1.64E-14	1.65E-14	1.50E-14
te127m	3.70E-16	2.19E-12	2.19E-12	2.19E-12	2.19E-12	2.08E-16
nb 95	2.84E-17	3.62E-11	3.62E-11	3.62E-11	3.62E-11	1.06E-17
zr 95	1.39E-17	3.90E-11	3.90E-11	3.90E-11	3.90E-11	5.18E-18
cd109	1.97E-18	1.60E-17	1.67E-17	1.74E-17	1.81E-17	2.02E-18
sn123	1.64E-18	2.57E-15	2.57E-15	2.57E-15	2.57E-15	1.01E-18
y 91	2.95E-18	3.33E-11	3.33E-11	3.33E-11	3.33E-11	9.98E-19
tb160	9.56E-20	4.63E-14	4.70E-14	4.78E-14	4.85E-14	4.10E-20
sr 89	5.46E-20	7.10E-12	7.10E-12	7.10E-12	7.10E-12	1.37E-20

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 146
power= 9.790E-04mw, burnup=1.8768E+04mwd, flux= 6.02E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
h 1	1.06E-03	1.08E-03	1.09E-03	1.10E-03	1.12E-03	1.12E-03
h 2	3.17E-06	3.21E-06	3.25E-06	3.29E-06	3.33E-06	3.33E-06
h 3	1.11E-11	1.38E-11	1.38E-11	1.39E-11	1.39E-11	1.11E-11
h 4	.00E+00	1.37E-35	1.37E-35	1.38E-35	1.38E-35	.00E+00
he 3	1.55E-08	1.56E-08	1.57E-08	1.58E-08	1.59E-08	1.59E-08
he 4	1.76E-04	1.78E-04	1.81E-04	1.83E-04	1.85E-04	1.85E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	2.12E-05	2.14E-05	2.17E-05	2.20E-05	2.22E-05	2.22E-05
ne 21	6.93E-09	7.10E-09	7.27E-09	7.45E-09	7.62E-09	7.62E-09
ne 22	1.39E-07	1.41E-07	1.43E-07	1.45E-07	1.46E-07	1.46E-07
ne 23	1.77E-30	1.77E-15	1.77E-15	1.77E-15	1.77E-15	1.77E-30
na 22	3.87E-12	1.05E-11	1.05E-11	1.05E-11	1.05E-11	3.62E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	6.42E-24	6.41E-09	6.42E-09	6.42E-09	6.42E-09	6.42E-24
na 24m	1.05E-30	1.05E-15	1.05E-15	1.05E-15	1.06E-15	1.06E-30
na 25	5.01E-39	5.13E-24	5.25E-24	5.38E-24	5.51E-24	5.51E-39
mg 24	1.38E-01	1.40E-01	1.42E-01	1.43E-01	1.45E-01	1.45E-01
mg 25	7.20E-07	7.37E-07	7.55E-07	7.73E-07	7.91E-07	7.91E-07
mg 26	3.17E-06	3.21E-06	3.25E-06	3.29E-06	3.33E-06	3.33E-06
mg 27	5.29E-28	5.28E-13	5.29E-13	5.29E-13	5.29E-13	5.29E-28
mg 28	.00E+00	2.63E-25	2.63E-25	2.63E-25	2.63E-25	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	4.76E-26	4.75E-11	4.76E-11	4.76E-11	4.76E-11	4.76E-26
al 29	4.05E-37	4.15E-22	4.25E-22	4.35E-22	4.46E-22	4.46E-37
al 30	.00E+00	9.65E-32	1.00E-31	1.04E-31	1.08E-31	.00E+00
si 28	4.03E-01	4.08E-01	4.13E-01	4.17E-01	4.22E-01	4.22E-01
si 29	6.50E-06	6.66E-06	6.82E-06	6.98E-06	7.15E-06	7.15E-06
si 30	1.12E-10	1.16E-10	1.20E-10	1.25E-10	1.29E-10	1.29E-10
si 31	1.96E-38	2.03E-23	2.10E-23	2.18E-23	2.26E-23	2.26E-38
si 32	8.16E-30	8.59E-30	8.93E-30	9.26E-30	9.61E-30	9.45E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		6.01E+07	6.02E+07	6.02E+07	6.02E+07	6.02E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 147
power= 9.790E-04mw, burnup=1.8768E+04mwd, flux= 6.02E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	2.89E+01	2.96E+01	3.03E+01	3.10E+01	3.16E+01	3.16E+01
pb206	1.38E-01	1.43E-01	1.48E-01	1.52E-01	1.57E-01	1.57E-01
pb207	9.24E-03	9.52E-03	9.81E-03	1.01E-02	1.04E-02	1.04E-02
pb208	4.36E-04	4.46E-04	4.57E-04	4.69E-04	4.80E-04	4.80E-04
pb209	7.50E-10	7.65E-10	7.81E-10	7.96E-10	8.12E-10	8.12E-10
pb210	2.42E-04	2.45E-04	2.49E-04	2.53E-04	2.57E-04	2.57E-04

pb211	4.46E-11	4.51E-11	4.56E-11	4.62E-11	4.67E-11	4.68E-11
pb212	2.97E-11	3.05E-11	3.09E-11	3.13E-11	3.17E-11	3.11E-11
pb214	5.52E-10	5.61E-10	5.70E-10	5.78E-10	5.87E-10	5.87E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.19E-02	2.28E-02	2.37E-02	2.46E-02	2.56E-02	2.56E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.49E-07	1.51E-07	1.53E-07	1.56E-07	1.58E-07	1.58E-07
bi211	2.65E-12	2.67E-12	2.70E-12	2.74E-12	2.77E-12	2.77E-12
bi212	2.81E-12	2.89E-12	2.93E-12	2.97E-12	3.00E-12	2.95E-12
bi213	1.75E-10	1.79E-10	1.82E-10	1.86E-10	1.90E-10	1.90E-10
bi214	4.10E-10	4.17E-10	4.23E-10	4.29E-10	4.36E-10	4.36E-10
po210	4.09E-06	4.17E-06	4.24E-06	4.30E-06	4.36E-06	4.37E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.92E-17	2.95E-17	2.99E-17	3.02E-17	3.06E-17	3.06E-17
po212	1.48E-22	1.52E-22	1.54E-22	1.56E-22	1.58E-22	1.55E-22
po213	2.63E-19	2.69E-19	2.74E-19	2.80E-19	2.85E-19	2.85E-19
po214	5.64E-17	5.73E-17	5.82E-17	5.91E-17	6.00E-17	6.00E-17
po215	3.67E-17	3.70E-17	3.75E-17	3.79E-17	3.84E-17	3.84E-17
po216	1.12E-16	1.16E-16	1.17E-16	1.18E-16	1.20E-16	1.18E-16
po218	6.39E-11	6.49E-11	6.59E-11	6.69E-11	6.79E-11	6.79E-11
rn218	1.02E-43	1.08E-28	1.09E-28	1.11E-28	1.12E-28	1.08E-43
rn219	8.16E-14	8.24E-14	8.34E-14	8.44E-14	8.54E-14	8.55E-14
rn220	4.31E-14	4.43E-14	4.49E-14	4.54E-14	4.59E-14	4.52E-14
rn222	1.13E-07	1.15E-07	1.17E-07	1.19E-07	1.21E-07	1.21E-07
ra222	1.11E-40	1.17E-25	1.19E-25	1.20E-25	1.22E-25	1.17E-40
ra223	2.04E-08	2.06E-08	2.08E-08	2.11E-08	2.13E-08	2.13E-08
ra224	2.45E-10	2.52E-10	2.55E-10	2.58E-10	2.61E-10	2.57E-10
ra225	8.19E-08	8.36E-08	8.53E-08	8.70E-08	8.87E-08	8.87E-08
ra226	1.73E-02	1.76E-02	1.79E-02	1.82E-02	1.84E-02	1.84E-02
ra228	8.25E-11	8.40E-11	8.54E-11	8.68E-11	8.82E-11	8.82E-11
ac225	5.53E-08	5.65E-08	5.76E-08	5.88E-08	5.99E-08	5.99E-08
ac227	1.41E-05	1.43E-05	1.45E-05	1.46E-05	1.48E-05	1.48E-05
ac228	1.01E-14	1.02E-14	1.04E-14	1.06E-14	1.08E-14	1.08E-14
th226	5.44E-39	5.71E-24	5.78E-24	5.86E-24	5.93E-24	5.70E-39
th227	3.29E-08	3.32E-08	3.36E-08	3.40E-08	3.44E-08	3.44E-08
th228	4.67E-08	4.81E-08	4.87E-08	4.93E-08	4.99E-08	4.90E-08
th229	1.59E-02	1.63E-02	1.66E-02	1.69E-02	1.72E-02	1.72E-02
th230	8.65E-01	8.78E-01	8.90E-01	9.03E-01	9.16E-01	9.16E-01
th231	2.75E-09	3.72E-09	3.73E-09	3.74E-09	3.75E-09	2.74E-09
th232	2.02E-01	2.05E-01	2.09E-01	2.12E-01	2.16E-01	2.16E-01
th233	4.50E-28	4.58E-13	4.66E-13	4.74E-13	4.82E-13	4.82E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	2.12E-02	2.15E-02	2.18E-02	2.20E-02	2.23E-02	2.23E-02
pa232	8.89E-26	9.00E-11	9.11E-11	9.22E-11	9.33E-11	9.33E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 148
power= 9.790E-04mw, burnup=1.8768E+04mwd, flux= 6.02E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.42E-06	1.42E-06	1.41E-06	1.41E-06	1.41E-06	1.41E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	5.27E-36	5.53E-21	5.60E-21	5.68E-21	5.75E-21	5.53E-36
u231	8.17E-32	8.29E-17	8.41E-17	8.53E-17	8.65E-17	8.66E-32
u232	1.67E-06	1.75E-06	1.78E-06	1.80E-06	1.82E-06	1.75E-06
u233	4.44E-01	4.50E-01	4.57E-01	4.63E-01	4.69E-01	4.69E-01
u234	1.01E+01	1.01E+01	1.01E+01	1.02E+01	1.02E+01	1.02E+01
u235	6.65E+02	6.65E+02	6.64E+02	6.64E+02	6.63E+02	6.63E+02

u236	1.88E+02	1.88E+02	1.89E+02	1.89E+02	1.89E+02	1.89E+02
u237	1.30E-12	8.03E-07	8.04E-07	8.05E-07	8.06E-07	1.29E-12
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	7.49E-23	7.48E-08	7.49E-08	7.49E-08	7.49E-08	7.50E-23
u240	2.56E-35	2.80E-35	3.05E-35	3.32E-35	3.61E-35	3.61E-35
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	1.88E-13	2.07E-12	2.07E-12	2.07E-12	2.07E-12	1.60E-13
np236m	4.92E-28	4.92E-13	4.92E-13	4.92E-13	4.92E-13	4.92E-28
np236	2.09E-06	2.11E-06	2.13E-06	2.15E-06	2.17E-06	2.17E-06
np237	4.10E+01	4.09E+01	4.09E+01	4.09E+01	4.09E+01	4.09E+01
np238	3.09E-14	3.63E-07	3.63E-07	3.63E-07	3.64E-07	3.10E-14
np239	1.63E-13	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.76E-13
np240m	2.18E-37	2.39E-37	2.60E-37	2.83E-37	3.08E-37	3.08E-37
np240	1.03E-38	5.35E-16	5.35E-16	5.36E-16	5.36E-16	1.19E-38
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.14E-10	2.71E-10	2.72E-10	2.72E-10	2.72E-10	1.07E-10
pu237	5.59E-23	7.71E-14	7.73E-14	7.75E-14	7.77E-14	1.40E-23
pu238	5.34E-03	5.50E-03	5.50E-03	5.50E-03	5.50E-03	5.33E-03
pu239	3.01E+01	3.02E+01	3.03E+01	3.04E+01	3.04E+01	3.04E+01
pu240	5.11E-01	5.12E-01	5.12E-01	5.13E-01	5.13E-01	5.13E-01
pu241	4.21E-05	5.05E-05	5.06E-05	5.06E-05	5.07E-05	4.18E-05
pu242	3.55E-05	3.60E-05	3.66E-05	3.71E-05	3.77E-05	3.77E-05
pu243	1.94E-29	1.84E-14	1.87E-14	1.90E-14	1.93E-14	2.08E-29
pu244	1.27E-24	1.39E-24	1.52E-24	1.65E-24	1.80E-24	1.80E-24
pu245	.00E+00	1.39E-35	1.52E-35	1.65E-35	1.80E-35	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.01E-34	1.01E-19	1.01E-19	1.01E-19	1.02E-19	1.02E-34
am240	4.62E-32	4.61E-17	4.62E-17	4.64E-17	4.65E-17	4.65E-32
am241	1.49E-03	1.49E-03	1.50E-03	1.50E-03	1.50E-03	1.50E-03
am242m	1.67E-07	1.70E-07	1.70E-07	1.71E-07	1.71E-07	1.68E-07
am242	2.15E-12	1.36E-11	1.36E-11	1.36E-11	1.37E-11	2.16E-12
am243	1.87E-07	1.90E-07	1.94E-07	1.97E-07	2.01E-07	2.01E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	3.43E-31	3.49E-16	3.56E-16	3.62E-16	3.69E-16	3.69E-31
am245	1.06E-39	2.74E-36	2.99E-36	3.25E-36	3.54E-36	1.13E-39
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	5.06E-35	1.94E-22	1.95E-22	1.96E-22	1.96E-22	7.47E-36
cm242	4.43E-10	2.74E-09	2.75E-09	2.76E-09	2.76E-09	4.43E-10
cm243	1.39E-14	1.53E-14	1.53E-14	1.54E-14	1.54E-14	1.40E-14
cm244	4.67E-12	5.48E-12	5.59E-12	5.69E-12	5.80E-12	4.97E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 149
power= 9.790E-04mw, burnup=1.8768E+04mwd, flux= 6.02E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge *******	d *******	d *******	d *******	d *******	d
cm245	1.17E-14	1.19E-14	1.22E-14	1.24E-14	1.26E-14	1.26E-14
cm246	9.32E-17	9.50E-17	9.69E-17	9.88E-17	1.01E-16	1.01E-16
cm247	3.47E-20	3.62E-20	3.77E-20	3.93E-20	4.09E-20	4.09E-20
cm248	9.79E-23	1.05E-22	1.12E-22	1.19E-22	1.26E-22	1.26E-22
cm249	.00E+00	7.98E-34	8.52E-34	9.07E-34	9.65E-34	.00E+00
cm250	4.55E-38	4.92E-38	5.31E-38	5.73E-38	6.18E-38	6.18E-38
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		6.01E+07	6.02E+07	6.02E+07	6.02E+07	6.02E-08

0 1q array has 20 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 4q array has 1 entries.

```
0       54q array has     12 entries.
1library information...

          cross-section data taken from position number 17 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *      data from the light element, actinide, and fission product libraries    *
          *        decay data, including gamma and total energy, are from endf/b-vi      *
          *                                                                              *
          *      neutron flux spectrum factors and cross sections were produced from     *
          *     the "presas2" case updating all nuclides on the scale "burnup" library   *
          *                                                                              *
          *                  fission product yields are from endf/b-v                    *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *        see information above this box (if present) for later updates         *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                  8/29/1996    date library was produced
0                       1697    total number of nuclides in library
                         689    number of light-element nuclides
                         129    number of actinide nuclides
                         879    number of fission product nuclides
0                       7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page  150
         power=    .00mw, burnup=  19662.mwd, flux= 6.03E+07n/cm**2-sec
0                                    basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                     initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.261778E+06   1.261179E+06   1.260578E+06   1.259975E+06   1.259371E+06   1.259364E+06
     absorptions   1.025688E+06   1.025483E+06   1.025275E+06   1.025067E+06   1.024858E+06   1.024853E+06
     k infinity    1.230177E+00   1.229839E+00   1.229502E+00   1.229164E+00   1.228825E+00   1.228824E+00
0                     initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   1.008513E+06   1.008226E+06   1.007939E+06   1.007650E+06   1.007360E+06   1.007356E+06
```

non-actinide
abs. fracs. 1.674420E-02 1.682734E-02 1.690948E-02 1.699156E-02 1.707327E-02 1.707256E-02

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 151
0 fraction of total absorption rate
power= .00mw, burnup= 19662.mwd, flux= 6.03E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sm149	5.44E-03	5.44E-03	5.44E-03	5.44E-03	5.44E-03	5.44E-03
nd143	1.81E-03	1.83E-03	1.85E-03	1.88E-03	1.90E-03	1.90E-03
eu151	1.72E-03	1.74E-03	1.75E-03	1.76E-03	1.77E-03	1.77E-03
rh103	8.82E-04	8.93E-04	9.04E-04	9.14E-04	9.25E-04	9.25E-04
xe131	5.90E-04	5.97E-04	6.04E-04	6.11E-04	6.18E-04	6.18E-04
cs133	4.58E-04	4.64E-04	4.70E-04	4.75E-04	4.81E-04	4.81E-04
sm147	3.36E-04	3.40E-04	3.44E-04	3.48E-04	3.52E-04	3.52E-04
tc 99	3.14E-04	3.17E-04	3.21E-04	3.24E-04	3.27E-04	3.27E-04
nd145	2.59E-04	2.62E-04	2.65E-04	2.68E-04	2.71E-04	2.71E-04
gd155	2.24E-04	2.24E-04	2.24E-04	2.24E-04	2.24E-04	2.24E-04
sm152	1.97E-04	2.00E-04	2.03E-04	2.06E-04	2.08E-04	2.08E-04
mo 95	1.79E-04	1.82E-04	1.84E-04	1.86E-04	1.88E-04	1.88E-04
sm150	1.35E-04	1.36E-04	1.38E-04	1.40E-04	1.42E-04	1.42E-04
kr 83	1.10E-04	1.12E-04	1.13E-04	1.14E-04	1.16E-04	1.16E-04
cs135	1.04E-04	1.05E-04	1.06E-04	1.08E-04	1.09E-04	1.09E-04
cd113	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04
eu153	8.14E-05	8.25E-05	8.36E-05	8.47E-05	8.58E-05	8.58E-05
ru101	8.08E-05	8.18E-05	8.28E-05	8.37E-05	8.47E-05	8.47E-05
pr141	7.73E-05	7.83E-05	7.92E-05	8.01E-05	8.11E-05	8.11E-05
la139	6.33E-05	6.40E-05	6.48E-05	6.55E-05	6.63E-05	6.63E-05
gd157	6.06E-05	6.06E-05	6.07E-05	6.07E-05	6.08E-05	6.08E-05
pd105	3.21E-05	3.25E-05	3.29E-05	3.33E-05	3.38E-05	3.38E-05
ag109	3.11E-05	3.16E-05	3.21E-05	3.26E-05	3.31E-05	3.31E-05
ba137	3.06E-05	3.09E-05	3.13E-05	3.17E-05	3.21E-05	3.21E-05
zr 93	2.49E-05	2.52E-05	2.55E-05	2.58E-05	2.61E-05	2.61E-05
i129	2.07E-05	2.09E-05	2.12E-05	2.14E-05	2.17E-05	2.17E-05
nd144	1.95E-05	1.97E-05	2.00E-05	2.02E-05	2.05E-05	2.05E-05
gd152	1.48E-05	1.51E-05	1.54E-05	1.57E-05	1.60E-05	1.60E-05
mo 97	1.44E-05	1.45E-05	1.47E-05	1.49E-05	1.51E-05	1.51E-05
sm151	1.26E-05	1.30E-05	1.30E-05	1.31E-05	1.31E-05	1.26E-05
pd108	7.55E-06	7.67E-06	7.78E-06	7.90E-06	8.02E-06	8.02E-06
zr 91	6.61E-06	6.69E-06	6.77E-06	6.85E-06	6.93E-06	6.93E-06
y 89	6.32E-06	6.40E-06	6.47E-06	6.55E-06	6.62E-06	6.62E-06
ru102	6.00E-06	6.08E-06	6.15E-06	6.22E-06	6.30E-06	6.30E-06
ce142	5.27E-06	5.33E-06	5.39E-06	5.46E-06	5.52E-06	5.52E-06
nd148	5.08E-06	5.14E-06	5.20E-06	5.26E-06	5.32E-06	5.32E-06
nd146	4.28E-06	4.33E-06	4.38E-06	4.43E-06	4.48E-06	4.48E-06
ru 99	3.64E-06	3.74E-06	3.84E-06	3.95E-06	4.05E-06	4.05E-06
pd107	3.81E-06	3.87E-06	3.93E-06	3.98E-06	4.04E-06	4.04E-06
in115	3.76E-06	3.80E-06	3.85E-06	3.90E-06	3.94E-06	3.94E-06
ba138	3.64E-06	3.68E-06	3.73E-06	3.77E-06	3.82E-06	3.82E-06
ce140	3.41E-06	3.45E-06	3.49E-06	3.53E-06	3.57E-06	3.57E-06
xe132	3.13E-06	3.17E-06	3.21E-06	3.25E-06	3.28E-06	3.28E-06
mo 98	2.10E-06	2.13E-06	2.15E-06	2.18E-06	2.20E-06	2.20E-06
mo100	2.05E-06	2.07E-06	2.10E-06	2.12E-06	2.15E-06	2.15E-06
xe134	2.02E-06	2.04E-06	2.06E-06	2.09E-06	2.11E-06	2.11E-06
zr 92	1.60E-06	1.62E-06	1.64E-06	1.66E-06	1.68E-06	1.68E-06
i127	1.51E-06	1.53E-06	1.55E-06	1.57E-06	1.59E-06	1.59E-06
ru104	1.38E-06	1.40E-06	1.42E-06	1.43E-06	1.45E-06	1.45E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 152
0 fraction of total absorption rate
power= .00mw, burnup= 19662.mwd, flux= 6.03E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	1.26E-06	1.28E-06	1.29E-06	1.31E-06	1.32E-06	1.32E-06
nd150	1.15E-06	1.16E-06	1.18E-06	1.19E-06	1.21E-06	1.21E-06
xe136	1.09E-06	1.11E-06	1.12E-06	1.13E-06	1.15E-06	1.15E-06
cd111	8.62E-07	8.74E-07	8.86E-07	8.99E-07	9.11E-07	9.11E-07
br 81	8.10E-07	8.20E-07	8.30E-07	8.40E-07	8.49E-07	8.49E-07
rb 85	7.76E-07	7.86E-07	7.95E-07	8.04E-07	8.13E-07	8.13E-07
gd154	6.72E-07	6.88E-07	7.06E-07	7.23E-07	7.41E-07	7.41E-07
zr 94	6.78E-07	6.87E-07	6.95E-07	7.03E-07	7.11E-07	7.11E-07
zr 90	6.23E-07	6.31E-07	6.38E-07	6.45E-07	6.53E-07	6.53E-07
sm154	5.38E-07	5.45E-07	5.52E-07	5.59E-07	5.66E-07	5.66E-07
te130	5.04E-07	5.10E-07	5.16E-07	5.22E-07	5.28E-07	5.28E-07
rb 87	4.47E-07	4.52E-07	4.57E-07	4.63E-07	4.68E-07	4.68E-07
ba135	3.65E-07	3.76E-07	3.87E-07	3.97E-07	4.08E-07	4.08E-07
pd106	3.26E-07	3.31E-07	3.35E-07	3.40E-07	3.44E-07	3.44E-07
se 77	3.26E-07	3.30E-07	3.34E-07	3.38E-07	3.42E-07	3.42E-07
gd156	3.08E-07	3.13E-07	3.17E-07	3.22E-07	3.26E-07	3.26E-07
kr 84	2.13E-07	2.16E-07	2.18E-07	2.21E-07	2.23E-07	2.23E-07
ru100	1.86E-07	1.91E-07	1.95E-07	2.00E-07	2.04E-07	2.04E-07
dy161	1.87E-07	1.90E-07	1.93E-07	1.96E-07	1.99E-07	1.99E-07
sb121	1.73E-07	1.75E-07	1.77E-07	1.79E-07	1.81E-07	1.81E-07
se 79	1.62E-07	1.64E-07	1.65E-07	1.67E-07	1.69E-07	1.69E-07
nd142	1.36E-07	1.39E-07	1.42E-07	1.46E-07	1.49E-07	1.49E-07
sb123	1.40E-07	1.41E-07	1.43E-07	1.45E-07	1.47E-07	1.47E-07
ba134	1.30E-07	1.33E-07	1.36E-07	1.39E-07	1.43E-07	1.43E-07
sm148	1.18E-07	1.21E-07	1.24E-07	1.27E-07	1.30E-07	1.30E-07
kr 86	1.18E-07	1.20E-07	1.21E-07	1.22E-07	1.24E-07	1.24E-07
te128	1.14E-07	1.15E-07	1.17E-07	1.18E-07	1.20E-07	1.20E-07
pd104	8.92E-08	9.13E-08	9.35E-08	9.58E-08	9.80E-08	9.80E-08
eu152	8.97E-08	1.11E-07	1.12E-07	1.13E-07	1.13E-07	9.09E-08
tb159	8.16E-08	8.28E-08	8.40E-08	8.53E-08	8.65E-08	8.65E-08
se 80	7.81E-08	7.90E-08	8.00E-08	8.09E-08	8.19E-08	8.19E-08
te125	7.72E-08	7.82E-08	7.92E-08	8.02E-08	8.12E-08	8.12E-08
gd158	6.47E-08	6.56E-08	6.66E-08	6.75E-08	6.85E-08	6.85E-08
nb 93	5.82E-08	5.98E-08	6.15E-08	6.33E-08	6.50E-08	6.50E-08
cd112	5.90E-08	5.98E-08	6.06E-08	6.14E-08	6.22E-08	6.22E-08
dy162	4.18E-08	4.26E-08	4.33E-08	4.41E-08	4.48E-08	4.48E-08
dy164	4.21E-08	4.28E-08	4.35E-08	4.41E-08	4.48E-08	4.48E-08
sn117	4.18E-08	4.24E-08	4.29E-08	4.35E-08	4.40E-08	4.40E-08
li 6	4.10E-08	4.14E-08	4.19E-08	4.23E-08	4.28E-08	4.28E-08
cd114	3.54E-08	3.59E-08	3.64E-08	3.69E-08	3.73E-08	3.73E-08
cd110	3.01E-08	3.10E-08	3.19E-08	3.28E-08	3.37E-08	3.37E-08
sn119	3.20E-08	3.24E-08	3.28E-08	3.32E-08	3.36E-08	3.36E-08
mo 96	2.98E-08	3.05E-08	3.12E-08	3.20E-08	3.27E-08	3.27E-08
br 79	2.91E-08	2.99E-08	3.07E-08	3.16E-08	3.25E-08	3.25E-08
sn115	2.93E-08	2.96E-08	3.00E-08	3.04E-08	3.07E-08	3.07E-08
pd110	2.87E-08	2.92E-08	2.96E-08	3.00E-08	3.05E-08	3.05E-08
ag107	2.67E-08	2.76E-08	2.84E-08	2.93E-08	3.02E-08	3.02E-08
eu155	2.51E-08	4.55E-08	4.55E-08	4.56E-08	4.56E-08	2.43E-08
sr 88	2.17E-08	2.20E-08	2.22E-08	2.25E-08	2.27E-08	2.27E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 153
0 fraction of total absorption rate
power= .00mw, burnup= 19662.mwd, flux= 6.03E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

pm147	2.30E-08	6.54E-08	6.55E-08	6.55E-08	6.55E-08	2.15E-08
xe129	1.75E-08	1.80E-08	1.85E-08	1.90E-08	1.96E-08	1.96E-08
xe130	1.48E-08	1.51E-08	1.55E-08	1.58E-08	1.62E-08	1.62E-08
se 82	1.49E-08	1.51E-08	1.53E-08	1.54E-08	1.56E-08	1.56E-08
ba136	1.33E-08	1.36E-08	1.38E-08	1.41E-08	1.44E-08	1.44E-08

sn126	1.30E-08	1.32E-08	1.33E-08	1.35E-08	1.36E-08	1.36E-08
se 78	1.17E-08	1.18E-08	1.20E-08	1.21E-08	1.22E-08	1.22E-08
dy163	1.05E-08	1.07E-08	1.09E-08	1.10E-08	1.12E-08	1.12E-08
te126	9.88E-09	1.02E-08	1.04E-08	1.07E-08	1.10E-08	1.10E-08
kr 82	1.00E-08	1.02E-08	1.04E-08	1.06E-08	1.08E-08	1.08E-08
sn124	1.02E-08	1.03E-08	1.05E-08	1.06E-08	1.07E-08	1.07E-08
as 75	6.87E-09	6.95E-09	7.03E-09	7.12E-09	7.20E-09	7.20E-09
eu154	6.21E-09	8.70E-09	8.81E-09	8.93E-09	9.05E-09	6.42E-09
in113	5.83E-09	5.90E-09	5.98E-09	6.05E-09	6.13E-09	6.13E-09
sn118	4.12E-09	4.17E-09	4.22E-09	4.27E-09	4.33E-09	4.33E-09
sn122	3.52E-09	3.57E-09	3.61E-09	3.66E-09	3.70E-09	3.70E-09
cd116	3.46E-09	3.50E-09	3.55E-09	3.59E-09	3.63E-09	3.63E-09
sr 90	3.59E-09	3.96E-09	3.96E-09	3.96E-09	3.96E-09	3.56E-09
sn120	2.60E-09	2.63E-09	2.66E-09	2.70E-09	2.73E-09	2.73E-09
ge 73	1.96E-09	1.99E-09	2.01E-09	2.03E-09	2.06E-09	2.06E-09
ho165	9.75E-10	9.95E-10	1.02E-09	1.04E-09	1.06E-09	1.06E-09
gd160	9.04E-10	9.18E-10	9.32E-10	9.46E-10	9.60E-10	9.60E-10
dy160	8.57E-10	8.80E-10	9.03E-10	9.26E-10	9.50E-10	9.50E-10
cs137	8.33E-10	9.14E-10	9.14E-10	9.14E-10	9.14E-10	8.29E-10
ge 76	6.69E-10	6.77E-10	6.85E-10	6.93E-10	7.01E-10	7.01E-10
xe128	5.14E-10	5.27E-10	5.40E-10	5.53E-10	5.66E-10	5.66E-10
sr 86	2.50E-10	2.55E-10	2.61E-10	2.67E-10	2.73E-10	2.73E-10
sn116	1.96E-10	2.01E-10	2.06E-10	2.11E-10	2.16E-10	2.16E-10
cs134	2.17E-10	8.42E-10	8.53E-10	8.63E-10	8.74E-10	2.09E-10
te124	1.92E-10	1.96E-10	2.00E-10	2.03E-10	2.07E-10	2.07E-10
nb 94	9.35E-11	9.60E-11	9.85E-11	1.01E-10	1.04E-10	1.04E-10
sr 87	9.77E-11	9.91E-11	1.01E-10	1.02E-10	1.04E-10	1.04E-10
kr 85	1.03E-10	1.33E-10	1.34E-10	1.34E-10	1.34E-10	1.01E-10
te122	8.23E-11	8.43E-11	8.64E-11	8.85E-11	9.06E-11	9.06E-11
se 76	7.12E-11	7.27E-11	7.42E-11	7.58E-11	7.74E-11	7.74E-11
er166	4.84E-11	4.93E-11	5.02E-11	5.11E-11	5.20E-11	5.20E-11
ge 74	3.92E-11	3.97E-11	4.02E-11	4.07E-11	4.11E-11	4.11E-11
kr 80	2.63E-11	2.74E-11	2.84E-11	2.95E-11	3.06E-11	3.06E-11
ge 72	2.88E-11	2.92E-11	2.95E-11	2.99E-11	3.03E-11	3.03E-11
er167	4.61E-12	4.75E-12	4.89E-12	5.03E-12	5.18E-12	5.18E-12
te123	3.32E-12	3.43E-12	3.55E-12	3.67E-12	3.80E-12	3.80E-12
y 90	3.41E-12	3.77E-12	3.77E-12	3.77E-12	3.77E-12	3.39E-12
ce144	4.05E-12	1.42E-10	1.42E-10	1.42E-10	1.42E-10	3.23E-12
cd108	1.71E-12	1.79E-12	1.87E-12	1.95E-12	2.03E-12	2.03E-12
sb125	1.57E-12	4.32E-12	4.33E-12	4.33E-12	4.33E-12	1.47E-12
ru106	6.38E-13	9.77E-12	9.78E-12	9.79E-12	9.80E-12	5.39E-13
be 9	8.43E-14	8.53E-14	8.63E-14	8.73E-14	8.84E-14	8.84E-14
sn114	5.14E-14	5.26E-14	5.39E-14	5.53E-14	5.66E-14	5.66E-14
li 7	3.45E-14	3.49E-14	3.53E-14	3.57E-14	3.61E-14	3.61E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 154
0 fraction of total absorption rate
power= .00mw, burnup= 19662.mwd, flux= 6.03E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sb126	1.50E-14	1.67E-14	1.69E-14	1.70E-14	1.72E-14	1.56E-14
te127m	2.08E-16	2.19E-12	2.19E-12	2.20E-12	2.20E-12	1.16E-16
nb 95	1.06E-17	3.62E-11	3.62E-11	3.62E-11	3.62E-11	3.89E-18
cd109	2.02E-18	1.88E-17	1.96E-17	2.03E-17	2.11E-17	2.06E-18
zr 95	5.19E-18	3.90E-11	3.90E-11	3.90E-11	3.90E-11	1.90E-18
sn123	1.01E-18	2.57E-15	2.58E-15	2.58E-15	2.58E-15	6.15E-19
y 91	1.01E-18	3.34E-11	3.34E-11	3.34E-11	3.34E-11	3.41E-19
tb160	4.09E-20	4.92E-14	4.99E-14	5.06E-14	5.13E-14	1.37E-20

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 155
power= 9.790E-04mw, burnup=1.9662E+04mwd, flux= 6.03E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
h 1	1.12E-03	1.13E-03	1.14E-03	1.16E-03	1.17E-03	1.17E-03
h 2	3.33E-06	3.37E-06	3.41E-06	3.45E-06	3.50E-06	3.50E-06
h 3	1.11E-11	1.40E-11	1.40E-11	1.41E-11	1.41E-11	1.11E-11
h 4	.00E+00	1.39E-35	1.39E-35	1.40E-35	1.40E-35	.00E+00
he 3	1.59E-08	1.60E-08	1.61E-08	1.62E-08	1.63E-08	1.64E-08
he 4	1.85E-04	1.87E-04	1.90E-04	1.92E-04	1.94E-04	1.94E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	2.22E-05	2.25E-05	2.28E-05	2.30E-05	2.33E-05	2.33E-05
ne 21	7.62E-09	7.80E-09	7.98E-09	8.16E-09	8.34E-09	8.34E-09
ne 22	1.46E-07	1.48E-07	1.50E-07	1.52E-07	1.53E-07	1.54E-07
ne 23	1.77E-30	1.77E-15	1.77E-15	1.78E-15	1.78E-15	1.78E-30
na 22	3.62E-12	1.05E-11	1.05E-11	1.05E-11	1.05E-11	3.39E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	6.42E-24	6.42E-09	6.42E-09	6.43E-09	6.43E-09	6.43E-24
na 24m	1.06E-30	1.06E-15	1.06E-15	1.06E-15	1.06E-15	1.06E-30
na 25	5.51E-39	5.63E-24	5.76E-24	5.90E-24	6.03E-24	6.03E-39
mg 24	1.45E-01	1.47E-01	1.48E-01	1.50E-01	1.52E-01	1.52E-01
mg 25	7.91E-07	8.09E-07	8.27E-07	8.46E-07	8.65E-07	8.65E-07
mg 26	3.33E-06	3.37E-06	3.41E-06	3.45E-06	3.49E-06	3.49E-06
mg 27	5.29E-28	5.29E-13	5.29E-13	5.29E-13	5.30E-13	5.30E-28
mg 28	.00E+00	2.63E-25	2.64E-25	2.64E-25	2.64E-25	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	4.76E-26	4.76E-11	4.76E-11	4.76E-11	4.77E-11	4.77E-26
al 29	4.46E-37	4.56E-22	4.67E-22	4.78E-22	4.89E-22	4.89E-37
al 30	.00E+00	1.11E-31	1.15E-31	1.19E-31	1.24E-31	.00E+00
si 28	4.22E-01	4.27E-01	4.32E-01	4.37E-01	4.42E-01	4.42E-01
si 29	7.15E-06	7.31E-06	7.48E-06	7.65E-06	7.83E-06	7.83E-06
si 30	1.29E-10	1.34E-10	1.38E-10	1.43E-10	1.48E-10	1.48E-10
si 31	2.26E-38	2.34E-23	2.43E-23	2.51E-23	2.60E-23	2.60E-38
si 32	9.45E-30	9.95E-30	1.03E-29	1.07E-29	1.11E-29	1.09E-29
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		6.02E+07	6.02E+07	6.03E+07	6.03E+07	6.03E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 156
power= 9.790E-04mw, burnup=1.9662E+04mwd, flux= 6.03E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	3.16E+01	3.23E+01	3.30E+01	3.37E+01	3.44E+01	3.44E+01
pb206	1.57E-01	1.63E-01	1.68E-01	1.73E-01	1.78E-01	1.78E-01
pb207	1.04E-02	1.07E-02	1.10E-02	1.13E-02	1.16E-02	1.16E-02
pb208	4.80E-04	4.91E-04	5.03E-04	5.15E-04	5.26E-04	5.26E-04
pb209	8.12E-10	8.27E-10	8.43E-10	8.58E-10	8.73E-10	8.73E-10
pb210	2.57E-04	2.61E-04	2.64E-04	2.68E-04	2.72E-04	2.72E-04
pb211	4.68E-11	4.72E-11	4.77E-11	4.83E-11	4.88E-11	4.89E-11
pb212	3.11E-11	3.20E-11	3.24E-11	3.28E-11	3.31E-11	3.25E-11
pb214	5.87E-10	5.96E-10	6.04E-10	6.13E-10	6.21E-10	6.21E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.56E-02	2.65E-02	2.75E-02	2.85E-02	2.95E-02	2.95E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.58E-07	1.60E-07	1.63E-07	1.65E-07	1.67E-07	1.67E-07
bi211	2.77E-12	2.80E-12	2.83E-12	2.86E-12	2.89E-12	2.90E-12
bi212	2.95E-12	3.04E-12	3.07E-12	3.11E-12	3.14E-12	3.08E-12
bi213	1.90E-10	1.93E-10	1.97E-10	2.00E-10	2.04E-10	2.04E-10
bi214	4.36E-10	4.42E-10	4.49E-10	4.55E-10	4.61E-10	4.61E-10
po210	4.37E-06	4.43E-06	4.49E-06	4.56E-06	4.62E-06	4.62E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

po211	3.06E-17	3.09E-17	3.13E-17	3.16E-17	3.20E-17	3.20E-17
po212	1.55E-22	1.60E-22	1.61E-22	1.63E-22	1.65E-22	1.62E-22
po213	2.85E-19	2.90E-19	2.96E-19	3.01E-19	3.07E-19	3.07E-19
po214	6.00E-17	6.08E-17	6.17E-17	6.26E-17	6.34E-17	6.35E-17
po215	3.84E-17	3.88E-17	3.92E-17	3.97E-17	4.01E-17	4.02E-17
po216	1.18E-16	1.21E-16	1.23E-16	1.24E-16	1.25E-16	1.23E-16
po218	6.79E-11	6.89E-11	6.99E-11	7.09E-11	7.19E-11	7.19E-11
rn218	1.08E-43	1.13E-28	1.15E-28	1.16E-28	1.17E-28	1.12E-43
rn219	8.55E-14	8.63E-14	8.73E-14	8.82E-14	8.92E-14	8.94E-14
rn220	4.52E-14	4.65E-14	4.70E-14	4.76E-14	4.81E-14	4.72E-14
rn222	1.21E-07	1.22E-07	1.24E-07	1.26E-07	1.28E-07	1.28E-07
ra222	1.17E-40	1.23E-25	1.24E-25	1.26E-25	1.27E-25	1.22E-40
ra223	2.13E-08	2.15E-08	2.18E-08	2.20E-08	2.22E-08	2.23E-08
ra224	2.57E-10	2.64E-10	2.67E-10	2.71E-10	2.74E-10	2.68E-10
ra225	8.87E-08	9.04E-08	9.20E-08	9.37E-08	9.54E-08	9.54E-08
ra226	1.84E-02	1.87E-02	1.90E-02	1.92E-02	1.95E-02	1.95E-02
ra228	8.82E-11	8.97E-11	9.11E-11	9.25E-11	9.40E-11	9.40E-11
ac225	5.99E-08	6.10E-08	6.22E-08	6.33E-08	6.44E-08	6.45E-08
ac227	1.48E-05	1.50E-05	1.51E-05	1.53E-05	1.55E-05	1.55E-05
ac228	1.08E-14	1.09E-14	1.11E-14	1.13E-14	1.15E-14	1.15E-14
th226	5.70E-39	6.00E-24	6.07E-24	6.14E-24	6.21E-24	5.96E-39
th227	3.44E-08	3.48E-08	3.52E-08	3.55E-08	3.59E-08	3.60E-08
th228	4.90E-08	5.05E-08	5.11E-08	5.16E-08	5.22E-08	5.12E-08
th229	1.72E-02	1.76E-02	1.79E-02	1.82E-02	1.86E-02	1.86E-02
th230	9.16E-01	9.28E-01	9.41E-01	9.53E-01	9.65E-01	9.65E-01
th231	2.74E-09	3.77E-09	3.78E-09	3.79E-09	3.80E-09	2.73E-09
th232	2.16E-01	2.19E-01	2.23E-01	2.26E-01	2.30E-01	2.30E-01
th233	4.82E-28	4.90E-13	4.98E-13	5.06E-13	5.14E-13	5.14E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	2.23E-02	2.25E-02	2.28E-02	2.30E-02	2.33E-02	2.33E-02
pa232	9.33E-26	9.44E-11	9.55E-11	9.66E-11	9.77E-11	9.77E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 157
power= 9.790E-04mw, burnup=1.9662E+04mwd, flux= 6.03E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.41E-06	1.41E-06	1.41E-06	1.41E-06	1.41E-06	1.41E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	5.53E-36	5.81E-21	5.88E-21	5.95E-21	6.02E-21	5.78E-36
u231	8.66E-32	8.77E-17	8.89E-17	9.01E-17	9.13E-17	9.13E-32
u232	1.75E-06	1.84E-06	1.86E-06	1.88E-06	1.90E-06	1.83E-06
u233	4.69E-01	4.76E-01	4.82E-01	4.88E-01	4.95E-01	4.95E-01
u234	1.02E+01	1.02E+01	1.02E+01	1.02E+01	1.02E+01	1.02E+01
u235	6.63E+02	6.63E+02	6.62E+02	6.61E+02	6.61E+02	6.61E+02
u236	1.89E+02	1.89E+02	1.89E+02	1.90E+02	1.90E+02	1.90E+02
u237	1.29E-12	8.06E-07	8.08E-07	8.09E-07	8.10E-07	1.28E-12
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	7.50E-23	7.49E-08	7.50E-08	7.50E-08	7.50E-08	7.51E-23
u240	3.61E-35	3.92E-35	4.24E-35	4.58E-35	4.95E-35	4.95E-35
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	1.60E-13	2.07E-12	2.07E-12	2.07E-12	2.07E-12	1.36E-13
np236m	4.92E-28	4.92E-13	4.92E-13	4.92E-13	4.92E-13	4.92E-28
np236	2.17E-06	2.19E-06	2.21E-06	2.23E-06	2.25E-06	2.25E-06
np237	4.09E+01	4.09E+01	4.09E+01	4.09E+01	4.08E+01	4.08E+01
np238	3.10E-14	3.63E-07	3.64E-07	3.64E-07	3.64E-07	3.12E-14
np239	1.76E-13	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.88E-13
np240m	3.08E-37	3.34E-37	3.62E-37	3.91E-37	4.22E-37	4.23E-37

```
      np240   1.19E-38  5.36E-16  5.37E-16  5.37E-16  5.38E-16  1.37E-38
      np241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      pu236   1.07E-10  2.72E-10  2.72E-10  2.72E-10  2.72E-10  1.02E-10
      pu237   1.40E-23  7.78E-14  7.80E-14  7.82E-14  7.84E-14  3.41E-24
      pu238   5.33E-03  5.50E-03  5.50E-03  5.50E-03  5.50E-03  5.32E-03
      pu239   3.04E+01  3.05E+01  3.06E+01  3.06E+01  3.07E+01  3.07E+01
      pu240   5.13E-01  5.14E-01  5.15E-01  5.15E-01  5.16E-01  5.16E-01
      pu241   4.18E-05  5.08E-05  5.09E-05  5.10E-05  5.11E-05  4.16E-05
      pu242   3.77E-05  3.83E-05  3.88E-05  3.94E-05  4.00E-05  4.00E-05
      pu243   2.08E-29  1.96E-14  1.99E-14  2.02E-14  2.05E-14  2.22E-29
      pu244   1.80E-24  1.95E-24  2.11E-24  2.28E-24  2.46E-24  2.47E-24
      pu245    .00E+00  1.95E-35  2.11E-35  2.29E-35  2.47E-35   .00E+00
      pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am239   1.02E-34  1.01E-19  1.02E-19  1.02E-19  1.02E-19  1.02E-34
      am240   4.65E-32  4.64E-17  4.66E-17  4.67E-17  4.68E-17  4.68E-32
      am241   1.50E-03  1.50E-03  1.50E-03  1.51E-03  1.51E-03  1.51E-03
      am242m  1.68E-07  1.71E-07  1.71E-07  1.72E-07  1.72E-07  1.69E-07
      am242   2.16E-12  1.37E-11  1.37E-11  1.38E-11  1.38E-11  2.18E-12
      am243   2.01E-07  2.04E-07  2.08E-07  2.11E-07  2.15E-07  2.15E-07
      am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am244   3.69E-31  3.75E-16  3.82E-16  3.89E-16  3.96E-16  3.96E-31
      am245   1.13E-39  3.84E-36  4.16E-36  4.50E-36  4.85E-36  1.16E-39
      am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      cm241   7.47E-36  1.96E-22  1.97E-22  1.97E-22  1.98E-22  1.10E-36
      cm242   4.43E-10  2.76E-09  2.77E-09  2.78E-09  2.78E-09  4.44E-10
      cm243   1.40E-14  1.54E-14  1.54E-14  1.55E-14  1.55E-14  1.40E-14
      cm244   4.97E-12  5.90E-12  6.00E-12  6.11E-12  6.22E-12  5.28E-12
1
      sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page  158
        power= 9.790E-04mw, burnup=1.9662E+04mwd, flux= 6.03E+07n/cm**2-sec
0                                          nuclide concentrations, gram atoms
                                           basis = single reactor assembly
             charge ******* d ******* d ******* d ******* d ******* d
      cm245   1.26E-14  1.28E-14  1.31E-14  1.33E-14  1.36E-14  1.36E-14
      cm246   1.01E-16  1.03E-16  1.05E-16  1.07E-16  1.09E-16  1.09E-16
      cm247   4.09E-20  4.26E-20  4.43E-20  4.60E-20  4.77E-20  4.77E-20
      cm248   1.26E-22  1.34E-22  1.42E-22  1.51E-22  1.60E-22  1.60E-22
      cm249    .00E+00  1.03E-33  1.09E-33  1.15E-33  1.22E-33   .00E+00
      cm250   6.18E-38  6.65E-38  7.14E-38  7.67E-38  8.22E-38  8.22E-38
      cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
    totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0     flux              6.02E+07  6.02E+07  6.03E+07  6.03E+07  6.03E-08
0         1q array has      20 entries.
0         3q array has       1 entries.
0         3q array has       1 entries.
0         3q array has       1 entries.
0         4q array has       1 entries.
0        54q array has      12 entries.
1library information...

          cross-section data taken from position number 18 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
```

```
        pass   0
        *scale-system control module sas2 library*
        used a time-dependent neutron spectrum, for each of the above passes
          pass 0 applies start-up fuel densiities
          pass n applies mid time densities of nth library interval
        first library updated was...
        ******************************************************************************
        *                                                                            *
        *            prelim lwr origen-s binary working library--id = 1143            *
        *         made from modified card-image origen-s libraries of scale 4.2       *
        *      data from the light element, actinide, and fission product libraries   *
        *        decay data, including gamma and total energy, are from endf/b-vi     *
        *                                                                            *
        *      neutron flux spectrum factors and cross sections were produced from    *
        *     the "presas2" case updating all nuclides on the scale "burnup" library  *
        *                                                                            *
        *                  fission product yields are from endf/b-v                  *
        *                                                                            *
        *              photon libraries use an 18-energy-group structure             *
        *             the photon data are from the master photon data base,          *
        *              produced to include bremsstrahlung from uo2 matrix            *
        *                                                                            *
        *        see information above this box (if present) for later updates       *
        *                                                                            *
        ******************************************************************************
        *                                                                            *
0       ******************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/29/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0       ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page  159
        power=    .00mw, burnup=  20556.mwd, flux= 6.03E+07n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.260138E+06   1.259530E+06   1.258921E+06   1.258311E+06   1.257699E+06   1.257691E+06
     absorptions   1.025244E+06   1.025033E+06   1.024821E+06   1.024607E+06   1.024393E+06   1.024388E+06
     k infinity    1.229110E+00   1.228770E+00   1.228431E+00   1.228091E+00   1.227750E+00   1.227749E+00
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   1.007740E+06   1.007449E+06   1.007157E+06   1.006864E+06   1.006570E+06   1.006566E+06
     non-actinide
     abs. fracs.   1.707274E-02   1.715469E-02   1.723617E-02   1.731735E-02   1.739866E-02   1.739806E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products    page  160
0                                 fraction of total absorption rate
        power=    .00mw, burnup=  20556.mwd, flux= 6.03E+07n/cm**2-sec
0               initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.44E-03  5.44E-03  5.44E-03  5.43E-03  5.43E-03  5.43E-03
     nd143     1.90E-03  1.92E-03  1.94E-03  1.96E-03  1.98E-03  1.98E-03
     eu151     1.77E-03  1.78E-03  1.79E-03  1.80E-03  1.81E-03  1.81E-03
     rh103     9.25E-04  9.36E-04  9.46E-04  9.57E-04  9.68E-04  9.68E-04
     xe131     6.18E-04  6.25E-04  6.32E-04  6.39E-04  6.46E-04  6.46E-04
     cs133     4.80E-04  4.86E-04  4.91E-04  4.97E-04  5.02E-04  5.02E-04
```

sm147	3.52E-04	3.56E-04	3.60E-04	3.64E-04	3.68E-04	3.68E-04
tc 99	3.27E-04	3.31E-04	3.34E-04	3.37E-04	3.41E-04	3.41E-04
nd145	2.71E-04	2.74E-04	2.77E-04	2.80E-04	2.83E-04	2.83E-04
gd155	2.24E-04	2.24E-04	2.24E-04	2.24E-04	2.24E-04	2.24E-04
sm152	2.08E-04	2.11E-04	2.14E-04	2.17E-04	2.20E-04	2.20E-04
mo 95	1.88E-04	1.90E-04	1.92E-04	1.94E-04	1.97E-04	1.97E-04
sm150	1.42E-04	1.43E-04	1.45E-04	1.47E-04	1.49E-04	1.49E-04
kr 83	1.16E-04	1.17E-04	1.18E-04	1.19E-04	1.21E-04	1.21E-04
cs135	1.09E-04	1.10E-04	1.11E-04	1.13E-04	1.14E-04	1.14E-04
cd113	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04
eu153	8.58E-05	8.69E-05	8.80E-05	8.91E-05	9.02E-05	9.02E-05
ru101	8.47E-05	8.57E-05	8.66E-05	8.76E-05	8.86E-05	8.86E-05
pr141	8.11E-05	8.20E-05	8.29E-05	8.39E-05	8.48E-05	8.48E-05
la139	6.63E-05	6.71E-05	6.78E-05	6.86E-05	6.94E-05	6.94E-05
gd157	6.08E-05	6.09E-05	6.09E-05	6.10E-05	6.10E-05	6.10E-05
pd105	3.37E-05	3.42E-05	3.46E-05	3.50E-05	3.54E-05	3.54E-05
ag109	3.31E-05	3.36E-05	3.41E-05	3.46E-05	3.51E-05	3.51E-05
ba137	3.21E-05	3.24E-05	3.28E-05	3.32E-05	3.35E-05	3.35E-05
zr 93	2.61E-05	2.64E-05	2.67E-05	2.70E-05	2.73E-05	2.73E-05
i129	2.17E-05	2.19E-05	2.22E-05	2.24E-05	2.27E-05	2.27E-05
nd144	2.05E-05	2.07E-05	2.09E-05	2.12E-05	2.14E-05	2.14E-05
gd152	1.60E-05	1.64E-05	1.67E-05	1.70E-05	1.73E-05	1.73E-05
mo 97	1.51E-05	1.52E-05	1.54E-05	1.56E-05	1.58E-05	1.58E-05
sm151	1.27E-05	1.31E-05	1.31E-05	1.31E-05	1.31E-05	1.27E-05
pd108	8.01E-06	8.13E-06	8.25E-06	8.37E-06	8.49E-06	8.49E-06
zr 91	6.93E-06	7.01E-06	7.08E-06	7.16E-06	7.24E-06	7.24E-06
y 89	6.62E-06	6.70E-06	6.77E-06	6.85E-06	6.92E-06	6.92E-06
ru102	6.30E-06	6.37E-06	6.45E-06	6.52E-06	6.59E-06	6.59E-06
ce142	5.52E-06	5.59E-06	5.65E-06	5.71E-06	5.78E-06	5.78E-06
nd148	5.32E-06	5.38E-06	5.45E-06	5.51E-06	5.57E-06	5.57E-06
nd146	4.48E-06	4.54E-06	4.59E-06	4.64E-06	4.69E-06	4.69E-06
ru 99	4.05E-06	4.16E-06	4.27E-06	4.38E-06	4.49E-06	4.49E-06
pd107	4.04E-06	4.10E-06	4.16E-06	4.21E-06	4.27E-06	4.27E-06
in115	3.94E-06	3.99E-06	4.03E-06	4.08E-06	4.13E-06	4.13E-06
ba138	3.82E-06	3.86E-06	3.91E-06	3.95E-06	3.99E-06	3.99E-06
ce140	3.57E-06	3.62E-06	3.66E-06	3.70E-06	3.74E-06	3.74E-06
xe132	3.28E-06	3.32E-06	3.36E-06	3.40E-06	3.44E-06	3.44E-06
mo 98	2.20E-06	2.23E-06	2.25E-06	2.28E-06	2.30E-06	2.30E-06
mo100	2.15E-06	2.17E-06	2.19E-06	2.22E-06	2.24E-06	2.24E-06
xe134	2.11E-06	2.14E-06	2.16E-06	2.19E-06	2.21E-06	2.21E-06
zr 92	1.68E-06	1.70E-06	1.71E-06	1.73E-06	1.75E-06	1.75E-06
i127	1.58E-06	1.60E-06	1.62E-06	1.64E-06	1.66E-06	1.66E-06
ru104	1.45E-06	1.47E-06	1.49E-06	1.50E-06	1.52E-06	1.52E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 161
0 fraction of total absorption rate
power= .00mw, burnup= 20556.mwd, flux= 6.03E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	1.32E-06	1.34E-06	1.35E-06	1.37E-06	1.38E-06	1.38E-06
nd150	1.21E-06	1.22E-06	1.23E-06	1.25E-06	1.26E-06	1.26E-06
xe136	1.15E-06	1.16E-06	1.17E-06	1.19E-06	1.20E-06	1.20E-06
cd111	9.12E-07	9.24E-07	9.37E-07	9.49E-07	9.62E-07	9.62E-07
br 81	8.49E-07	8.59E-07	8.69E-07	8.79E-07	8.88E-07	8.88E-07
rb 85	8.13E-07	8.23E-07	8.32E-07	8.41E-07	8.50E-07	8.50E-07
gd154	7.41E-07	7.59E-07	7.77E-07	7.95E-07	8.14E-07	8.14E-07
zr 94	7.11E-07	7.19E-07	7.27E-07	7.35E-07	7.43E-07	7.43E-07
zr 90	6.53E-07	6.60E-07	6.68E-07	6.75E-07	6.83E-07	6.83E-07
sm154	5.66E-07	5.73E-07	5.80E-07	5.87E-07	5.94E-07	5.94E-07
te130	5.29E-07	5.35E-07	5.41E-07	5.47E-07	5.53E-07	5.53E-07
rb 87	4.68E-07	4.73E-07	4.79E-07	4.84E-07	4.89E-07	4.89E-07

ba135	4.08E-07	4.19E-07	4.31E-07	4.42E-07	4.54E-07	4.54E-07
pd106	3.44E-07	3.49E-07	3.53E-07	3.58E-07	3.62E-07	3.62E-07
se 77	3.42E-07	3.46E-07	3.50E-07	3.54E-07	3.58E-07	3.58E-07
gd156	3.26E-07	3.31E-07	3.35E-07	3.40E-07	3.44E-07	3.44E-07
kr 84	2.23E-07	2.26E-07	2.28E-07	2.31E-07	2.34E-07	2.34E-07
ru100	2.04E-07	2.09E-07	2.14E-07	2.18E-07	2.23E-07	2.23E-07
dy161	1.99E-07	2.02E-07	2.05E-07	2.08E-07	2.11E-07	2.11E-07
sb121	1.81E-07	1.84E-07	1.86E-07	1.88E-07	1.90E-07	1.90E-07
se 79	1.69E-07	1.71E-07	1.73E-07	1.75E-07	1.76E-07	1.76E-07
nd142	1.49E-07	1.52E-07	1.56E-07	1.59E-07	1.63E-07	1.63E-07
ba134	1.43E-07	1.46E-07	1.49E-07	1.53E-07	1.56E-07	1.56E-07
sb123	1.47E-07	1.48E-07	1.50E-07	1.52E-07	1.54E-07	1.54E-07
sm148	1.30E-07	1.33E-07	1.36E-07	1.39E-07	1.42E-07	1.42E-07
kr 86	1.24E-07	1.25E-07	1.27E-07	1.28E-07	1.29E-07	1.29E-07
te128	1.20E-07	1.21E-07	1.22E-07	1.24E-07	1.25E-07	1.25E-07
pd104	9.80E-08	1.00E-07	1.03E-07	1.05E-07	1.07E-07	1.07E-07
eu152	9.09E-08	1.14E-07	1.15E-07	1.16E-07	1.16E-07	9.20E-08
tb159	8.65E-08	8.77E-08	8.89E-08	9.01E-08	9.13E-08	9.13E-08
se 80	8.19E-08	8.28E-08	8.38E-08	8.47E-08	8.57E-08	8.57E-08
te125	8.12E-08	8.21E-08	8.31E-08	8.41E-08	8.51E-08	8.51E-08
gd158	6.85E-08	6.94E-08	7.03E-08	7.13E-08	7.22E-08	7.22E-08
nb 93	6.50E-08	6.68E-08	6.85E-08	7.03E-08	7.22E-08	7.22E-08
cd112	6.22E-08	6.30E-08	6.38E-08	6.46E-08	6.54E-08	6.54E-08
dy162	4.48E-08	4.56E-08	4.63E-08	4.71E-08	4.78E-08	4.78E-08
dy164	4.48E-08	4.54E-08	4.61E-08	4.67E-08	4.74E-08	4.74E-08
sn117	4.40E-08	4.46E-08	4.51E-08	4.57E-08	4.62E-08	4.62E-08
li 6	4.28E-08	4.32E-08	4.37E-08	4.41E-08	4.46E-08	4.46E-08
cd114	3.73E-08	3.78E-08	3.83E-08	3.88E-08	3.93E-08	3.93E-08
cd110	3.37E-08	3.46E-08	3.56E-08	3.65E-08	3.75E-08	3.75E-08
br 79	3.25E-08	3.33E-08	3.42E-08	3.51E-08	3.60E-08	3.60E-08
mo 96	3.27E-08	3.34E-08	3.42E-08	3.49E-08	3.57E-08	3.57E-08
sn119	3.36E-08	3.40E-08	3.44E-08	3.48E-08	3.52E-08	3.52E-08
ag107	3.02E-08	3.12E-08	3.21E-08	3.30E-08	3.40E-08	3.40E-08
sn115	3.08E-08	3.11E-08	3.15E-08	3.19E-08	3.22E-08	3.22E-08
pd110	3.04E-08	3.09E-08	3.13E-08	3.17E-08	3.22E-08	3.22E-08
sr 88	2.27E-08	2.30E-08	2.33E-08	2.35E-08	2.38E-08	2.38E-08
eu155	2.43E-08	4.56E-08	4.57E-08	4.57E-08	4.58E-08	2.35E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 162
0 fraction of total absorption rate
power= .00mw, burnup= 20556.mwd, flux= 6.03E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

xe129	1.96E-08	2.01E-08	2.06E-08	2.12E-08	2.18E-08	2.18E-08
pm147	2.15E-08	6.55E-08	6.55E-08	6.55E-08	6.55E-08	2.01E-08
xe130	1.62E-08	1.65E-08	1.69E-08	1.72E-08	1.76E-08	1.76E-08
se 82	1.56E-08	1.58E-08	1.60E-08	1.62E-08	1.63E-08	1.63E-08
ba136	1.44E-08	1.46E-08	1.49E-08	1.52E-08	1.55E-08	1.55E-08
sn126	1.36E-08	1.37E-08	1.39E-08	1.40E-08	1.42E-08	1.42E-08
se 78	1.22E-08	1.24E-08	1.25E-08	1.27E-08	1.28E-08	1.28E-08
te126	1.10E-08	1.13E-08	1.16E-08	1.19E-08	1.22E-08	1.22E-08
dy163	1.12E-08	1.14E-08	1.16E-08	1.18E-08	1.20E-08	1.20E-08
kr 82	1.08E-08	1.10E-08	1.12E-08	1.14E-08	1.16E-08	1.16E-08
sn124	1.07E-08	1.08E-08	1.10E-08	1.11E-08	1.12E-08	1.12E-08
as 75	7.20E-09	7.28E-09	7.37E-09	7.45E-09	7.53E-09	7.53E-09
eu154	6.42E-09	9.17E-09	9.29E-09	9.42E-09	9.54E-09	6.63E-09
in113	6.13E-09	6.20E-09	6.28E-09	6.35E-09	6.43E-09	6.43E-09
sn118	4.32E-09	4.38E-09	4.43E-09	4.48E-09	4.53E-09	4.53E-09
sn122	3.70E-09	3.75E-09	3.79E-09	3.84E-09	3.88E-09	3.88E-09
cd116	3.63E-09	3.68E-09	3.72E-09	3.76E-09	3.81E-09	3.81E-09
sr 90	3.57E-09	3.96E-09	3.96E-09	3.96E-09	3.96E-09	3.54E-09

sn120	2.73E-09	2.76E-09	2.80E-09	2.83E-09	2.86E-09	2.86E-09
ge 73	2.06E-09	2.08E-09	2.11E-09	2.13E-09	2.16E-09	2.16E-09
ho165	1.06E-09	1.08E-09	1.10E-09	1.12E-09	1.14E-09	1.14E-09
dy160	9.50E-10	9.74E-10	9.98E-10	1.02E-09	1.05E-09	1.05E-09
gd160	9.60E-10	9.74E-10	9.88E-10	1.00E-09	1.02E-09	1.02E-09
cs137	8.28E-10	9.14E-10	9.15E-10	9.15E-10	9.15E-10	8.24E-10
ge 76	7.01E-10	7.09E-10	7.17E-10	7.26E-10	7.34E-10	7.34E-10
xe128	5.67E-10	5.80E-10	5.94E-10	6.07E-10	6.21E-10	6.21E-10
sr 86	2.73E-10	2.79E-10	2.85E-10	2.91E-10	2.97E-10	2.98E-10
sn116	2.16E-10	2.21E-10	2.26E-10	2.32E-10	2.37E-10	2.37E-10
te124	2.07E-10	2.11E-10	2.15E-10	2.18E-10	2.22E-10	2.22E-10
cs134	2.09E-10	8.84E-10	8.94E-10	9.05E-10	9.15E-10	2.01E-10
nb 94	1.04E-10	1.07E-10	1.09E-10	1.12E-10	1.15E-10	1.15E-10
sr 87	1.04E-10	1.05E-10	1.07E-10	1.08E-10	1.10E-10	1.10E-10
kr 85	1.01E-10	1.34E-10	1.34E-10	1.34E-10	1.34E-10	9.98E-11
te122	9.06E-11	9.27E-11	9.49E-11	9.71E-11	9.93E-11	9.93E-11
se 76	7.74E-11	7.90E-11	8.07E-11	8.23E-11	8.40E-11	8.40E-11
er166	5.20E-11	5.29E-11	5.38E-11	5.47E-11	5.56E-11	5.56E-11
ge 74	4.12E-11	4.16E-11	4.21E-11	4.26E-11	4.31E-11	4.31E-11
kr 80	3.06E-11	3.18E-11	3.29E-11	3.41E-11	3.54E-11	3.54E-11
ge 72	3.03E-11	3.06E-11	3.10E-11	3.14E-11	3.18E-11	3.18E-11
er167	5.18E-12	5.33E-12	5.48E-12	5.63E-12	5.79E-12	5.79E-12
te123	3.80E-12	3.93E-12	4.06E-12	4.19E-12	4.32E-12	4.32E-12
y 90	3.40E-12	3.77E-12	3.77E-12	3.77E-12	3.77E-12	3.38E-12
ce144	3.23E-12	1.42E-10	1.42E-10	1.42E-10	1.42E-10	2.59E-12
cd108	2.03E-12	2.12E-12	2.21E-12	2.30E-12	2.40E-12	2.40E-12
sb125	1.47E-12	4.33E-12	4.34E-12	4.34E-12	4.34E-12	1.39E-12
ru106	5.39E-13	9.81E-12	9.82E-12	9.83E-12	9.85E-12	4.57E-13
be 9	8.83E-14	8.93E-14	9.03E-14	9.14E-14	9.24E-14	9.24E-14
sn114	5.66E-14	5.80E-14	5.94E-14	6.08E-14	6.22E-14	6.22E-14
li 7	3.62E-14	3.66E-14	3.70E-14	3.74E-14	3.78E-14	3.78E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 163
0 fraction of total absorption rate
power= .00mw, burnup= 20556.mwd, flux= 6.03E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sb126	1.56E-14	1.74E-14	1.75E-14	1.77E-14	1.78E-14	1.63E-14
te127m	1.16E-16	2.20E-12	2.20E-12	2.20E-12	2.20E-12	6.50E-17
cd109	2.06E-18	2.20E-17	2.28E-17	2.37E-17	2.46E-17	2.09E-18
nb 95	3.90E-18	3.63E-11	3.63E-11	3.63E-11	3.63E-11	1.46E-18
zr 95	1.91E-18	3.90E-11	3.90E-11	3.90E-11	3.90E-11	7.10E-19
sn123	6.13E-19	2.58E-15	2.58E-15	2.58E-15	2.58E-15	3.82E-19
y 91	3.41E-19	3.34E-11	3.34E-11	3.34E-11	3.34E-11	1.09E-19
tb160	1.36E-20	5.20E-14	5.27E-14	5.35E-14	5.42E-14	1.36E-20

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 164
power= 9.790E-04mw, burnup=2.0556E+04mwd, flux= 6.03E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly
charge ******* d ******* d ******* d ******* d ******* d

h 1	1.17E-03	1.18E-03	1.20E-03	1.21E-03	1.22E-03	1.22E-03
h 2	3.50E-06	3.54E-06	3.58E-06	3.62E-06	3.66E-06	3.66E-06
h 3	1.11E-11	1.42E-11	1.42E-11	1.42E-11	1.43E-11	1.11E-11
h 4	.00E+00	1.41E-35	1.41E-35	1.42E-35	1.42E-35	.00E+00
he 3	1.64E-08	1.65E-08	1.66E-08	1.67E-08	1.68E-08	1.68E-08
he 4	1.94E-04	1.96E-04	1.98E-04	2.01E-04	2.03E-04	2.03E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	2.33E-05	2.36E-05	2.38E-05	2.41E-05	2.44E-05	2.44E-05
ne 21	8.34E-09	8.53E-09	8.72E-09	8.91E-09	9.10E-09	9.10E-09
ne 22	1.54E-07	1.55E-07	1.57E-07	1.59E-07	1.61E-07	1.61E-07

ne 23	1.78E-30	1.78E-15	1.78E-15	1.78E-15	1.78E-15	1.78E-30
na 22	3.39E-12	1.05E-11	1.05E-11	1.05E-11	1.06E-11	3.18E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	6.43E-24	6.43E-09	6.43E-09	6.44E-09	6.44E-09	6.44E-24
na 24m	1.06E-30	1.06E-15	1.06E-15	1.06E-15	1.06E-15	1.06E-30
na 25	6.03E-39	6.16E-24	6.30E-24	6.44E-24	6.58E-24	6.58E-39
mg 24	1.52E-01	1.53E-01	1.55E-01	1.57E-01	1.58E-01	1.58E-01
mg 25	8.65E-07	8.84E-07	9.03E-07	9.23E-07	9.42E-07	9.42E-07
mg 26	3.49E-06	3.53E-06	3.57E-06	3.61E-06	3.65E-06	3.65E-06
mg 27	5.30E-28	5.29E-13	5.30E-13	5.30E-13	5.30E-13	5.30E-28
mg 28	.00E+00	2.64E-25	2.65E-25	2.65E-25	2.65E-25	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	4.77E-26	4.77E-11	4.77E-11	4.77E-11	4.77E-11	4.77E-26
al 29	4.89E-37	4.99E-22	5.11E-22	5.22E-22	5.34E-22	5.34E-37
al 30	.00E+00	1.28E-31	1.32E-31	1.36E-31	1.41E-31	.00E+00
si 28	4.42E-01	4.46E-01	4.51E-01	4.56E-01	4.61E-01	4.61E-01
si 29	7.83E-06	8.00E-06	8.18E-06	8.36E-06	8.54E-06	8.54E-06
si 30	1.48E-10	1.53E-10	1.58E-10	1.63E-10	1.69E-10	1.69E-10
si 31	2.60E-38	2.69E-23	2.78E-23	2.87E-23	2.97E-23	2.97E-38
si 32	1.09E-29	1.14E-29	1.19E-29	1.23E-29	1.27E-29	1.25E-29
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		6.03E+07	6.03E+07	6.04E+07	6.04E-07	6.04E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 165

power= 9.790E-04mw, burnup=2.0556E+04mwd, flux= 6.03E+07n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
he 4	3.44E+01	3.51E+01	3.58E+01	3.65E+01	3.71E+01	3.72E+01
pb206	1.78E-01	1.84E-01	1.89E-01	1.94E-01	2.00E-01	2.00E-01
pb207	1.16E-02	1.19E-02	1.22E-02	1.25E-02	1.29E-02	1.29E-02
pb208	5.26E-04	5.38E-04	5.50E-04	5.63E-04	5.75E-04	5.75E-04
pb209	8.73E-10	8.89E-10	9.04E-10	9.19E-10	9.34E-10	9.34E-10
pb210	2.72E-04	2.75E-04	2.79E-04	2.83E-04	2.86E-04	2.86E-04
pb211	4.89E-11	4.93E-11	4.98E-11	5.03E-11	5.08E-11	5.09E-11
pb212	3.25E-11	3.35E-11	3.39E-11	3.42E-11	3.46E-11	3.39E-11
pb214	6.21E-10	6.30E-10	6.38E-10	6.46E-10	6.55E-10	6.55E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.95E-02	3.05E-02	3.16E-02	3.26E-02	3.37E-02	3.37E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.67E-07	1.70E-07	1.72E-07	1.74E-07	1.76E-07	1.76E-07
bi211	2.90E-12	2.92E-12	2.95E-12	2.98E-12	3.01E-12	3.02E-12
bi212	3.08E-12	3.18E-12	3.21E-12	3.25E-12	3.28E-12	3.21E-12
bi213	2.04E-10	2.08E-10	2.11E-10	2.15E-10	2.18E-10	2.18E-10
bi214	4.61E-10	4.67E-10	4.74E-10	4.80E-10	4.86E-10	4.86E-10
po210	4.62E-06	4.68E-06	4.74E-06	4.81E-06	4.87E-06	4.87E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.20E-17	3.23E-17	3.26E-17	3.30E-17	3.33E-17	3.34E-17
po212	1.62E-22	1.67E-22	1.69E-22	1.71E-22	1.72E-22	1.69E-22
po213	3.07E-19	3.12E-19	3.17E-19	3.23E-19	3.28E-19	3.28E-19
po214	6.35E-17	6.43E-17	6.52E-17	6.60E-17	6.69E-17	6.69E-17
po215	4.02E-17	4.05E-17	4.09E-17	4.14E-17	4.18E-17	4.18E-17
po216	1.23E-16	1.27E-16	1.28E-16	1.30E-16	1.31E-16	1.28E-16
po218	7.19E-11	7.28E-11	7.38E-11	7.48E-11	7.57E-11	7.57E-11
rn218	1.12E-43	1.19E-28	1.20E-28	1.21E-28	1.23E-28	1.18E-43
rn219	8.94E-14	9.01E-14	9.11E-14	9.20E-14	9.29E-14	9.31E-14
rn220	4.72E-14	4.86E-14	4.92E-14	4.97E-14	5.02E-14	4.91E-14
rn222	1.28E-07	1.29E-07	1.31E-07	1.33E-07	1.35E-07	1.35E-07
ra222	1.22E-40	1.29E-25	1.30E-25	1.32E-25	1.33E-25	1.27E-40
ra223	2.23E-08	2.25E-08	2.27E-08	2.29E-08	2.32E-08	2.32E-08

ra224	2.68E-10	2.77E-10	2.80E-10	2.83E-10	2.86E-10	2.79E-10
ra225	9.54E-08	9.71E-08	9.87E-08	1.00E-07	1.02E-07	1.02E-07
ra226	1.95E-02	1.98E-02	2.00E-02	2.03E-02	2.06E-02	2.06E-02
ra228	9.40E-11	9.54E-11	9.69E-11	9.83E-11	9.97E-11	9.97E-11
ac225	6.45E-08	6.56E-08	6.67E-08	6.78E-08	6.89E-08	6.89E-08
ac227	1.55E-05	1.56E-05	1.58E-05	1.60E-05	1.61E-05	1.61E-05
ac228	1.15E-14	1.16E-14	1.18E-14	1.20E-14	1.22E-14	1.22E-14
th226	5.96E-39	6.28E-24	6.35E-24	6.42E-24	6.49E-24	6.21E-39
th227	3.60E-08	3.63E-08	3.67E-08	3.70E-08	3.74E-08	3.75E-08
th228	5.12E-08	5.28E-08	5.34E-08	5.39E-08	5.45E-08	5.33E-08
th229	1.86E-02	1.89E-02	1.92E-02	1.95E-02	1.98E-02	1.98E-02
th230	9.65E-01	9.78E-01	9.90E-01	1.00E+00	1.01E+00	1.01E+00
th231	2.73E-09	3.81E-09	3.82E-09	3.84E-09	3.85E-09	2.73E-09
th232	2.30E-01	2.33E-01	2.37E-01	2.40E-01	2.44E-01	2.44E-01
th233	5.14E-28	5.22E-13	5.30E-13	5.38E-13	5.46E-13	5.46E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	2.33E-02	2.35E-02	2.38E-02	2.40E-02	2.42E-02	2.42E-02
pa232	9.77E-26	9.88E-11	9.98E-11	1.01E-10	1.02E-10	1.02E-25

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 166
power= 9.790E-04mw, burnup=2.0556E+04mwd, flux= 6.03E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d	******* d
pa233	1.41E-06	1.41E-06	1.41E-06	1.41E-06	1.41E-06	1.41E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	5.78E-36	6.09E-21	6.15E-21	6.22E-21	6.29E-21	6.02E-36
u231	9.13E-32	9.24E-17	9.36E-17	9.48E-17	9.60E-17	9.60E-32
u232	1.83E-06	1.93E-06	1.95E-06	1.97E-06	1.99E-06	1.90E-06
u233	4.95E-01	5.01E-01	5.07E-01	5.13E-01	5.19E-01	5.19E-01
u234	1.02E+01	1.02E+01	1.02E+01	1.02E+01	1.02E+01	1.02E+01
u235	6.61E+02	6.60E+02	6.60E+02	6.59E+02	6.59E+02	6.59E+02
u236	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02
u237	1.28E-12	8.10E-07	8.11E-07	8.12E-07	8.14E-07	1.28E-12
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	7.51E-23	7.50E-08	7.51E-08	7.51E-08	7.51E-08	7.52E-23
u240	4.95E-35	5.34E-35	5.74E-35	6.17E-35	6.63E-35	6.63E-35
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	1.36E-13	2.07E-12	2.07E-12	2.07E-12	2.07E-12	1.16E-13
np236m	4.92E-28	4.92E-13	4.92E-13	4.92E-13	4.92E-13	4.92E-28
np236	2.25E-06	2.28E-06	2.30E-06	2.32E-06	2.34E-06	2.34E-06
np237	4.08E+01	4.08E+01	4.08E+01	4.08E+01	4.08E+01	4.08E+01
np238	3.12E-14	3.64E-07	3.64E-07	3.64E-07	3.64E-07	3.15E-14
np239	1.88E-13	1.08E-05	1.09E-05	1.09E-05	1.09E-05	2.01E-13
np240m	4.23E-37	4.55E-37	4.90E-37	5.27E-37	5.65E-37	5.66E-37
np240	1.37E-38	5.38E-16	5.39E-16	5.39E-16	5.40E-16	1.58E-38
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.02E-10	2.72E-10	2.72E-10	2.72E-10	2.72E-10	9.62E-11
pu237	3.41E-24	7.85E-14	7.87E-14	7.88E-14	7.90E-14	8.49E-25
pu238	5.32E-03	5.50E-03	5.50E-03	5.50E-03	5.50E-03	5.31E-03
pu239	3.07E+01	3.08E+01	3.08E+01	3.09E+01	3.10E+01	3.10E+01
pu240	5.16E-01	5.17E-01	5.18E-01	5.19E-01	5.20E-01	5.19E-01
pu241	4.16E-05	5.11E-05	5.12E-05	5.14E-05	5.15E-05	4.14E-05
pu242	4.00E-05	4.05E-05	4.11E-05	4.16E-05	4.22E-05	4.22E-05
pu243	2.22E-29	2.08E-14	2.11E-14	2.14E-14	2.17E-14	2.36E-29
pu244	2.47E-24	2.66E-24	2.86E-24	3.07E-24	3.30E-24	3.30E-24
pu245	.00E+00	2.66E-35	2.87E-35	3.08E-35	3.31E-35	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

```
     am239   1.02E-34  1.02E-19  1.03E-19  1.03E-19  1.03E-19  1.03E-34
     am240   4.68E-32  4.68E-17  4.69E-17  4.71E-17  4.72E-17  4.72E-32
     am241   1.51E-03  1.51E-03  1.52E-03  1.52E-03  1.52E-03  1.52E-03
     am242m  1.69E-07  1.72E-07  1.73E-07  1.73E-07  1.74E-07  1.70E-07
     am242   2.18E-12  1.38E-11  1.38E-11  1.39E-11  1.39E-11  2.20E-12
     am243   2.15E-07  2.18E-07  2.22E-07  2.26E-07  2.29E-07  2.29E-07
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   3.96E-31  4.02E-16  4.09E-16  4.16E-16  4.23E-16  4.23E-31
     am245   1.16E-39  5.24E-36  5.64E-36  6.06E-36  6.51E-36  1.19E-39
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   1.10E-36  1.98E-22  1.99E-22  2.00E-22  2.00E-22  1.91E-37
     cm242   4.44E-10  2.78E-09  2.79E-09  2.80E-09  2.81E-09  4.46E-10
     cm243   1.40E-14  1.55E-14  1.56E-14  1.57E-14  1.57E-14  1.41E-14
     cm244   5.28E-12  6.32E-12  6.42E-12  6.53E-12  6.64E-12  5.59E-12
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides         page  167
       power= 9.790E-04mw, burnup=2.0556E+04mwd, flux= 6.03E+07n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
          charge ******* d ******* d ******* d ******* d ******* d
     cm245   1.36E-14  1.38E-14  1.41E-14  1.43E-14  1.46E-14  1.46E-14
     cm246   1.09E-16  1.11E-16  1.13E-16  1.15E-16  1.17E-16  1.17E-16
     cm247   4.77E-20  4.95E-20  5.13E-20  5.31E-20  5.50E-20  5.50E-20
     cm248   1.60E-22  1.69E-22  1.78E-22  1.88E-22  1.98E-22  1.98E-22
     cm249    .00E+00  1.29E-33  1.36E-33  1.44E-33  1.52E-33   .00E+00
     cm250   8.22E-38  8.81E-38  9.42E-38  1.01E-37  1.08E-37  1.08E-37
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              6.03E+07  6.03E+07  6.04E+07  6.04E+07  6.04E-08
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number 19 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *      data from the light element, actinide, and fission product libraries    *
          *        decay data, including gamma and total energy, are from endf/b-vi      *
          *                                                                              *
```

```
         *      neutron flux spectrum factors and cross sections were produced from     *
         *     the "presas2" case updating all nuclides on the scale "burnup" library   *
         *                                                                              *
         *                  fission product yields are from endf/b-v                    *
         *                                                                              *
         *              photon libraries use an 18-energy-group structure               *
         *             the photon data are from the master photon data base,            *
         *              produced to include bremsstrahlung from uo2 matrix              *
         *                                                                              *
         *        see information above this box (if present) for later updates         *
         *                                                                              *
         ********************************************************************************
         *                                                                              *
0        ********************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/29/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page  168
        power=    .00mw, burnup=  21450.mwd, flux= 6.04E+07n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.258714E+06   1.258098E+06   1.257482E+06   1.256863E+06   1.256244E+06   1.256236E+06
     absorptions   1.024958E+06   1.024742E+06   1.024525E+06   1.024306E+06   1.024087E+06   1.024082E+06
     k infinity    1.228064E+00   1.227722E+00   1.227381E+00   1.227039E+00   1.226696E+00   1.226695E+00
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   1.007127E+06   1.006832E+06   1.006536E+06   1.006239E+06   1.005941E+06   1.005936E+06
     non-actinide
     abs. fracs.   1.739621E-02   1.747781E-02   1.755846E-02   1.763892E-02   1.771957E-02   1.771897E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products    page  169
0                                 fraction of total absorption rate
        power=    .00mw, burnup=  21450.mwd, flux= 6.04E+07n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.43E-03  5.43E-03  5.43E-03  5.43E-03  5.43E-03  5.43E-03
     nd143     1.98E-03  2.00E-03  2.02E-03  2.05E-03  2.07E-03  2.07E-03
     eu151     1.81E-03  1.82E-03  1.83E-03  1.84E-03  1.85E-03  1.85E-03
     rh103     9.67E-04  9.78E-04  9.89E-04  1.00E-03  1.01E-03  1.01E-03
     xe131     6.46E-04  6.53E-04  6.60E-04  6.67E-04  6.74E-04  6.74E-04
     cs133     5.02E-04  5.08E-04  5.13E-04  5.19E-04  5.24E-04  5.24E-04
     sm147     3.68E-04  3.72E-04  3.76E-04  3.80E-04  3.84E-04  3.84E-04
     tc 99     3.41E-04  3.44E-04  3.47E-04  3.51E-04  3.54E-04  3.54E-04
     nd145     2.83E-04  2.86E-04  2.89E-04  2.93E-04  2.96E-04  2.96E-04
     sm152     2.20E-04  2.22E-04  2.25E-04  2.28E-04  2.31E-04  2.31E-04
     gd155     2.25E-04  2.25E-04  2.25E-04  2.25E-04  2.25E-04  2.25E-04
     mo 95     1.97E-04  1.99E-04  2.01E-04  2.03E-04  2.05E-04  2.05E-04
     sm150     1.49E-04  1.50E-04  1.52E-04  1.54E-04  1.55E-04  1.55E-04
     kr 83     1.21E-04  1.22E-04  1.23E-04  1.25E-04  1.26E-04  1.26E-04
     cs135     1.14E-04  1.15E-04  1.16E-04  1.18E-04  1.19E-04  1.19E-04
     cd113     1.03E-04  1.03E-04  1.03E-04  1.03E-04  1.03E-04  1.03E-04
     eu153     9.02E-05  9.13E-05  9.24E-05  9.36E-05  9.47E-05  9.47E-05
     ru101     8.86E-05  8.95E-05  9.05E-05  9.15E-05  9.25E-05  9.25E-05
     pr141     8.48E-05  8.58E-05  8.67E-05  8.76E-05  8.86E-05  8.86E-05
```

la139	6.94E-05	7.02E-05	7.09E-05	7.17E-05	7.25E-05	7.25E-05
gd157	6.11E-05	6.11E-05	6.11E-05	6.12E-05	6.12E-05	6.12E-05
ag109	3.51E-05	3.56E-05	3.61E-05	3.66E-05	3.71E-05	3.71E-05
pd105	3.54E-05	3.59E-05	3.63E-05	3.67E-05	3.71E-05	3.71E-05
ba137	3.36E-05	3.39E-05	3.43E-05	3.47E-05	3.50E-05	3.51E-05
zr 93	2.73E-05	2.76E-05	2.78E-05	2.81E-05	2.84E-05	2.84E-05
i129	2.27E-05	2.30E-05	2.32E-05	2.35E-05	2.37E-05	2.37E-05
nd144	2.14E-05	2.17E-05	2.19E-05	2.22E-05	2.24E-05	2.24E-05
gd152	1.73E-05	1.76E-05	1.79E-05	1.83E-05	1.86E-05	1.86E-05
mo 97	1.58E-05	1.59E-05	1.61E-05	1.63E-05	1.65E-05	1.65E-05
sm151	1.27E-05	1.31E-05	1.32E-05	1.32E-05	1.32E-05	1.27E-05
pd108	8.48E-06	8.60E-06	8.72E-06	8.84E-06	8.96E-06	8.96E-06
zr 91	7.24E-06	7.32E-06	7.40E-06	7.48E-06	7.56E-06	7.56E-06
y 89	6.93E-06	7.00E-06	7.08E-06	7.15E-06	7.23E-06	7.23E-06
ru102	6.60E-06	6.67E-06	6.74E-06	6.82E-06	6.89E-06	6.89E-06
ce142	5.78E-06	5.84E-06	5.91E-06	5.97E-06	6.03E-06	6.03E-06
nd148	5.57E-06	5.63E-06	5.69E-06	5.75E-06	5.82E-06	5.82E-06
ru 99	4.49E-06	4.60E-06	4.71E-06	4.82E-06	4.94E-06	4.94E-06
nd146	4.69E-06	4.75E-06	4.80E-06	4.85E-06	4.90E-06	4.90E-06
pd107	4.27E-06	4.33E-06	4.39E-06	4.45E-06	4.51E-06	4.51E-06
in115	4.13E-06	4.17E-06	4.22E-06	4.27E-06	4.31E-06	4.31E-06
ba138	4.00E-06	4.04E-06	4.08E-06	4.13E-06	4.17E-06	4.17E-06
ce140	3.74E-06	3.78E-06	3.82E-06	3.86E-06	3.91E-06	3.91E-06
xe132	3.44E-06	3.48E-06	3.52E-06	3.56E-06	3.59E-06	3.59E-06
mo 98	2.30E-06	2.33E-06	2.35E-06	2.38E-06	2.40E-06	2.40E-06
mo100	2.24E-06	2.27E-06	2.29E-06	2.32E-06	2.34E-06	2.34E-06
xe134	2.21E-06	2.24E-06	2.26E-06	2.29E-06	2.31E-06	2.31E-06
zr 92	1.75E-06	1.77E-06	1.79E-06	1.81E-06	1.83E-06	1.83E-06
i127	1.66E-06	1.68E-06	1.70E-06	1.72E-06	1.74E-06	1.74E-06
ru104	1.52E-06	1.54E-06	1.56E-06	1.57E-06	1.59E-06	1.59E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 170
0 fraction of total absorption rate
power= .00mw, burnup= 21450.mwd, flux= 6.04E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	1.38E-06	1.40E-06	1.41E-06	1.43E-06	1.44E-06	1.44E-06
nd150	1.26E-06	1.28E-06	1.29E-06	1.30E-06	1.32E-06	1.32E-06
xe136	1.20E-06	1.21E-06	1.23E-06	1.24E-06	1.25E-06	1.25E-06
cd111	9.62E-07	9.75E-07	9.87E-07	1.00E-06	1.01E-06	1.01E-06
br 81	8.88E-07	8.98E-07	9.08E-07	9.18E-07	9.28E-07	9.28E-07
gd154	8.14E-07	8.33E-07	8.52E-07	8.71E-07	8.91E-07	8.91E-07
rb 85	8.50E-07	8.60E-07	8.69E-07	8.78E-07	8.88E-07	8.88E-07
zr 94	7.43E-07	7.51E-07	7.60E-07	7.68E-07	7.76E-07	7.76E-07
zr 90	6.83E-07	6.90E-07	6.98E-07	7.05E-07	7.13E-07	7.13E-07
sm154	5.94E-07	6.01E-07	6.08E-07	6.14E-07	6.21E-07	6.21E-07
te130	5.53E-07	5.60E-07	5.66E-07	5.72E-07	5.78E-07	5.78E-07
rb 87	4.89E-07	4.95E-07	5.00E-07	5.05E-07	5.11E-07	5.11E-07
ba135	4.54E-07	4.65E-07	4.77E-07	4.89E-07	5.01E-07	5.01E-07
pd106	3.62E-07	3.67E-07	3.72E-07	3.76E-07	3.81E-07	3.81E-07
se 77	3.58E-07	3.62E-07	3.66E-07	3.69E-07	3.73E-07	3.73E-07
gd156	3.44E-07	3.49E-07	3.53E-07	3.58E-07	3.62E-07	3.62E-07
kr 84	2.33E-07	2.36E-07	2.39E-07	2.41E-07	2.44E-07	2.44E-07
ru100	2.23E-07	2.28E-07	2.33E-07	2.38E-07	2.43E-07	2.43E-07
dy161	2.11E-07	2.14E-07	2.17E-07	2.20E-07	2.22E-07	2.22E-07
sb121	1.90E-07	1.92E-07	1.95E-07	1.97E-07	1.99E-07	1.99E-07
se 79	1.76E-07	1.78E-07	1.80E-07	1.82E-07	1.84E-07	1.84E-07
nd142	1.63E-07	1.67E-07	1.70E-07	1.74E-07	1.78E-07	1.78E-07
ba134	1.56E-07	1.60E-07	1.63E-07	1.67E-07	1.70E-07	1.70E-07
sb123	1.54E-07	1.55E-07	1.57E-07	1.59E-07	1.61E-07	1.61E-07
sm148	1.42E-07	1.45E-07	1.48E-07	1.52E-07	1.55E-07	1.55E-07

kr 86	1.30E-07	1.31E-07	1.32E-07	1.34E-07	1.35E-07	1.35E-07
te128	1.25E-07	1.27E-07	1.28E-07	1.30E-07	1.31E-07	1.31E-07
pd104	1.07E-07	1.10E-07	1.12E-07	1.15E-07	1.17E-07	1.17E-07
tb159	9.13E-08	9.25E-08	9.38E-08	9.50E-08	9.62E-08	9.62E-08
eu152	9.20E-08	1.17E-07	1.18E-07	1.18E-07	1.19E-07	9.30E-08
se 80	8.57E-08	8.66E-08	8.76E-08	8.85E-08	8.95E-08	8.95E-08
te125	8.51E-08	8.61E-08	8.71E-08	8.81E-08	8.91E-08	8.91E-08
nb 93	7.22E-08	7.40E-08	7.59E-08	7.77E-08	7.96E-08	7.96E-08
gd158	7.22E-08	7.32E-08	7.41E-08	7.51E-08	7.60E-08	7.60E-08
cd112	6.54E-08	6.63E-08	6.71E-08	6.79E-08	6.87E-08	6.87E-08
dy162	4.78E-08	4.86E-08	4.94E-08	5.01E-08	5.09E-08	5.09E-08
dy164	4.74E-08	4.80E-08	4.87E-08	4.93E-08	5.00E-08	5.00E-08
sn117	4.62E-08	4.68E-08	4.73E-08	4.79E-08	4.84E-08	4.84E-08
li 6	4.46E-08	4.50E-08	4.55E-08	4.59E-08	4.64E-08	4.64E-08
cd110	3.75E-08	3.85E-08	3.95E-08	4.05E-08	4.16E-08	4.16E-08
cd114	3.93E-08	3.97E-08	4.02E-08	4.07E-08	4.12E-08	4.12E-08
br 79	3.60E-08	3.69E-08	3.78E-08	3.87E-08	3.97E-08	3.97E-08
mo 96	3.57E-08	3.65E-08	3.73E-08	3.81E-08	3.89E-08	3.89E-08
ag107	3.40E-08	3.50E-08	3.59E-08	3.69E-08	3.79E-08	3.79E-08
sn119	3.52E-08	3.57E-08	3.61E-08	3.65E-08	3.69E-08	3.69E-08
pd110	3.22E-08	3.26E-08	3.30E-08	3.35E-08	3.39E-08	3.39E-08
sn115	3.23E-08	3.26E-08	3.30E-08	3.34E-08	3.37E-08	3.37E-08
sr 88	2.38E-08	2.40E-08	2.43E-08	2.46E-08	2.48E-08	2.48E-08
xe129	2.18E-08	2.23E-08	2.29E-08	2.35E-08	2.40E-08	2.40E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 171
0 fraction of total absorption rate
power= .00mw, burnup= 21450.mwd, flux= 6.04E+07n/cm**2-sec
0

	initial	******* d	******* d	******* d	******* d	******* d
eu155	2.35E-08	4.58E-08	4.58E-08	4.59E-08	4.59E-08	2.27E-08
xe130	1.76E-08	1.80E-08	1.84E-08	1.87E-08	1.91E-08	1.91E-08
pm147	2.01E-08	6.55E-08	6.55E-08	6.55E-08	6.55E-08	1.89E-08
se 82	1.63E-08	1.65E-08	1.67E-08	1.69E-08	1.71E-08	1.71E-08
ba136	1.55E-08	1.58E-08	1.60E-08	1.63E-08	1.66E-08	1.66E-08
sn126	1.42E-08	1.43E-08	1.44E-08	1.46E-08	1.47E-08	1.47E-08
te126	1.22E-08	1.25E-08	1.28E-08	1.31E-08	1.34E-08	1.34E-08
se 78	1.28E-08	1.30E-08	1.31E-08	1.32E-08	1.34E-08	1.34E-08
dy163	1.20E-08	1.22E-08	1.24E-08	1.26E-08	1.28E-08	1.28E-08
kr 82	1.16E-08	1.18E-08	1.19E-08	1.21E-08	1.23E-08	1.23E-08
sn124	1.12E-08	1.14E-08	1.15E-08	1.16E-08	1.17E-08	1.17E-08
as 75	7.53E-09	7.62E-09	7.70E-09	7.78E-09	7.87E-09	7.87E-09
eu154	6.63E-09	9.66E-09	9.78E-09	9.90E-09	1.00E-08	6.83E-09
in113	6.43E-09	6.50E-09	6.58E-09	6.65E-09	6.73E-09	6.73E-09
sn118	4.53E-09	4.58E-09	4.64E-09	4.69E-09	4.74E-09	4.74E-09
sn122	3.88E-09	3.93E-09	3.97E-09	4.02E-09	4.06E-09	4.06E-09
cd116	3.81E-09	3.85E-09	3.89E-09	3.94E-09	3.98E-09	3.98E-09
sr 90	3.55E-09	3.96E-09	3.96E-09	3.96E-09	3.96E-09	3.53E-09
sn120	2.86E-09	2.89E-09	2.93E-09	2.96E-09	2.99E-09	2.99E-09
ge 73	2.16E-09	2.18E-09	2.21E-09	2.23E-09	2.25E-09	2.25E-09
ho165	1.14E-09	1.16E-09	1.18E-09	1.21E-09	1.23E-09	1.23E-09
dy160	1.05E-09	1.07E-09	1.10E-09	1.12E-09	1.15E-09	1.15E-09
gd160	1.02E-09	1.03E-09	1.04E-09	1.06E-09	1.07E-09	1.07E-09
cs137	8.24E-10	9.15E-10	9.15E-10	9.15E-10	9.16E-10	8.20E-10
ge 76	7.34E-10	7.42E-10	7.50E-10	7.58E-10	7.66E-10	7.66E-10
xe128	6.21E-10	6.36E-10	6.50E-10	6.64E-10	6.79E-10	6.79E-10
sr 86	2.98E-10	3.04E-10	3.10E-10	3.17E-10	3.23E-10	3.23E-10
sn116	2.37E-10	2.42E-10	2.47E-10	2.53E-10	2.58E-10	2.58E-10
te124	2.22E-10	2.26E-10	2.30E-10	2.34E-10	2.38E-10	2.38E-10
cs134	2.01E-10	9.25E-10	9.36E-10	9.47E-10	9.57E-10	1.94E-10
nb 94	1.15E-10	1.18E-10	1.21E-10	1.24E-10	1.27E-10	1.27E-10

sr 87	1.10E-10	1.11E-10	1.13E-10	1.14E-10	1.16E-10	1.16E-10
te122	9.93E-11	1.02E-10	1.04E-10	1.06E-10	1.08E-10	1.08E-10
kr 85	9.99E-11	1.34E-10	1.34E-10	1.34E-10	1.34E-10	9.83E-11
se 76	8.40E-11	8.57E-11	8.73E-11	8.90E-11	9.08E-11	9.08E-11
er166	5.57E-11	5.66E-11	5.75E-11	5.85E-11	5.94E-11	5.94E-11
ge 74	4.31E-11	4.36E-11	4.41E-11	4.46E-11	4.51E-11	4.51E-11
kr 80	3.54E-11	3.67E-11	3.80E-11	3.93E-11	4.07E-11	4.07E-11
ge 72	3.18E-11	3.21E-11	3.25E-11	3.29E-11	3.33E-11	3.33E-11
er167	5.79E-12	5.95E-12	6.11E-12	6.27E-12	6.44E-12	6.44E-12
te123	4.32E-12	4.46E-12	4.61E-12	4.75E-12	4.90E-12	4.90E-12
y 90	3.38E-12	3.77E-12	3.77E-12	3.77E-12	3.77E-12	3.36E-12
cd108	2.40E-12	2.50E-12	2.60E-12	2.70E-12	2.81E-12	2.81E-12
ce144	2.59E-12	1.42E-10	1.42E-10	1.42E-10	1.42E-10	2.09E-12
sb125	1.39E-12	4.34E-12	4.35E-12	4.35E-12	4.35E-12	1.31E-12
ru106	4.57E-13	9.85E-12	9.86E-12	9.87E-12	9.89E-12	3.88E-13
be 9	9.23E-14	9.34E-14	9.44E-14	9.54E-14	9.64E-14	9.64E-14
sn114	6.22E-14	6.36E-14	6.51E-14	6.65E-14	6.80E-14	6.80E-14
li 7	3.78E-14	3.83E-14	3.87E-14	3.91E-14	3.95E-14	3.95E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 172
0 fraction of total absorption rate
power= .00mw, burnup= 21450.mwd, flux= 6.04E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sb126	1.63E-14	1.80E-14	1.82E-14	1.83E-14	1.85E-14	1.69E-14
te127m	6.51E-17	2.21E-12	2.21E-12	2.21E-12	2.21E-12	3.69E-17
cd109	2.08E-18	2.55E-17	2.65E-17	2.75E-17	2.85E-17	2.11E-18
nb 95	1.46E-18	3.63E-11	3.63E-11	3.63E-11	3.63E-11	5.59E-19
zr 95	7.08E-19	3.90E-11	3.90E-11	3.90E-11	3.91E-11	2.73E-19
sn123	3.81E-19	2.58E-15	2.58E-15	2.58E-15	2.58E-15	2.32E-19
y 91	1.09E-19	3.34E-11	3.34E-11	3.34E-11	3.34E-11	4.09E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 173
power= 9.790E-04mw, burnup=2.1450E+04mwd, flux= 6.04E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
h 1	1.22E-03	1.24E-03	1.25E-03	1.26E-03	1.28E-03	1.28E-03
h 2	3.66E-06	3.70E-06	3.74E-06	3.78E-06	3.82E-06	3.82E-06
h 3	1.11E-11	1.43E-11	1.44E-11	1.44E-11	1.44E-11	1.11E-11
h 4	.00E+00	1.43E-35	1.43E-35	1.44E-35	1.44E-35	.00E+00
he 3	1.68E-08	1.69E-08	1.70E-08	1.71E-08	1.72E-08	1.72E-08
he 4	2.03E-04	2.05E-04	2.07E-04	2.10E-04	2.12E-04	2.12E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	2.44E-05	2.46E-05	2.49E-05	2.52E-05	2.54E-05	2.54E-05
ne 21	9.10E-09	9.29E-09	9.49E-09	9.68E-09	9.88E-09	9.88E-09
ne 22	1.61E-07	1.62E-07	1.64E-07	1.66E-07	1.68E-07	1.68E-07
ne 23	1.78E-30	1.78E-15	1.78E-15	1.78E-15	1.78E-15	1.78E-30
na 22	3.18E-12	1.05E-11	1.06E-11	1.06E-11	1.06E-11	2.98E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	6.44E-24	6.43E-09	6.44E-09	6.44E-09	6.44E-09	6.44E-24
na 24m	1.06E-30	1.06E-15	1.06E-15	1.06E-15	1.06E-15	1.06E-30
na 25	6.58E-39	6.71E-24	6.86E-24	7.00E-24	7.15E-24	7.15E-39
mg 24	1.58E-01	1.60E-01	1.62E-01	1.63E-01	1.65E-01	1.65E-01
mg 25	9.42E-07	9.62E-07	9.82E-07	1.00E-06	1.02E-06	1.02E-06
mg 26	3.65E-06	3.69E-06	3.73E-06	3.77E-06	3.81E-06	3.81E-06
mg 27	5.30E-28	5.30E-13	5.30E-13	5.31E-13	5.31E-13	5.31E-28
mg 28	.00E+00	2.65E-25	2.65E-25	2.66E-25	2.66E-25	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	4.77E-26	4.77E-11	4.77E-11	4.77E-11	4.77E-11	4.78E-26
al 29	5.34E-37	5.45E-22	5.57E-22	5.69E-22	5.81E-22	5.81E-37

	al 30	.00E+00	1.45E-31	1.50E-31	1.55E-31	1.60E-31	.00E+00
	si 28	4.61E-01	4.66E-01	4.71E-01	4.76E-01	4.80E-01	4.80E-01
	si 29	8.54E-06	8.72E-06	8.91E-06	9.09E-06	9.28E-06	9.28E-06
	si 30	1.69E-10	1.74E-10	1.80E-10	1.86E-10	1.91E-10	1.91E-10
	si 31	2.97E-38	3.07E-23	3.17E-23	3.27E-23	3.38E-23	3.38E-38
	si 32	1.25E-29	1.31E-29	1.36E-29	1.40E-29	1.45E-29	1.42E-29
	totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0	flux		6.04E+07	6.04E+07	6.04E+07	6.05E+07	6.05E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 174
power= 9.790E-04mw, burnup=2.1450E+04mwd, flux= 6.04E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	3.72E+01	3.78E+01	3.85E+01	3.92E+01	3.99E+01	4.00E+01
pb206	2.00E-01	2.06E-01	2.11E-01	2.17E-01	2.23E-01	2.23E-01
pb207	1.29E-02	1.32E-02	1.35E-02	1.38E-02	1.42E-02	1.42E-02
pb208	5.75E-04	5.87E-04	6.00E-04	6.13E-04	6.26E-04	6.26E-04
pb209	9.34E-10	9.49E-10	9.65E-10	9.80E-10	9.94E-10	9.95E-10
pb210	2.86E-04	2.90E-04	2.94E-04	2.97E-04	3.01E-04	3.01E-04
pb211	5.09E-11	5.13E-11	5.18E-11	5.23E-11	5.28E-11	5.29E-11
pb212	3.39E-11	3.49E-11	3.53E-11	3.57E-11	3.60E-11	3.52E-11
pb214	6.55E-10	6.63E-10	6.71E-10	6.79E-10	6.87E-10	6.88E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	3.37E-02	3.48E-02	3.59E-02	3.71E-02	3.82E-02	3.82E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.76E-07	1.79E-07	1.81E-07	1.83E-07	1.85E-07	1.85E-07
bi211	3.02E-12	3.04E-12	3.07E-12	3.10E-12	3.13E-12	3.14E-12
bi212	3.21E-12	3.31E-12	3.35E-12	3.38E-12	3.42E-12	3.34E-12
bi213	2.18E-10	2.22E-10	2.25E-10	2.29E-10	2.32E-10	2.32E-10
bi214	4.86E-10	4.92E-10	4.98E-10	5.04E-10	5.10E-10	5.11E-10
po210	4.87E-06	4.93E-06	4.99E-06	5.05E-06	5.11E-06	5.12E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.34E-17	3.36E-17	3.39E-17	3.43E-17	3.46E-17	3.47E-17
po212	1.69E-22	1.74E-22	1.76E-22	1.78E-22	1.79E-22	1.75E-22
po213	3.28E-19	3.33E-19	3.39E-19	3.44E-19	3.49E-19	3.49E-19
po214	6.69E-17	6.77E-17	6.86E-17	6.94E-17	7.02E-17	7.02E-17
po215	4.18E-17	4.22E-17	4.26E-17	4.30E-17	4.34E-17	4.35E-17
po216	1.28E-16	1.32E-16	1.34E-16	1.35E-16	1.36E-16	1.33E-16
po218	7.57E-11	7.67E-11	7.76E-11	7.86E-11	7.95E-11	7.95E-11
rn218	1.18E-43	1.24E-28	1.25E-28	1.26E-28	1.28E-28	1.22E-43
rn219	9.31E-14	9.38E-14	9.47E-14	9.56E-14	9.65E-14	9.67E-14
rn220	4.91E-14	5.07E-14	5.12E-14	5.18E-14	5.23E-14	5.11E-14
rn222	1.35E-07	1.36E-07	1.38E-07	1.40E-07	1.41E-07	1.41E-07
ra222	1.27E-40	1.34E-25	1.36E-25	1.37E-25	1.39E-25	1.32E-40
ra223	2.32E-08	2.34E-08	2.36E-08	2.39E-08	2.41E-08	2.41E-08
ra224	2.79E-10	2.88E-10	2.91E-10	2.94E-10	2.97E-10	2.90E-10
ra225	1.02E-07	1.04E-07	1.05E-07	1.07E-07	1.09E-07	1.09E-07
ra226	2.06E-02	2.08E-02	2.11E-02	2.13E-02	2.16E-02	2.16E-02
ra228	9.97E-11	1.01E-10	1.03E-10	1.04E-10	1.06E-10	1.06E-10
ac225	6.89E-08	7.01E-08	7.12E-08	7.23E-08	7.34E-08	7.34E-08
ac227	1.61E-05	1.63E-05	1.64E-05	1.66E-05	1.67E-05	1.67E-05
ac228	1.22E-14	1.23E-14	1.25E-14	1.27E-14	1.29E-14	1.29E-14
th226	6.21E-39	6.56E-24	6.63E-24	6.70E-24	6.77E-24	6.46E-39
th227	3.75E-08	3.78E-08	3.82E-08	3.85E-08	3.89E-08	3.90E-08
th228	5.33E-08	5.51E-08	5.56E-08	5.62E-08	5.68E-08	5.54E-08
th229	1.98E-02	2.02E-02	2.05E-02	2.08E-02	2.11E-02	2.11E-02
th230	1.01E+00	1.03E+00	1.04E+00	1.05E+00	1.06E+00	1.06E+00
th231	2.73E-09	3.86E-09	3.87E-09	3.88E-09	3.89E-09	2.72E-09
th232	2.44E-01	2.47E-01	2.51E-01	2.54E-01	2.58E-01	2.58E-01

th233	5.46E-28	5.54E-13	5.62E-13	5.71E-13	5.79E-13	5.79E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	2.42E-02	2.45E-02	2.47E-02	2.50E-02	2.52E-02	2.52E-02
pa232	1.02E-25	1.03E-10	1.04E-10	1.05E-10	1.06E-10	1.06E-25

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 175
power= 9.790E-04mw, burnup=2.1450E+04mwd, flux= 6.04E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge *******	d *******	d *******	d *******	d *******	d
pa233	1.41E-06	1.41E-06	1.41E-06	1.41E-06	1.41E-06	1.41E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	6.02E-36	6.35E-21	6.42E-21	6.49E-21	6.56E-21	6.26E-36
u231	9.60E-32	9.70E-17	9.82E-17	9.94E-17	1.01E-16	1.01E-31
u232	1.90E-06	2.01E-06	2.03E-06	2.05E-06	2.07E-06	1.97E-06
u233	5.19E-01	5.26E-01	5.32E-01	5.38E-01	5.44E-01	5.44E-01
u234	1.02E+01	1.02E+01	1.02E+01	1.03E+01	1.03E+01	1.03E+01
u235	6.59E+02	6.58E+02	6.58E+02	6.57E+02	6.57E+02	6.57E+02
u236	1.90E+02	1.91E+02	1.91E+02	1.91E+02	1.91E+02	1.91E+02
u237	1.28E-12	8.14E-07	8.15E-07	8.16E-07	8.17E-07	1.27E-12
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	7.52E-23	7.51E-08	7.52E-08	7.52E-08	7.52E-08	7.53E-23
u240	6.63E-35	7.11E-35	7.61E-35	8.14E-35	8.69E-35	8.70E-35
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	1.16E-13	2.07E-12	2.07E-12	2.07E-12	2.07E-12	9.94E-14
np236m	4.92E-28	4.91E-13	4.91E-13	4.92E-13	4.92E-13	4.92E-28
np236	2.34E-06	2.36E-06	2.38E-06	2.40E-06	2.42E-06	2.42E-06
np237	4.08E+01	4.08E+01	4.08E+01	4.07E+01	4.07E+01	4.07E+01
np238	3.15E-14	3.64E-07	3.64E-07	3.64E-07	3.64E-07	3.18E-14
np239	2.01E-13	1.09E-05	1.09E-05	1.09E-05	1.09E-05	2.13E-13
np240m	5.66E-37	6.06E-37	6.49E-37	6.94E-37	7.42E-37	7.42E-37
np240	1.58E-38	5.40E-16	5.40E-16	5.41E-16	5.41E-16	1.83E-38
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	9.62E-11	2.72E-10	2.72E-10	2.72E-10	2.72E-10	9.11E-11
pu237	8.49E-25	7.91E-14	7.93E-14	7.94E-14	7.96E-14	2.17E-25
pu238	5.31E-03	5.50E-03	5.50E-03	5.50E-03	5.50E-03	5.30E-03
pu239	3.10E+01	3.10E+01	3.11E+01	3.11E+01	3.12E+01	3.12E+01
pu240	5.19E-01	5.20E-01	5.21E-01	5.22E-01	5.24E-01	5.23E-01
pu241	4.14E-05	5.15E-05	5.17E-05	5.18E-05	5.19E-05	4.13E-05
pu242	4.22E-05	4.28E-05	4.33E-05	4.39E-05	4.45E-05	4.45E-05
pu243	2.36E-29	2.20E-14	2.23E-14	2.26E-14	2.29E-14	2.51E-29
pu244	3.30E-24	3.54E-24	3.79E-24	4.05E-24	4.33E-24	4.33E-24
pu245	.00E+00	3.56E-35	3.81E-35	4.08E-35	4.36E-35	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.03E-34	1.03E-19	1.04E-19	1.04E-19	1.04E-19	1.04E-34
am240	4.72E-32	4.72E-17	4.74E-17	4.75E-17	4.77E-17	4.77E-32
am241	1.52E-03	1.52E-03	1.53E-03	1.53E-03	1.54E-03	1.54E-03
am242m	1.70E-07	1.74E-07	1.75E-07	1.75E-07	1.76E-07	1.72E-07
am242	2.20E-12	1.39E-11	1.40E-11	1.40E-11	1.41E-11	2.22E-12
am243	2.29E-07	2.33E-07	2.37E-07	2.40E-07	2.44E-07	2.44E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	4.23E-31	4.29E-16	4.36E-16	4.43E-16	4.50E-16	4.50E-31
am245	1.19E-39	6.99E-36	7.48E-36	8.01E-36	8.56E-36	1.21E-39
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	1.91E-37	2.00E-22	2.01E-22	2.02E-22	2.02E-22	5.83E-38
cm242	4.46E-10	2.81E-09	2.82E-09	2.83E-09	2.84E-09	4.49E-10
cm243	1.41E-14	1.57E-14	1.58E-14	1.58E-14	1.59E-14	1.42E-14
cm244	5.59E-12	6.74E-12	6.85E-12	6.96E-12	7.08E-12	5.90E-12

```
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides          page  176
       power= 9.790E-04mw, burnup=2.1450E+04mwd, flux= 6.04E+07n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
              charge ******* d ******* d ******* d ******* d ******* d
     cm245    1.46E-14  1.48E-14  1.51E-14  1.54E-14  1.56E-14  1.56E-14
     cm246    1.17E-16  1.19E-16  1.22E-16  1.24E-16  1.26E-16  1.26E-16
     cm247    5.50E-20  5.69E-20  5.89E-20  6.08E-20  6.29E-20  6.29E-20
     cm248    1.98E-22  2.09E-22  2.19E-22  2.31E-22  2.42E-22  2.42E-22
     cm249     .00E+00  1.60E-33  1.68E-33  1.77E-33  1.86E-33   .00E+00
     cm250    1.08E-37  1.15E-37  1.22E-37  1.30E-37  1.38E-37  1.38E-37
     cm251     .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals     3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               6.04E+07  6.04E+07  6.04E+07  6.05E+07  6.05E-08
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number 20 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *      data from the light element, actinide, and fission product libraries    *
          *        decay data, including gamma and total energy, are from endf/b-vi      *
          *                                                                              *
          *      neutron flux spectrum factors and cross sections were produced from     *
          *     the "presas2" case updating all nuclides on the scale "burnup" library   *
          *                                                                              *
          *                  fission product yields are from endf/b-v                    *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *        see information above this box (if present) for later updates         *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
```

```
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/29/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page  177
        power=    .00mw, burnup=  22344.mwd, flux= 6.05E+07n/cm**2-sec
0                                                 basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.256850E+06   1.256228E+06   1.255605E+06   1.254980E+06   1.254355E+06   1.254355E+06
     absorptions   1.024347E+06   1.024127E+06   1.023905E+06   1.023683E+06   1.023460E+06   1.023460E+06
     k infinity    1.226977E+00   1.226633E+00   1.226290E+00   1.225946E+00   1.225602E+00   1.225602E+00
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   1.006195E+06   1.005896E+06   1.005597E+06   1.005296E+06   1.004996E+06   1.004996E+06
     non-actinide
     abs. fracs.   1.772010E-02   1.780099E-02   1.788104E-02   1.796150E-02   1.804131E-02   1.804131E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products    page  178
0                                  fraction of total absorption rate
        power=    .00mw, burnup=  22344.mwd, flux= 6.05E+07n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.43E-03  5.43E-03  5.43E-03  5.43E-03  5.42E-03  5.42E-03
     nd143     2.07E-03  2.09E-03  2.11E-03  2.13E-03  2.15E-03  2.15E-03
     eu151     1.85E-03  1.86E-03  1.87E-03  1.88E-03  1.89E-03  1.89E-03
     rh103     1.01E-03  1.02E-03  1.03E-03  1.04E-03  1.05E-03  1.05E-03
     xe131     6.74E-04  6.81E-04  6.88E-04  6.95E-04  7.02E-04  7.02E-04
     cs133     5.24E-04  5.30E-04  5.35E-04  5.41E-04  5.46E-04  5.46E-04
     sm147     3.84E-04  3.88E-04  3.92E-04  3.96E-04  4.00E-04  4.00E-04
     tc 99     3.54E-04  3.57E-04  3.60E-04  3.64E-04  3.67E-04  3.67E-04
     nd145     2.96E-04  2.99E-04  3.02E-04  3.05E-04  3.08E-04  3.08E-04
     sm152     2.31E-04  2.34E-04  2.37E-04  2.39E-04  2.42E-04  2.42E-04
     gd155     2.25E-04  2.25E-04  2.25E-04  2.25E-04  2.25E-04  2.25E-04
     mo 95     2.05E-04  2.07E-04  2.09E-04  2.12E-04  2.14E-04  2.14E-04
     sm150     1.55E-04  1.57E-04  1.59E-04  1.61E-04  1.62E-04  1.62E-04
     kr 83     1.26E-04  1.27E-04  1.29E-04  1.30E-04  1.31E-04  1.31E-04
     cs135     1.19E-04  1.20E-04  1.21E-04  1.23E-04  1.24E-04  1.24E-04
     cd113     1.03E-04  1.03E-04  1.03E-04  1.03E-04  1.03E-04  1.03E-04
     eu153     9.47E-05  9.58E-05  9.69E-05  9.80E-05  9.92E-05  9.92E-05
     ru101     9.24E-05  9.34E-05  9.44E-05  9.54E-05  9.64E-05  9.64E-05
     pr141     8.86E-05  8.95E-05  9.05E-05  9.14E-05  9.23E-05  9.23E-05
     la139     7.25E-05  7.32E-05  7.40E-05  7.48E-05  7.55E-05  7.55E-05
     gd157     6.13E-05  6.13E-05  6.14E-05  6.14E-05  6.14E-05  6.14E-05
     ag109     3.71E-05  3.76E-05  3.82E-05  3.87E-05  3.92E-05  3.92E-05
     pd105     3.71E-05  3.75E-05  3.80E-05  3.84E-05  3.88E-05  3.88E-05
     ba137     3.51E-05  3.54E-05  3.58E-05  3.62E-05  3.66E-05  3.66E-05
     zr 93     2.84E-05  2.87E-05  2.90E-05  2.93E-05  2.96E-05  2.96E-05
      i129     2.37E-05  2.40E-05  2.43E-05  2.45E-05  2.48E-05  2.48E-05
     nd144     2.24E-05  2.27E-05  2.29E-05  2.32E-05  2.34E-05  2.34E-05
     gd152     1.86E-05  1.89E-05  1.93E-05  1.96E-05  1.99E-05  1.99E-05
     mo 97     1.65E-05  1.66E-05  1.68E-05  1.70E-05  1.72E-05  1.72E-05
     sm151     1.27E-05  1.32E-05  1.32E-05  1.32E-05  1.33E-05  1.33E-05
     pd108     8.95E-06  9.07E-06  9.19E-06  9.31E-06  9.43E-06  9.43E-06
     zr 91     7.56E-06  7.64E-06  7.72E-06  7.80E-06  7.88E-06  7.88E-06
      y 89     7.23E-06  7.30E-06  7.38E-06  7.46E-06  7.53E-06  7.53E-06
```

ru102	6.89E-06	6.97E-06	7.04E-06	7.11E-06	7.19E-06	7.19E-06
ce142	6.04E-06	6.10E-06	6.16E-06	6.23E-06	6.29E-06	6.29E-06
nd148	5.82E-06	5.88E-06	5.94E-06	6.00E-06	6.06E-06	6.06E-06
ru 99	4.94E-06	5.05E-06	5.17E-06	5.29E-06	5.41E-06	5.41E-06
nd146	4.90E-06	4.96E-06	5.01E-06	5.06E-06	5.11E-06	5.11E-06
pd107	4.51E-06	4.56E-06	4.62E-06	4.68E-06	4.74E-06	4.74E-06
in115	4.31E-06	4.36E-06	4.41E-06	4.45E-06	4.50E-06	4.50E-06
ba138	4.17E-06	4.22E-06	4.26E-06	4.31E-06	4.35E-06	4.35E-06
ce140	3.91E-06	3.95E-06	3.99E-06	4.03E-06	4.07E-06	4.07E-06
xe132	3.59E-06	3.63E-06	3.67E-06	3.71E-06	3.75E-06	3.75E-06
mo 98	2.40E-06	2.43E-06	2.45E-06	2.48E-06	2.51E-06	2.51E-06
mo100	2.34E-06	2.37E-06	2.39E-06	2.42E-06	2.44E-06	2.44E-06
xe134	2.31E-06	2.33E-06	2.36E-06	2.38E-06	2.41E-06	2.41E-06
zr 92	1.83E-06	1.85E-06	1.87E-06	1.89E-06	1.91E-06	1.91E-06
i127	1.74E-06	1.76E-06	1.78E-06	1.80E-06	1.82E-06	1.82E-06
ru104	1.59E-06	1.61E-06	1.63E-06	1.64E-06	1.66E-06	1.66E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 179
0 fraction of total absorption rate
power= .00mw, burnup= 22344.mwd, flux= 6.05E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	1.44E-06	1.46E-06	1.47E-06	1.49E-06	1.50E-06	1.50E-06
nd150	1.32E-06	1.33E-06	1.35E-06	1.36E-06	1.37E-06	1.37E-06
xe136	1.25E-06	1.27E-06	1.28E-06	1.29E-06	1.31E-06	1.31E-06
cd111	1.01E-06	1.03E-06	1.04E-06	1.05E-06	1.06E-06	1.06E-06
gd154	8.91E-07	9.11E-07	9.31E-07	9.51E-07	9.72E-07	9.72E-07
br 81	9.27E-07	9.37E-07	9.47E-07	9.57E-07	9.67E-07	9.67E-07
rb 85	8.87E-07	8.97E-07	9.06E-07	9.15E-07	9.25E-07	9.25E-07
zr 94	7.76E-07	7.84E-07	7.92E-07	8.00E-07	8.09E-07	8.09E-07
zr 90	7.13E-07	7.20E-07	7.28E-07	7.35E-07	7.42E-07	7.42E-07
sm154	6.21E-07	6.28E-07	6.35E-07	6.42E-07	6.49E-07	6.49E-07
te130	5.78E-07	5.85E-07	5.91E-07	5.97E-07	6.03E-07	6.03E-07
xe135	.00E+00	5.67E-07	5.67E-07	5.67E-07	5.68E-07	5.68E-07
ba135	5.01E-07	5.13E-07	5.25E-07	5.38E-07	5.50E-07	5.50E-07
rb 87	5.11E-07	5.16E-07	5.21E-07	5.27E-07	5.32E-07	5.32E-07
pd106	3.81E-07	3.85E-07	3.90E-07	3.95E-07	3.99E-07	3.99E-07
se 77	3.74E-07	3.77E-07	3.81E-07	3.85E-07	3.89E-07	3.89E-07
gd156	3.62E-07	3.67E-07	3.71E-07	3.76E-07	3.80E-07	3.80E-07
ru100	2.43E-07	2.48E-07	2.53E-07	2.58E-07	2.63E-07	2.63E-07
kr 84	2.44E-07	2.46E-07	2.49E-07	2.51E-07	2.54E-07	2.54E-07
dy161	2.23E-07	2.25E-07	2.28E-07	2.31E-07	2.34E-07	2.34E-07
sb121	1.99E-07	2.01E-07	2.03E-07	2.05E-07	2.08E-07	2.08E-07
nd142	1.78E-07	1.82E-07	1.86E-07	1.90E-07	1.93E-07	1.93E-07
se 79	1.84E-07	1.86E-07	1.87E-07	1.89E-07	1.91E-07	1.91E-07
ba134	1.70E-07	1.74E-07	1.77E-07	1.81E-07	1.85E-07	1.85E-07
sm148	1.55E-07	1.58E-07	1.62E-07	1.65E-07	1.68E-07	1.68E-07
sb123	1.61E-07	1.62E-07	1.64E-07	1.66E-07	1.68E-07	1.68E-07
kr 86	1.35E-07	1.37E-07	1.38E-07	1.39E-07	1.41E-07	1.41E-07
te128	1.31E-07	1.32E-07	1.34E-07	1.35E-07	1.37E-07	1.37E-07
pd104	1.17E-07	1.19E-07	1.22E-07	1.25E-07	1.27E-07	1.27E-07
eu152	9.31E-08	1.20E-07	1.20E-07	1.21E-07	1.22E-07	1.22E-07
tb159	9.62E-08	9.75E-08	9.87E-08	9.99E-08	1.01E-07	1.01E-07
se 80	8.95E-08	9.05E-08	9.14E-08	9.24E-08	9.33E-08	9.33E-08
te125	8.91E-08	9.01E-08	9.11E-08	9.21E-08	9.31E-08	9.31E-08
nb 93	7.97E-08	8.16E-08	8.35E-08	8.55E-08	8.74E-08	8.74E-08
gd158	7.60E-08	7.70E-08	7.79E-08	7.89E-08	7.99E-08	7.99E-08
cd112	6.87E-08	6.95E-08	7.04E-08	7.12E-08	7.20E-08	7.20E-08
pm147	1.89E-08	6.55E-08	6.55E-08	6.55E-08	6.56E-08	6.56E-08
dy162	5.09E-08	5.17E-08	5.25E-08	5.33E-08	5.40E-08	5.40E-08
dy164	5.00E-08	5.06E-08	5.13E-08	5.19E-08	5.26E-08	5.26E-08

sn117	4.85E-08	4.90E-08	4.96E-08	5.01E-08	5.07E-08	5.07E-08
li 6	4.64E-08	4.68E-08	4.73E-08	4.77E-08	4.82E-08	4.82E-08
eu155	2.27E-08	4.59E-08	4.60E-08	4.60E-08	4.60E-08	4.60E-08
cd110	4.16E-08	4.26E-08	4.37E-08	4.48E-08	4.59E-08	4.59E-08
br 79	3.97E-08	4.06E-08	4.16E-08	4.25E-08	4.35E-08	4.35E-08
cd114	4.12E-08	4.17E-08	4.22E-08	4.27E-08	4.31E-08	4.31E-08
mo 96	3.89E-08	3.97E-08	4.05E-08	4.13E-08	4.22E-08	4.22E-08
ag107	3.80E-08	3.90E-08	4.00E-08	4.11E-08	4.21E-08	4.21E-08
sn119	3.69E-08	3.73E-08	3.77E-08	3.81E-08	3.85E-08	3.85E-08
pd110	3.39E-08	3.43E-08	3.48E-08	3.52E-08	3.56E-08	3.56E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 180
0 fraction of total absorption rate
power= .00mw, burnup= 22344.mwd, flux= 6.05E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sn115	3.38E-08	3.41E-08	3.45E-08	3.49E-08	3.52E-08	3.52E-08
xe129	2.41E-08	2.46E-08	2.52E-08	2.58E-08	2.64E-08	2.64E-08
sr 88	2.48E-08	2.51E-08	2.53E-08	2.56E-08	2.59E-08	2.59E-08
xe130	1.91E-08	1.95E-08	1.99E-08	2.03E-08	2.07E-08	2.07E-08
ba136	1.66E-08	1.69E-08	1.72E-08	1.75E-08	1.78E-08	1.78E-08
se 82	1.71E-08	1.72E-08	1.74E-08	1.76E-08	1.78E-08	1.78E-08
sn126	1.47E-08	1.49E-08	1.50E-08	1.51E-08	1.53E-08	1.53E-08
te126	1.34E-08	1.37E-08	1.40E-08	1.43E-08	1.47E-08	1.47E-08
se 78	1.34E-08	1.35E-08	1.37E-08	1.38E-08	1.40E-08	1.40E-08
dy163	1.28E-08	1.29E-08	1.31E-08	1.33E-08	1.35E-08	1.35E-08
kr 82	1.23E-08	1.25E-08	1.27E-08	1.30E-08	1.32E-08	1.32E-08
sn124	1.17E-08	1.19E-08	1.20E-08	1.21E-08	1.23E-08	1.23E-08
eu154	6.84E-09	1.02E-08	1.03E-08	1.04E-08	1.05E-08	1.05E-08
as 75	7.87E-09	7.95E-09	8.04E-09	8.12E-09	8.20E-09	8.20E-09
in113	6.73E-09	6.81E-09	6.88E-09	6.96E-09	7.03E-09	7.03E-09
sn118	4.74E-09	4.79E-09	4.84E-09	4.90E-09	4.95E-09	4.95E-09
sn122	4.06E-09	4.11E-09	4.16E-09	4.20E-09	4.25E-09	4.25E-09
cd116	3.98E-09	4.02E-09	4.07E-09	4.11E-09	4.16E-09	4.16E-09
sr 90	3.53E-09	3.96E-09	3.96E-09	3.96E-09	3.96E-09	3.96E-09
sn120	2.99E-09	3.03E-09	3.06E-09	3.09E-09	3.13E-09	3.13E-09
rh105	.00E+00	2.66E-09	2.66E-09	2.66E-09	2.66E-09	2.66E-09
ge 73	2.25E-09	2.28E-09	2.30E-09	2.33E-09	2.35E-09	2.35E-09
ho165	1.23E-09	1.25E-09	1.27E-09	1.29E-09	1.32E-09	1.32E-09
dy160	1.15E-09	1.18E-09	1.20E-09	1.23E-09	1.26E-09	1.26E-09
gd160	1.07E-09	1.09E-09	1.10E-09	1.11E-09	1.13E-09	1.13E-09
cs134	1.94E-10	9.67E-10	9.78E-10	9.89E-10	9.99E-10	9.99E-10
cs137	8.20E-10	9.16E-10	9.16E-10	9.16E-10	9.16E-10	9.16E-10
ge 76	7.66E-10	7.74E-10	7.82E-10	7.90E-10	7.98E-10	7.98E-10
xe128	6.79E-10	6.94E-10	7.09E-10	7.24E-10	7.39E-10	7.39E-10
pr143	.00E+00	6.35E-10	6.35E-10	6.35E-10	6.35E-10	6.35E-10
xe133	.00E+00	4.92E-10	4.92E-10	4.92E-10	4.92E-10	4.92E-10
ce141	.00E+00	3.86E-10	3.86E-10	3.86E-10	3.86E-10	3.86E-10
sr 86	3.23E-10	3.30E-10	3.36E-10	3.43E-10	3.50E-10	3.50E-10
sn116	2.58E-10	2.64E-10	2.70E-10	2.75E-10	2.81E-10	2.81E-10
te124	2.38E-10	2.42E-10	2.46E-10	2.50E-10	2.54E-10	2.54E-10
pm149	.00E+00	2.40E-10	2.41E-10	2.41E-10	2.41E-10	2.41E-10
nd147	.00E+00	2.24E-10	2.24E-10	2.24E-10	2.24E-10	2.24E-10
ce144	2.09E-12	1.42E-10	1.42E-10	1.42E-10	1.42E-10	1.42E-10
nb 94	1.27E-10	1.30E-10	1.34E-10	1.37E-10	1.40E-10	1.40E-10
kr 85	9.83E-11	1.34E-10	1.34E-10	1.34E-10	1.34E-10	1.34E-10
sr 87	1.16E-10	1.17E-10	1.19E-10	1.20E-10	1.22E-10	1.22E-10
te122	1.08E-10	1.11E-10	1.13E-10	1.16E-10	1.18E-10	1.18E-10
se 76	9.08E-11	9.25E-11	9.43E-11	9.61E-11	9.79E-11	9.79E-11
ru103	.00E+00	9.48E-11	9.48E-11	9.48E-11	9.49E-11	9.49E-11
er166	5.94E-11	6.04E-11	6.13E-11	6.23E-11	6.32E-11	6.32E-11

ge 74	4.51E-11	4.56E-11	4.60E-11	4.65E-11	4.70E-11	4.70E-11
kr 80	4.07E-11	4.21E-11	4.35E-11	4.50E-11	4.65E-11	4.65E-11
zr 95	2.72E-19	3.90E-11	3.91E-11	3.91E-11	3.91E-11	3.91E-11
nb 95	5.58E-19	3.63E-11	3.63E-11	3.63E-11	3.63E-11	3.63E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 181
0 fraction of total absorption rate

power= .00mw, burnup= 22344.mwd, flux= 6.05E+07n/cm**2-sec

	initial	******* d	******* d	******* d	******* d	******* d
ge 72	3.33E-11	3.37E-11	3.40E-11	3.44E-11	3.48E-11	3.48E-11
y 91	4.08E-20	3.34E-11	3.34E-11	3.34E-11	3.34E-11	3.34E-11
pm151	.00E+00	2.84E-11	2.84E-11	2.84E-11	2.84E-11	2.84E-11
sm153	.00E+00	1.27E-11	1.27E-11	1.27E-11	1.28E-11	1.28E-11
eu156	.00E+00	1.27E-11	1.27E-11	1.28E-11	1.28E-11	1.28E-11
ba140	.00E+00	1.14E-11	1.14E-11	1.14E-11	1.14E-11	1.14E-11
ru106	3.88E-13	9.89E-12	9.90E-12	9.91E-12	9.92E-12	9.92E-12
er167	6.44E-12	6.61E-12	6.78E-12	6.95E-12	7.13E-12	7.13E-12
sr 89	.00E+00	7.11E-12	7.11E-12	7.11E-12	7.11E-12	7.11E-12
te123	4.90E-12	5.05E-12	5.21E-12	5.36E-12	5.53E-12	5.53E-12
kr 87	.00E+00	5.34E-12	5.34E-12	5.34E-12	5.34E-12	5.34E-12
sb125	1.31E-12	4.35E-12	4.36E-12	4.36E-12	4.36E-12	4.36E-12
ce143	.00E+00	4.16E-12	4.16E-12	4.16E-12	4.16E-12	4.16E-12
y 90	3.36E-12	3.77E-12	3.78E-12	3.78E-12	3.78E-12	3.78E-12
la140	.00E+00	3.67E-12	3.67E-12	3.67E-12	3.67E-12	3.67E-12
cd108	2.81E-12	2.92E-12	3.03E-12	3.15E-12	3.27E-12	3.27E-12
mo 99	.00E+00	3.18E-12	3.18E-12	3.18E-12	3.18E-12	3.18E-12
te127m	3.69E-17	2.21E-12	2.21E-12	2.21E-12	2.22E-12	2.22E-12
i131	.00E+00	1.68E-12	1.68E-12	1.68E-12	1.68E-12	1.68E-12
pm148m	.00E+00	7.28E-13	7.29E-13	7.30E-13	7.31E-13	7.31E-13
te129m	.00E+00	4.71E-13	4.71E-13	4.71E-13	4.71E-13	4.71E-13
ag111	.00E+00	1.51E-13	1.52E-13	1.52E-13	1.52E-13	1.52E-13
eu157	.00E+00	1.24E-13	1.24E-13	1.24E-13	1.24E-13	1.24E-13
be 9	9.64E-14	9.74E-14	9.84E-14	9.94E-14	1.00E-13	1.00E-13
cs136	.00E+00	8.90E-14	8.97E-14	9.05E-14	9.12E-14	9.12E-14
sn114	6.80E-14	6.95E-14	7.11E-14	7.26E-14	7.42E-14	7.42E-14
cd115m	.00E+00	6.74E-14	6.75E-14	6.75E-14	6.76E-14	6.76E-14
tb160	.00E+00	5.78E-14	5.86E-14	5.93E-14	6.00E-14	6.00E-14
li 7	3.95E-14	3.99E-14	4.04E-14	4.08E-14	4.12E-14	4.12E-14
pr142	.00E+00	2.49E-14	2.52E-14	2.54E-14	2.57E-14	2.57E-14
pm148	.00E+00	2.37E-14	2.37E-14	2.38E-14	2.38E-14	2.38E-14
sb126	1.69E-14	1.87E-14	1.88E-14	1.90E-14	1.91E-14	1.91E-14
ru105	.00E+00	9.33E-15	9.34E-15	9.35E-15	9.36E-15	9.36E-15
sn125	.00E+00	7.97E-15	7.97E-15	7.98E-15	7.98E-15	7.98E-15
i130	.00E+00	4.38E-15	4.43E-15	4.47E-15	4.52E-15	4.52E-15
rb 88	.00E+00	3.00E-15	3.00E-15	3.00E-15	3.00E-15	3.00E-15
sn123	2.31E-19	2.58E-15	2.58E-15	2.58E-15	2.58E-15	2.58E-15
i135	.00E+00	2.47E-15	2.47E-15	2.48E-15	2.48E-15	2.48E-15
te132	.00E+00	2.36E-15	2.36E-15	2.36E-15	2.36E-15	2.36E-15
sb124	.00E+00	2.19E-15	2.20E-15	2.22E-15	2.24E-15	2.24E-15
rb 86	.00E+00	1.45E-15	1.47E-15	1.48E-15	1.50E-15	1.50E-15
te134	.00E+00	1.39E-15	1.39E-15	1.39E-15	1.39E-15	1.39E-15
dy165	.00E+00	7.14E-16	7.20E-16	7.25E-16	7.30E-16	7.30E-16
in117m	.00E+00	6.54E-16	6.55E-16	6.55E-16	6.56E-16	6.56E-16
in117	.00E+00	1.96E-16	1.96E-16	1.96E-16	1.96E-16	1.96E-16
cs134m	.00E+00	1.83E-16	1.85E-16	1.87E-16	1.89E-16	1.89E-16
cd118	.00E+00	3.41E-17	3.41E-17	3.41E-17	3.42E-17	3.42E-17
cd109	2.12E-18	2.95E-17	3.06E-17	3.17E-17	3.28E-17	3.28E-17
ge 75	.00E+00	2.12E-17	2.13E-17	2.13E-17	2.13E-17	2.13E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 182
0 fraction of total absorption rate

power= .00mw, burnup= 22344.mwd, flux= 6.05E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

ag110	.00E+00	1.22E-17	1.23E-17	1.25E-17	1.27E-17	1.27E-17
in119m	.00E+00	8.34E-18	8.34E-18	8.35E-18	8.36E-18	8.36E-18
in119	.00E+00	6.81E-19	6.81E-19	6.81E-19	6.81E-19	6.81E-19

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 183
power= 9.790E-04mw, burnup=2.2344E+04mwd, flux= 6.05E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
h 1	1.28E-03	1.29E-03	1.30E-03	1.32E-03	1.33E-03	1.33E-03
h 2	3.82E-06	3.86E-06	3.90E-06	3.94E-06	3.98E-06	3.98E-06
h 3	1.11E-11	1.45E-11	1.45E-11	1.46E-11	1.46E-11	1.46E-11
h 4	.00E+00	1.45E-35	1.45E-35	1.46E-35	1.46E-35	1.46E-35
he 3	1.72E-08	1.73E-08	1.73E-08	1.74E-08	1.75E-08	1.75E-08
he 4	2.12E-04	2.14E-04	2.16E-04	2.19E-04	2.21E-04	2.21E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	2.54E-05	2.57E-05	2.60E-05	2.63E-05	2.65E-05	2.65E-05
ne 21	9.88E-09	1.01E-08	1.03E-08	1.05E-08	1.07E-08	1.07E-08
ne 22	1.68E-07	1.69E-07	1.71E-07	1.73E-07	1.75E-07	1.75E-07
ne 23	1.78E-30	1.78E-15	1.78E-15	1.78E-15	1.78E-15	1.78E-15
na 22	2.98E-12	1.06E-11	1.06E-11	1.06E-11	1.06E-11	1.06E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	6.44E-24	6.44E-09	6.44E-09	6.45E-09	6.45E-09	6.45E-09
na 24m	1.06E-30	1.06E-15	1.06E-15	1.06E-15	1.06E-15	1.06E-15
na 25	7.15E-39	7.29E-24	7.44E-24	7.59E-24	7.75E-24	7.75E-24
mg 24	1.65E-01	1.67E-01	1.68E-01	1.70E-01	1.72E-01	1.72E-01
mg 25	1.02E-06	1.04E-06	1.06E-06	1.09E-06	1.11E-06	1.11E-06
mg 26	3.81E-06	3.85E-06	3.89E-06	3.93E-06	3.97E-06	3.97E-06
mg 27	5.31E-28	5.31E-13	5.31E-13	5.31E-13	5.31E-13	5.31E-13
mg 28	.00E+00	2.66E-25	2.66E-25	2.67E-25	2.67E-25	2.67E-25
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	4.78E-26	4.77E-11	4.78E-11	4.78E-11	4.78E-11	4.78E-11
al 29	5.81E-37	5.93E-22	6.05E-22	6.17E-22	6.30E-22	6.30E-22
al 30	.00E+00	1.65E-31	1.70E-31	1.75E-31	1.81E-31	1.81E-31
si 28	4.80E-01	4.85E-01	4.90E-01	4.95E-01	5.00E-01	5.00E-01
si 29	9.28E-06	9.47E-06	9.67E-06	9.86E-06	1.01E-05	1.01E-05
si 30	1.91E-10	1.97E-10	2.04E-10	2.10E-10	2.16E-10	2.16E-10
si 31	3.38E-38	3.48E-23	3.59E-23	3.70E-23	3.82E-23	3.82E-23
si 32	1.42E-29	1.49E-29	1.54E-29	1.59E-29	1.64E-29	1.64E-29
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		6.05E+07	6.05E+07	6.05E+07	6.06E+07	6.06E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 184
power= 9.790E-04mw, burnup=2.2344E+04mwd, flux= 6.05E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
he 4	4.00E+01	4.07E+01	4.14E+01	4.21E+01	4.28E+01	4.28E+01
pb206	2.23E-01	2.29E-01	2.35E-01	2.41E-01	2.47E-01	2.47E-01
pb207	1.42E-02	1.45E-02	1.48E-02	1.52E-02	1.55E-02	1.55E-02
pb208	6.26E-04	6.39E-04	6.52E-04	6.65E-04	6.78E-04	6.78E-04
pb209	9.95E-10	1.01E-09	1.02E-09	1.04E-09	1.05E-09	1.05E-09
pb210	3.01E-04	3.04E-04	3.08E-04	3.11E-04	3.15E-04	3.15E-04
pb211	5.29E-11	5.33E-11	5.38E-11	5.43E-11	5.47E-11	5.47E-11
pb212	3.52E-11	3.64E-11	3.67E-11	3.71E-11	3.74E-11	3.74E-11
pb214	6.88E-10	6.96E-10	7.04E-10	7.12E-10	7.20E-10	7.20E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

bi209	3.82E-02	3.94E-02	4.06E-02	4.18E-02	4.30E-02	4.30E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.85E-07	1.87E-07	1.90E-07	1.92E-07	1.94E-07	1.94E-07
bi211	3.14E-12	3.16E-12	3.19E-12	3.22E-12	3.25E-12	3.25E-12
bi212	3.34E-12	3.45E-12	3.48E-12	3.52E-12	3.55E-12	3.55E-12
bi213	2.32E-10	2.36E-10	2.39E-10	2.43E-10	2.46E-10	2.46E-10
bi214	5.11E-10	5.17E-10	5.23E-10	5.28E-10	5.34E-10	5.34E-10
po210	5.12E-06	5.17E-06	5.23E-06	5.29E-06	5.35E-06	5.35E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.47E-17	3.49E-17	3.52E-17	3.55E-17	3.59E-17	3.59E-17
po212	1.75E-22	1.81E-22	1.83E-22	1.85E-22	1.86E-22	1.86E-22
po213	3.49E-19	3.54E-19	3.60E-19	3.65E-19	3.70E-19	3.70E-19
po214	7.02E-17	7.11E-17	7.19E-17	7.27E-17	7.35E-17	7.35E-17
po215	4.35E-17	4.38E-17	4.42E-17	4.46E-17	4.50E-17	4.50E-17
po216	1.33E-16	1.38E-16	1.39E-16	1.40E-16	1.42E-16	1.42E-16
po218	7.95E-11	8.05E-11	8.14E-11	8.23E-11	8.33E-11	8.33E-11
rn218	1.22E-43	1.29E-28	1.30E-28	1.32E-28	1.33E-28	1.33E-28
rn219	9.67E-14	9.74E-14	9.83E-14	9.92E-14	1.00E-13	1.00E-13
rn220	5.11E-14	5.28E-14	5.33E-14	5.38E-14	5.43E-14	5.43E-14
rn222	1.41E-07	1.43E-07	1.45E-07	1.46E-07	1.48E-07	1.48E-07
ra222	1.32E-40	1.40E-25	1.41E-25	1.43E-25	1.44E-25	1.44E-25
ra223	2.41E-08	2.43E-08	2.45E-08	2.47E-08	2.50E-08	2.50E-08
ra224	2.90E-10	3.00E-10	3.03E-10	3.06E-10	3.09E-10	3.09E-10
ra225	1.09E-07	1.10E-07	1.12E-07	1.14E-07	1.15E-07	1.15E-07
ra226	2.16E-02	2.18E-02	2.21E-02	2.24E-02	2.26E-02	2.26E-02
ra228	1.06E-10	1.07E-10	1.08E-10	1.10E-10	1.11E-10	1.11E-10
ac225	7.34E-08	7.45E-08	7.56E-08	7.67E-08	7.78E-08	7.78E-08
ac227	1.67E-05	1.69E-05	1.71E-05	1.72E-05	1.74E-05	1.74E-05
ac228	1.29E-14	1.31E-14	1.32E-14	1.34E-14	1.36E-14	1.36E-14
th226	6.46E-39	6.83E-24	6.90E-24	6.97E-24	7.04E-24	7.04E-24
th227	3.90E-08	3.92E-08	3.96E-08	4.00E-08	4.03E-08	4.03E-08
th228	5.54E-08	5.73E-08	5.79E-08	5.84E-08	5.90E-08	5.90E-08
th229	2.11E-02	2.14E-02	2.18E-02	2.21E-02	2.24E-02	2.24E-02
th230	1.06E+00	1.07E+00	1.09E+00	1.10E+00	1.11E+00	1.11E+00
th231	2.72E-09	3.91E-09	3.92E-09	3.93E-09	3.94E-09	3.94E-09
th232	2.58E-01	2.61E-01	2.65E-01	2.69E-01	2.72E-01	2.72E-01
th233	5.79E-28	5.87E-13	5.95E-13	6.04E-13	6.12E-13	6.12E-13
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	2.52E-02	2.54E-02	2.57E-02	2.59E-02	2.61E-02	2.61E-02
pa232	1.06E-25	1.07E-10	1.08E-10	1.09E-10	1.10E-10	1.10E-10

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 185
power= 9.790E-04mw, burnup=2.2344E+04mwd, flux= 6.05E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge *******	d *******	d *******	d *******	d *******	d
pa233	1.41E-06	1.41E-06	1.41E-06	1.41E-06	1.41E-06	1.41E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	6.26E-36	6.62E-21	6.69E-21	6.75E-21	6.82E-21	6.82E-21
u231	1.01E-31	1.02E-16	1.03E-16	1.04E-16	1.05E-16	1.05E-16
u232	1.97E-06	2.09E-06	2.11E-06	2.13E-06	2.15E-06	2.15E-06
u233	5.44E-01	5.50E-01	5.56E-01	5.62E-01	5.68E-01	5.68E-01
u234	1.03E+01	1.03E+01	1.03E+01	1.03E+01	1.03E+01	1.03E+01
u235	6.57E+02	6.56E+02	6.56E+02	6.55E+02	6.55E+02	6.55E+02
u236	1.91E+02	1.91E+02	1.92E+02	1.92E+02	1.92E+02	1.92E+02
u237	1.27E-12	8.17E-07	8.19E-07	8.20E-07	8.21E-07	8.21E-07
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	7.53E-23	7.52E-08	7.53E-08	7.53E-08	7.53E-08	7.53E-08

u240	8.70E-35	9.28E-35	9.89E-35	1.05E-34	1.12E-34	1.12E-34
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	9.94E-14	2.07E-12	2.07E-12	2.07E-12	2.07E-12	2.07E-12
np236m	4.92E-28	4.91E-13	4.91E-13	4.91E-13	4.91E-13	4.91E-13
np236	2.42E-06	2.44E-06	2.46E-06	2.48E-06	2.50E-06	2.50E-06
np237	4.07E+01	4.07E+01	4.07E+01	4.07E+01	4.07E+01	4.07E+01
np238	3.18E-14	3.64E-07	3.64E-07	3.64E-07	3.64E-07	3.64E-07
np239	2.13E-13	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05
np240m	7.42E-37	7.92E-37	8.44E-37	8.99E-37	9.56E-37	9.56E-37
np240	1.83E-38	5.42E-16	5.42E-16	5.43E-16	5.43E-16	5.43E-16
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	9.11E-11	2.72E-10	2.72E-10	2.72E-10	2.72E-10	2.72E-10
pu237	2.17E-25	7.97E-14	7.99E-14	8.00E-14	8.02E-14	8.02E-14
pu238	5.30E-03	5.50E-03	5.50E-03	5.51E-03	5.51E-03	5.51E-03
pu239	3.12E+01	3.12E+01	3.13E+01	3.13E+01	3.14E+01	3.14E+01
pu240	5.23E-01	5.24E-01	5.25E-01	5.26E-01	5.28E-01	5.28E-01
pu241	4.13E-05	5.20E-05	5.21E-05	5.23E-05	5.24E-05	5.24E-05
pu242	4.45E-05	4.51E-05	4.56E-05	4.62E-05	4.68E-05	4.68E-05
pu243	2.51E-29	2.32E-14	2.35E-14	2.38E-14	2.41E-14	2.41E-14
pu244	4.33E-24	4.62E-24	4.93E-24	5.24E-24	5.58E-24	5.58E-24
pu245	.00E+00	4.65E-35	4.96E-35	5.29E-35	5.63E-35	5.63E-35
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.04E-34	1.04E-19	1.05E-19	1.05E-19	1.05E-19	1.05E-19
am240	4.77E-32	4.76E-17	4.79E-17	4.80E-17	4.82E-17	4.82E-17
am241	1.54E-03	1.53E-03	1.54E-03	1.55E-03	1.55E-03	1.55E-03
am242m	1.72E-07	1.75E-07	1.76E-07	1.77E-07	1.78E-07	1.78E-07
am242	2.22E-12	1.40E-11	1.41E-11	1.42E-11	1.42E-11	1.42E-11
am243	2.44E-07	2.48E-07	2.51E-07	2.55E-07	2.59E-07	2.59E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	4.50E-31	4.57E-16	4.64E-16	4.71E-16	4.79E-16	4.79E-16
am245	1.21E-39	9.14E-36	9.74E-36	1.04E-35	1.10E-35	1.10E-35
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	5.83E-38	2.02E-22	2.03E-22	2.04E-22	2.05E-22	2.05E-22
cm242	4.49E-10	2.84E-09	2.85E-09	2.86E-09	2.87E-09	2.87E-09
cm243	1.42E-14	1.59E-14	1.60E-14	1.60E-14	1.61E-14	1.61E-14
cm244	5.90E-12	7.18E-12	7.29E-12	7.40E-12	7.52E-12	7.52E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 186
power= 9.790E-04mw, burnup=2.2344E+04mwd, flux= 6.05E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d
cm245	1.56E-14	1.59E-14	1.62E-14	1.64E-14	1.67E-14	1.67E-14
cm246	1.26E-16	1.29E-16	1.31E-16	1.33E-16	1.36E-16	1.36E-16
cm247	6.29E-20	6.49E-20	6.70E-20	6.92E-20	7.13E-20	7.13E-20
cm248	2.42E-22	2.54E-22	2.67E-22	2.80E-22	2.93E-22	2.93E-22
cm249	.00E+00	1.95E-33	2.05E-33	2.15E-33	2.25E-33	2.25E-33
cm250	1.38E-37	1.47E-37	1.56E-37	1.65E-37	1.75E-37	1.75E-37
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		6.05E+07	6.05E+07	6.05E+07	6.06E+07	6.06E-08

0 1q array has 20 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 4q array has 1 entries.
0 54q array has 12 entries.
1library information...

cross-section data taken from position number 21 of library on unit 33.

```
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ******************************************************************************
          *                                                                            *
          *            prelim lwr origen-s binary working library--id = 1143            *
          *         made from modified card-image origen-s libraries of scale 4.2       *
          *      data from the light element, actinide, and fission product libraries   *
          *        decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                            *
          *      neutron flux spectrum factors and cross sections were produced from    *
          *     the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                            *
          *                  fission product yields are from endf/b-v                  *
          *                                                                            *
          *              photon libraries use an 18-energy-group structure             *
          *             the photon data are from the master photon data base,          *
          *              produced to include bremsstrahlung from uo2 matrix            *
          *                                                                            *
          *        see information above this box (if present) for later updates       *
          *                                                                            *
          ******************************************************************************
          *                                                                            *
0         ******************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                 8/29/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
                        879    number of fission product nuclides
0                      7993    number of nonzero off-diagonal matrix elements
0         ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page  187
        power=    .00mw, burnup=  22791.mwd, flux= 2.94E+07n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.292597E+06   1.291740E+06   1.290894E+06   1.290058E+06   1.289232E+06   1.289224E+06
     absorptions   1.050823E+06   1.050404E+06   1.049996E+06   1.049592E+06   1.049194E+06   1.049188E+06
     k infinity    1.230081E+00   1.229756E+00   1.229428E+00   1.229104E+00   1.228783E+00   1.228782E+00
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   1.031996E+06   1.031525E+06   1.031063E+06   1.030608E+06   1.030158E+06   1.030153E+06
     non-actinide
     abs. fracs.   1.791602E-02   1.797271E-02   1.803118E-02   1.808763E-02   1.814312E-02   1.814258E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products        page  188
0                                 fraction of total absorption rate
```

power= .00mw, burnup= 22791.mwd, flux= 2.94E+07n/cm**2-sec

0	initial ******* d	******* d	******* d	******* d	******* d
sm149	5.27E-03	5.28E-03	5.30E-03	5.31E-03	5.32E-03	5.32E-03
nd143	2.16E-03	2.17E-03	2.18E-03	2.19E-03	2.20E-03	2.20E-03
eu151	1.89E-03	1.90E-03	1.91E-03	1.91E-03	1.91E-03	1.92E-03
rh103	1.05E-03	1.06E-03	1.06E-03	1.07E-03	1.07E-03	1.07E-03
xe131	7.03E-04	7.06E-04	7.10E-04	7.14E-04	7.18E-04	7.18E-04
cs133	5.47E-04	5.50E-04	5.53E-04	5.56E-04	5.59E-04	5.59E-04
sm147	4.01E-04	4.03E-04	4.05E-04	4.07E-04	4.09E-04	4.09E-04
tc 99	3.68E-04	3.69E-04	3.70E-04	3.72E-04	3.73E-04	3.73E-04
nd145	3.09E-04	3.10E-04	3.12E-04	3.13E-04	3.15E-04	3.15E-04
sm152	2.43E-04	2.44E-04	2.46E-04	2.47E-04	2.49E-04	2.49E-04
gd155	2.31E-04	2.31E-04	2.30E-04	2.30E-04	2.30E-04	2.30E-04
mo 95	2.14E-04	2.15E-04	2.16E-04	2.17E-04	2.19E-04	2.19E-04
sm150	1.63E-04	1.64E-04	1.65E-04	1.66E-04	1.66E-04	1.66E-04
kr 83	1.32E-04	1.32E-04	1.33E-04	1.34E-04	1.34E-04	1.34E-04
cs135	1.24E-04	1.25E-04	1.25E-04	1.26E-04	1.27E-04	1.27E-04
cd113	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04
eu153	9.98E-05	1.00E-04	1.01E-04	1.02E-04	1.02E-04	1.02E-04
ru101	9.65E-05	9.70E-05	9.75E-05	9.80E-05	9.86E-05	9.86E-05
pr141	9.25E-05	9.30E-05	9.35E-05	9.40E-05	9.45E-05	9.45E-05
la139	7.57E-05	7.61E-05	7.65E-05	7.69E-05	7.73E-05	7.73E-05
gd157	6.16E-05	6.15E-05	6.15E-05	6.14E-05	6.13E-05	6.13E-05
ag109	3.92E-05	3.95E-05	3.98E-05	4.00E-05	4.03E-05	4.03E-05
pd105	3.89E-05	3.91E-05	3.93E-05	3.95E-05	3.98E-05	3.98E-05
ba137	3.66E-05	3.68E-05	3.70E-05	3.72E-05	3.74E-05	3.74E-05
zr 93	2.96E-05	2.98E-05	2.99E-05	3.01E-05	3.02E-05	3.02E-05
i129	2.48E-05	2.50E-05	2.51E-05	2.52E-05	2.54E-05	2.54E-05
nd144	2.35E-05	2.36E-05	2.37E-05	2.38E-05	2.40E-05	2.40E-05
gd152	2.00E-05	2.01E-05	2.03E-05	2.05E-05	2.07E-05	2.07E-05
mo 97	1.72E-05	1.73E-05	1.74E-05	1.75E-05	1.76E-05	1.76E-05
pd108	9.44E-06	9.50E-06	9.56E-06	9.62E-06	9.68E-06	9.68E-06
zr 91	7.89E-06	7.93E-06	7.98E-06	8.02E-06	8.06E-06	8.06E-06
y 89	7.55E-06	7.59E-06	7.63E-06	7.67E-06	7.71E-06	7.71E-06
ru102	7.20E-06	7.24E-06	7.28E-06	7.32E-06	7.36E-06	7.36E-06
sm151	1.37E-05	6.92E-06	6.87E-06	6.87E-06	6.87E-06	6.60E-06
ce142	6.31E-06	6.34E-06	6.37E-06	6.41E-06	6.44E-06	6.44E-06
nd148	6.07E-06	6.11E-06	6.14E-06	6.17E-06	6.21E-06	6.21E-06
ru 99	5.41E-06	5.54E-06	5.66E-06	5.78E-06	5.90E-06	5.90E-06
nd146	5.12E-06	5.15E-06	5.18E-06	5.21E-06	5.24E-06	5.24E-06
pd107	4.75E-06	4.78E-06	4.81E-06	4.84E-06	4.87E-06	4.87E-06
in115	4.50E-06	4.53E-06	4.55E-06	4.58E-06	4.60E-06	4.60E-06
ba138	4.36E-06	4.38E-06	4.41E-06	4.43E-06	4.45E-06	4.45E-06
ce140	4.08E-06	4.10E-06	4.13E-06	4.15E-06	4.17E-06	4.17E-06
xe132	3.75E-06	3.78E-06	3.80E-06	3.82E-06	3.84E-06	3.84E-06
mo 98	2.51E-06	2.52E-06	2.53E-06	2.55E-06	2.56E-06	2.56E-06
mo100	2.45E-06	2.46E-06	2.47E-06	2.49E-06	2.50E-06	2.50E-06
xe134	2.41E-06	2.43E-06	2.44E-06	2.45E-06	2.47E-06	2.47E-06
zr 92	1.91E-06	1.92E-06	1.93E-06	1.94E-06	1.95E-06	1.95E-06
i127	1.82E-06	1.83E-06	1.84E-06	1.85E-06	1.86E-06	1.86E-06
ru104	1.66E-06	1.67E-06	1.68E-06	1.69E-06	1.70E-06	1.70E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 189
0 fraction of total absorption rate

power= .00mw, burnup= 22791.mwd, flux= 2.94E+07n/cm**2-sec

0	initial ******* d	******* d	******* d	******* d	******* d
zr 96	1.50E-06	1.51E-06	1.52E-06	1.52E-06	1.53E-06	1.53E-06
nd150	1.38E-06	1.38E-06	1.39E-06	1.40E-06	1.41E-06	1.41E-06
xe136	1.31E-06	1.32E-06	1.32E-06	1.33E-06	1.34E-06	1.34E-06

cd111	1.07E-06	1.07E-06	1.08E-06	1.09E-06	1.09E-06	1.09E-06
gd154	9.74E-07	9.85E-07	9.95E-07	1.01E-06	1.02E-06	1.02E-06
br 81	9.68E-07	9.73E-07	9.78E-07	9.84E-07	9.89E-07	9.89E-07
rb 85	9.26E-07	9.31E-07	9.36E-07	9.41E-07	9.46E-07	9.46E-07
zr 94	8.09E-07	8.14E-07	8.18E-07	8.22E-07	8.27E-07	8.27E-07
zr 90	7.44E-07	7.48E-07	7.52E-07	7.56E-07	7.60E-07	7.60E-07
sm154	6.50E-07	6.54E-07	6.58E-07	6.61E-07	6.65E-07	6.65E-07
te130	6.04E-07	6.08E-07	6.11E-07	6.14E-07	6.17E-07	6.17E-07
ba135	5.51E-07	5.64E-07	5.76E-07	5.89E-07	6.02E-07	6.02E-07
rb 87	5.33E-07	5.36E-07	5.38E-07	5.41E-07	5.44E-07	5.44E-07
pd106	4.00E-07	4.02E-07	4.04E-07	4.07E-07	4.09E-07	4.09E-07
se 77	3.90E-07	3.92E-07	3.94E-07	3.96E-07	3.99E-07	3.99E-07
gd156	3.80E-07	3.83E-07	3.85E-07	3.88E-07	3.90E-07	3.90E-07
ru100	2.64E-07	2.66E-07	2.69E-07	2.72E-07	2.74E-07	2.74E-07
kr 84	2.54E-07	2.56E-07	2.57E-07	2.58E-07	2.60E-07	2.60E-07
dy161	2.35E-07	2.36E-07	2.38E-07	2.39E-07	2.41E-07	2.41E-07
sb121	2.08E-07	2.09E-07	2.10E-07	2.11E-07	2.12E-07	2.12E-07
nd142	1.94E-07	1.96E-07	1.98E-07	2.00E-07	2.02E-07	2.02E-07
se 79	1.92E-07	1.92E-07	1.93E-07	1.94E-07	1.95E-07	1.95E-07
ba134	1.85E-07	1.87E-07	1.89E-07	1.91E-07	1.93E-07	1.93E-07
sm148	1.68E-07	1.70E-07	1.72E-07	1.74E-07	1.76E-07	1.76E-07
sb123	1.68E-07	1.69E-07	1.70E-07	1.71E-07	1.72E-07	1.72E-07
kr 86	1.41E-07	1.42E-07	1.43E-07	1.43E-07	1.44E-07	1.44E-07
te128	1.37E-07	1.38E-07	1.38E-07	1.39E-07	1.40E-07	1.40E-07
pd104	1.27E-07	1.29E-07	1.30E-07	1.31E-07	1.33E-07	1.33E-07
tb159	1.01E-07	1.02E-07	1.03E-07	1.03E-07	1.04E-07	1.04E-07
nb 93	8.76E-08	8.96E-08	9.16E-08	9.36E-08	9.57E-08	9.57E-08
se 80	9.35E-08	9.40E-08	9.45E-08	9.50E-08	9.55E-08	9.55E-08
te125	9.32E-08	9.38E-08	9.43E-08	9.48E-08	9.53E-08	9.53E-08
gd158	8.00E-08	8.05E-08	8.10E-08	8.15E-08	8.20E-08	8.20E-08
cd112	7.21E-08	7.26E-08	7.30E-08	7.34E-08	7.38E-08	7.38E-08
dy162	5.41E-08	5.45E-08	5.49E-08	5.53E-08	5.57E-08	5.57E-08
dy164	5.27E-08	5.30E-08	5.34E-08	5.37E-08	5.40E-08	5.40E-08
sn117	5.08E-08	5.11E-08	5.13E-08	5.16E-08	5.19E-08	5.19E-08
li 6	4.83E-08	4.85E-08	4.87E-08	4.90E-08	4.92E-08	4.92E-08
cd110	4.60E-08	4.65E-08	4.71E-08	4.77E-08	4.83E-08	4.83E-08
br 79	4.36E-08	4.46E-08	4.56E-08	4.66E-08	4.76E-08	4.76E-08
eu152	1.22E-07	6.12E-08	6.14E-08	6.16E-08	6.18E-08	4.70E-08
ag107	4.22E-08	4.33E-08	4.44E-08	4.55E-08	4.66E-08	4.66E-08
cd114	4.32E-08	4.34E-08	4.37E-08	4.39E-08	4.42E-08	4.42E-08
mo 96	4.22E-08	4.27E-08	4.31E-08	4.35E-08	4.40E-08	4.40E-08
sn119	3.86E-08	3.88E-08	3.90E-08	3.93E-08	3.95E-08	3.95E-08
pd110	3.57E-08	3.59E-08	3.61E-08	3.63E-08	3.66E-08	3.66E-08
sn115	3.53E-08	3.55E-08	3.57E-08	3.59E-08	3.61E-08	3.61E-08
xe129	2.65E-08	2.71E-08	2.77E-08	2.83E-08	2.90E-08	2.90E-08
sr 88	2.59E-08	2.60E-08	2.62E-08	2.63E-08	2.65E-08	2.65E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 190
0 fraction of total absorption rate
power= .00mw, burnup= 22791.mwd, flux= 2.94E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

xe130	2.07E-08	2.09E-08	2.11E-08	2.14E-08	2.16E-08	2.16E-08
ba136	1.78E-08	1.80E-08	1.81E-08	1.83E-08	1.84E-08	1.84E-08
se 82	1.78E-08	1.79E-08	1.80E-08	1.81E-08	1.82E-08	1.82E-08
te126	1.47E-08	1.50E-08	1.53E-08	1.56E-08	1.60E-08	1.60E-08
sn126	1.53E-08	1.53E-08	1.54E-08	1.54E-08	1.55E-08	1.55E-08
se 78	1.40E-08	1.41E-08	1.41E-08	1.42E-08	1.43E-08	1.43E-08
dy163	1.36E-08	1.37E-08	1.38E-08	1.38E-08	1.39E-08	1.39E-08
kr 82	1.32E-08	1.33E-08	1.34E-08	1.35E-08	1.36E-08	1.36E-08
sn124	1.23E-08	1.23E-08	1.24E-08	1.25E-08	1.26E-08	1.26E-08

eu155	4.57E-08	2.27E-08	2.27E-08	2.26E-08	2.26E-08	1.04E-08
as 75	8.21E-09	8.26E-09	8.30E-09	8.35E-09	8.39E-09	8.39E-09
pm147	6.57E-08	3.28E-08	3.29E-08	3.29E-08	3.29E-08	8.30E-09
in113	7.04E-09	7.08E-09	7.12E-09	7.16E-09	7.20E-09	7.20E-09
sn118	4.95E-09	4.98E-09	5.01E-09	5.03E-09	5.06E-09	5.06E-09
sn122	4.25E-09	4.28E-09	4.30E-09	4.33E-09	4.35E-09	4.35E-09
cd116	4.16E-09	4.18E-09	4.20E-09	4.23E-09	4.25E-09	4.25E-09
eu154	1.02E-08	5.15E-09	5.19E-09	5.22E-09	5.25E-09	3.44E-09
sn120	3.13E-09	3.15E-09	3.17E-09	3.18E-09	3.20E-09	3.20E-09
ge 73	2.36E-09	2.37E-09	2.38E-09	2.40E-09	2.41E-09	2.41E-09
sr 90	3.97E-09	1.99E-09	1.99E-09	1.99E-09	1.99E-09	1.75E-09
ho165	1.32E-09	1.33E-09	1.34E-09	1.35E-09	1.37E-09	1.37E-09
dy160	1.26E-09	1.28E-09	1.29E-09	1.30E-09	1.32E-09	1.32E-09
gd160	1.13E-09	1.14E-09	1.15E-09	1.15E-09	1.16E-09	1.16E-09
ge 76	8.00E-10	8.04E-10	8.08E-10	8.12E-10	8.17E-10	8.17E-10
xe128	7.41E-10	7.49E-10	7.57E-10	7.65E-10	7.73E-10	7.73E-10
cs137	9.17E-10	4.58E-10	4.59E-10	4.59E-10	4.59E-10	4.06E-10
sr 86	3.50E-10	3.54E-10	3.57E-10	3.61E-10	3.64E-10	3.64E-10
sn116	2.81E-10	2.84E-10	2.87E-10	2.90E-10	2.93E-10	2.93E-10
te124	2.55E-10	2.57E-10	2.59E-10	2.61E-10	2.63E-10	2.63E-10
nb 94	1.41E-10	1.41E-10	1.41E-10	1.42E-10	1.42E-10	1.42E-10
sr 87	1.22E-10	1.23E-10	1.24E-10	1.25E-10	1.26E-10	1.26E-10
te122	1.18E-10	1.19E-10	1.21E-10	1.22E-10	1.23E-10	1.23E-10
se 76	9.81E-11	9.90E-11	1.00E-10	1.01E-10	1.02E-10	1.02E-10
cs134	1.00E-09	5.02E-10	5.05E-10	5.08E-10	5.11E-10	8.73E-11
er166	6.33E-11	6.38E-11	6.43E-11	6.48E-11	6.53E-11	6.53E-11
kr 80	4.66E-11	4.73E-11	4.81E-11	4.89E-11	4.98E-11	4.98E-11
ge 74	4.71E-11	4.74E-11	4.76E-11	4.79E-11	4.81E-11	4.81E-11
kr 85	1.34E-10	6.71E-11	6.71E-11	6.72E-11	6.72E-11	4.79E-11
ge 72	3.48E-11	3.50E-11	3.52E-11	3.54E-11	3.56E-11	3.56E-11
er167	7.14E-12	7.23E-12	7.33E-12	7.42E-12	7.51E-12	7.51E-12
te123	5.53E-12	5.62E-12	5.70E-12	5.79E-12	5.87E-12	5.87E-12
cd108	3.27E-12	3.33E-12	3.40E-12	3.46E-12	3.53E-12	3.53E-12
y 90	3.78E-12	1.89E-12	1.90E-12	1.90E-12	1.90E-12	1.67E-12
ce144	1.43E-10	7.13E-11	7.13E-11	7.14E-11	7.14E-11	6.71E-13
sb125	4.37E-12	2.17E-12	2.17E-12	2.17E-12	2.17E-12	5.72E-13
ru106	9.93E-12	4.91E-12	4.90E-12	4.88E-12	4.87E-12	1.36E-13
be 9	1.00E-13	1.01E-13	1.02E-13	1.02E-13	1.03E-13	1.03E-13
sn114	7.43E-14	7.51E-14	7.59E-14	7.67E-14	7.76E-14	7.76E-14
li 7	4.13E-14	4.15E-14	4.17E-14	4.20E-14	4.22E-14	4.22E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 191
0 fraction of total absorption rate
power= .00mw, burnup= 22791.mwd, flux= 2.94E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sb126	1.92E-14	1.84E-14	1.84E-14	1.85E-14	1.85E-14	1.77E-14
te127m	2.22E-12	1.10E-12	1.10E-12	1.10E-12	1.10E-12	5.72E-18
cd109	3.29E-17	1.67E-17	1.70E-17	1.73E-17	1.76E-17	9.85E-19
sn123	2.58E-15	1.29E-15	1.29E-15	1.29E-15	1.29E-15	5.47E-20
nb 95	3.64E-11	1.82E-11	1.82E-11	1.82E-11	1.82E-11	2.73E-20
zr 95	3.91E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	2.73E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 192
power= 4.890E-04mw, burnup=2.2791E+04mwd, flux= 2.94E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d
h 1	1.33E-03	1.34E-03	1.34E-03	1.35E-03	1.36E-03	1.36E-03
h 2	3.98E-06	4.00E-06	4.02E-06	4.04E-06	4.06E-06	4.06E-06
h 3	1.46E-11	7.28E-12	7.29E-12	7.30E-12	7.31E-12	5.44E-12

h 4	1.46E-35	3.63E-36	3.64E-36	3.65E-36	3.66E-36	.00E+00
he 3	1.75E-08	1.76E-08	1.76E-08	1.77E-08	1.77E-08	1.77E-08
he 4	2.21E-04	2.22E-04	2.23E-04	2.24E-04	2.25E-04	2.25E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	2.65E-05	2.67E-05	2.68E-05	2.69E-05	2.71E-05	2.71E-05
ne 21	1.07E-08	1.08E-08	1.09E-08	1.10E-08	1.11E-08	1.11E-08
ne 22	1.75E-07	1.76E-07	1.76E-07	1.77E-07	1.78E-07	1.78E-07
ne 23	1.78E-15	8.86E-16	8.86E-16	8.87E-16	8.87E-16	8.87E-31
na 22	1.06E-11	5.26E-12	5.26E-12	5.26E-12	5.27E-12	1.30E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	6.45E-09	3.22E-09	3.22E-09	3.23E-09	3.23E-09	3.23E-24
na 24m	1.06E-15	5.29E-16	5.30E-16	5.30E-16	5.30E-16	5.31E-31
na 25	7.75E-24	3.89E-24	3.93E-24	3.97E-24	4.01E-24	4.01E-39
mg 24	1.72E-01	1.73E-01	1.73E-01	1.74E-01	1.75E-01	1.75E-01
mg 25	1.11E-06	1.12E-06	1.13E-06	1.14E-06	1.15E-06	1.15E-06
mg 26	3.97E-06	3.99E-06	4.01E-06	4.03E-06	4.05E-06	4.05E-06
mg 27	5.31E-13	2.64E-13	2.64E-13	2.64E-13	2.65E-13	2.65E-28
mg 28	2.67E-25	6.62E-26	6.62E-26	6.63E-26	6.64E-26	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	4.78E-11	2.39E-11	2.39E-11	2.39E-11	2.39E-11	2.39E-26
al 29	6.30E-22	3.17E-22	3.20E-22	3.23E-22	3.27E-22	3.27E-37
al 30	1.81E-31	9.14E-32	9.28E-32	9.42E-32	9.56E-32	.00E+00
si 28	5.00E-01	5.02E-01	5.05E-01	5.07E-01	5.10E-01	5.10E-01
si 29	1.01E-05	1.02E-05	1.03E-05	1.04E-05	1.05E-05	1.05E-05
si 30	2.16E-10	2.19E-10	2.23E-10	2.26E-10	2.29E-10	2.29E-10
si 31	3.82E-23	1.93E-23	1.96E-23	1.99E-23	2.02E-23	2.02E-38
si 32	1.64E-29	5.16E-30	4.31E-30	4.31E-30	4.37E-30	4.28E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.94E+07	2.94E+07	2.94E+07	2.94E+07	2.94E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 193
power= 4.890E-04mw, burnup=2.2791E+04mwd, flux= 2.94E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge ******* d	******* d	******* d	******* d	******* d	******* d
he 4	4.28E+01	4.35E+01	4.42E+01	4.48E+01	4.55E+01	4.55E+01
pb206	2.47E-01	2.53E-01	2.60E-01	2.66E-01	2.72E-01	2.72E-01
pb207	1.55E-02	1.59E-02	1.62E-02	1.66E-02	1.69E-02	1.69E-02
pb208	6.78E-04	6.86E-04	6.93E-04	7.00E-04	7.06E-04	7.06E-04
pb209	1.05E-09	1.07E-09	1.08E-09	1.10E-09	1.11E-09	1.11E-09
pb210	3.15E-04	3.18E-04	3.22E-04	3.25E-04	3.29E-04	3.29E-04
pb211	5.47E-11	5.50E-11	5.53E-11	5.56E-11	5.59E-11	5.60E-11
pb212	3.74E-11	1.88E-11	1.89E-11	1.90E-11	1.91E-11	1.86E-11
pb214	7.20E-10	7.28E-10	7.36E-10	7.44E-10	7.51E-10	7.52E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	4.30E-02	4.43E-02	4.55E-02	4.68E-02	4.81E-02	4.81E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.94E-07	1.96E-07	1.98E-07	2.00E-07	2.02E-07	2.02E-07
bi211	3.25E-12	3.26E-12	3.28E-12	3.30E-12	3.32E-12	3.32E-12
bi212	3.55E-12	1.79E-12	1.79E-12	1.80E-12	1.81E-12	1.76E-12
bi213	2.46E-10	2.50E-10	2.53E-10	2.56E-10	2.60E-10	2.60E-10
bi214	5.34E-10	5.40E-10	5.46E-10	5.52E-10	5.58E-10	5.58E-10
po210	5.35E-06	5.41E-06	5.47E-06	5.53E-06	5.59E-06	5.59E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.59E-17	3.61E-17	3.63E-17	3.64E-17	3.66E-17	3.67E-17
po212	1.86E-22	9.38E-23	9.42E-23	9.47E-23	9.53E-23	9.27E-23
po213	3.70E-19	3.75E-19	3.80E-19	3.86E-19	3.91E-19	3.91E-19
po214	7.35E-17	7.43E-17	7.52E-17	7.60E-17	7.68E-17	7.68E-17
po215	4.50E-17	4.52E-17	4.55E-17	4.57E-17	4.60E-17	4.60E-17
po216	1.42E-16	7.13E-17	7.15E-17	7.20E-17	7.24E-17	7.04E-17

po218	8.33E-11	8.42E-11	8.51E-11	8.60E-11	8.69E-11	8.69E-11
rn218	1.33E-28	3.32E-29	3.34E-29	3.36E-29	3.38E-29	3.22E-44
rn219	1.00E-13	1.01E-13	1.01E-13	1.02E-13	1.02E-13	1.02E-13
rn220	5.43E-14	2.73E-14	2.74E-14	2.76E-14	2.78E-14	2.70E-14
rn222	1.48E-07	1.50E-07	1.51E-07	1.53E-07	1.54E-07	1.54E-07
ra222	1.44E-25	3.61E-26	3.63E-26	3.65E-26	3.67E-26	3.49E-41
ra223	2.50E-08	2.51E-08	2.52E-08	2.54E-08	2.55E-08	2.56E-08
ra224	3.09E-10	1.55E-10	1.56E-10	1.57E-10	1.58E-10	1.54E-10
ra225	1.15E-07	1.17E-07	1.18E-07	1.20E-07	1.22E-07	1.22E-07
ra226	2.26E-02	2.29E-02	2.31E-02	2.34E-02	2.36E-02	2.36E-02
ra228	1.11E-10	1.13E-10	1.14E-10	1.16E-10	1.17E-10	1.17E-10
ac225	7.78E-08	7.89E-08	7.99E-08	8.10E-08	8.21E-08	8.21E-08
ac227	1.74E-05	1.75E-05	1.76E-05	1.76E-05	1.77E-05	1.77E-05
ac228	1.36E-14	1.38E-14	1.39E-14	1.41E-14	1.43E-14	1.43E-14
th226	7.04E-24	1.76E-24	1.77E-24	1.78E-24	1.79E-24	1.70E-39
th227	4.03E-08	4.05E-08	4.07E-08	4.10E-08	4.12E-08	4.13E-08
th228	5.90E-08	2.97E-08	2.98E-08	3.00E-08	3.01E-08	2.93E-08
th229	2.24E-02	2.27E-02	2.30E-02	2.33E-02	2.36E-02	2.36E-02
th230	1.11E+00	1.12E+00	1.13E+00	1.14E+00	1.15E+00	1.15E+00
th231	3.94E-09	3.33E-09	3.34E-09	3.34E-09	3.35E-09	2.71E-09
th232	2.72E-01	2.76E-01	2.79E-01	2.83E-01	2.86E-01	2.86E-01
th233	6.12E-13	3.09E-13	3.13E-13	3.17E-13	3.22E-13	3.22E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	2.61E-02	2.63E-02	2.64E-02	2.65E-02	2.67E-02	2.67E-02
pa232	1.10E-10	5.53E-11	5.57E-11	5.60E-11	5.63E-11	5.63E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 194
power= 4.890E-04mw, burnup=2.2791E+04mwd, flux= 2.94E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d
pa233	1.41E-06	1.40E-06	1.40E-06	1.40E-06	1.40E-06	1.40E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	6.82E-21	1.71E-21	1.71E-21	1.73E-21	1.74E-21	1.65E-36
u231	1.05E-16	5.28E-17	5.35E-17	5.41E-17	5.47E-17	5.47E-32
u232	2.15E-06	1.08E-06	1.09E-06	1.09E-06	1.10E-06	1.04E-06
u233	5.68E-01	5.74E-01	5.80E-01	5.86E-01	5.93E-01	5.93E-01
u234	1.03E+01	1.03E+01	1.03E+01	1.03E+01	1.03E+01	1.03E+01
u235	6.55E+02	6.55E+02	6.55E+02	6.55E+02	6.55E+02	6.55E+02
u236	1.92E+02	1.92E+02	1.92E+02	1.92E+02	1.92E+02	1.92E+02
u237	8.21E-07	4.09E-07	4.09E-07	4.09E-07	4.10E-07	5.51E-13
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	7.53E-08	3.73E-08	3.74E-08	3.74E-08	3.74E-08	3.74E-23
u240	1.12E-34	1.19E-34	1.26E-34	1.33E-34	1.41E-34	1.41E-34
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	2.07E-12	1.03E-12	1.03E-12	1.03E-12	1.03E-12	3.59E-14
np236m	4.91E-13	2.44E-13	2.45E-13	2.45E-13	2.45E-13	2.45E-28
np236	2.50E-06	2.50E-06	2.51E-06	2.51E-06	2.52E-06	2.52E-06
np237	4.07E+01	4.07E+01	4.06E+01	4.06E+01	4.06E+01	4.06E+01
np238	3.64E-07	1.81E-07	1.81E-07	1.81E-07	1.82E-07	7.53E-15
np239	1.09E-05	5.40E-06	5.40E-06	5.40E-06	5.41E-06	2.08E-13
np240m	9.56E-37	1.02E-36	1.08E-36	1.14E-36	1.20E-36	1.20E-36
np240	5.43E-16	1.34E-16	1.34E-16	1.35E-16	1.35E-16	1.75E-38
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	2.72E-10	1.38E-10	1.38E-10	1.38E-10	1.38E-10	4.35E-11
pu237	8.02E-14	3.63E-14	3.61E-14	3.58E-14	3.56E-14	5.83E-27
pu238	5.51E-03	2.76E-03	2.75E-03	2.75E-03	2.75E-03	2.64E-03
pu239	3.14E+01	3.11E+01	3.09E+01	3.06E+01	3.04E+01	3.04E+01

```
     pu240   5.28E-01  5.11E-01  4.95E-01  4.79E-01  4.65E-01  4.65E-01
     pu241   5.24E-05  2.52E-05  2.45E-05  2.37E-05  2.30E-05  1.79E-05
     pu242   4.68E-05  4.70E-05  4.71E-05  4.72E-05  4.73E-05  4.73E-05
     pu243   2.41E-14  1.21E-14  1.21E-14  1.21E-14  1.22E-14  1.48E-29
     pu244   5.58E-24  5.92E-24  6.28E-24  6.64E-24  7.01E-24  7.01E-24
     pu245   5.63E-35  2.98E-35  3.16E-35  3.35E-35  3.53E-35   .00E+00
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239   1.05E-19  3.58E-20  2.89E-20  2.59E-20  2.44E-20  2.44E-35
     am240   4.82E-17  1.64E-17  1.32E-17  1.19E-17  1.11E-17  1.11E-32
     am241   1.55E-03  1.06E-03  8.55E-04  7.65E-04  7.19E-04  7.18E-04
     am242m  1.78E-07  7.15E-08  5.21E-08  4.51E-08  4.18E-08  4.07E-08
     am242   1.42E-11  4.95E-12  3.92E-12  3.50E-12  3.28E-12  5.26E-13
     am243   2.59E-07  2.53E-07  2.48E-07  2.43E-07  2.38E-07  2.38E-07
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   4.79E-16  2.33E-16  2.28E-16  2.24E-16  2.19E-16  2.19E-31
     am245   1.10E-35  5.85E-36  6.20E-36  6.56E-36  6.93E-36  5.37E-40
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   2.05E-22  3.55E-23  2.82E-23  2.51E-23  2.36E-23  5.79E-39
     cm242   2.87E-09  1.00E-09  7.92E-10  7.06E-10  6.62E-10  1.06E-10
     cm243   1.61E-14  2.80E-15  2.22E-15  1.98E-15  1.86E-15  1.63E-15
     cm244   7.52E-12  3.66E-12  3.58E-12  3.51E-12  3.44E-12  2.82E-12
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides         page  195
       power= 4.890E-04mw, burnup=2.2791E+04mwd, flux= 2.94E+07n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
          charge ******* d ******* d ******* d ******* d ******* d
     cm245   1.67E-14  1.62E-14  1.56E-14  1.51E-14  1.46E-14  1.46E-14
     cm246   1.36E-16  1.31E-16  1.26E-16  1.22E-16  1.17E-16  1.17E-16
     cm247   7.13E-20  7.24E-20  7.35E-20  7.44E-20  7.54E-20  7.54E-20
     cm248   2.93E-22  2.99E-22  3.06E-22  3.13E-22  3.19E-22  3.19E-22
     cm249   2.25E-33  1.15E-33  1.17E-33  1.20E-33  1.22E-33   .00E+00
     cm250   1.75E-37  1.74E-37  1.74E-37  1.73E-37  1.73E-37  1.73E-37
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              2.94E+07  2.94E+07  2.94E+07  2.94E+07  2.94E-08
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number 22 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
```

```
          ********************************************************************************
          *                                                                              *
          *           prelim lwr origen-s binary working library--id = 1143              *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *      data from the light element, actinide, and fission product libraries    *
          *        decay data, including gamma and total energy, are from endf/b-vi      *
          *                                                                              *
          *      neutron flux spectrum factors and cross sections were produced from     *
          *     the "presas2" case updating all nuclides on the scale "burnup" library   *
          *                                                                              *
          *                  fission product yields are from endf/b-v                    *
          *                                                                              *
          *             photon libraries use an 18-energy-group structure                *
          *            the photon data are from the master photon data base,             *
          *             produced to include bremsstrahlung from uo2 matrix               *
          *                                                                              *
          *       see information above this box (if present) for later updates          *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                 8/29/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
                        879    number of fission product nuclides
0                      7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page  196
        power=    .00mw, burnup=  23237.mwd, flux= 2.94E+07n/cm**2-sec
0                                    basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.291305E+06   1.290486E+06   1.289677E+06   1.288876E+06   1.288085E+06   1.288077E+06
     absorptions   1.050426E+06   1.050032E+06   1.049643E+06   1.049258E+06   1.048878E+06   1.048872E+06
     k infinity    1.229316E+00   1.228997E+00   1.228682E+00   1.228370E+00   1.228061E+00   1.228059E+00
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   1.031377E+06   1.030934E+06   1.030496E+06   1.030064E+06   1.029638E+06   1.029633E+06
     non-actinide
     abs. fracs.   1.813418E-02   1.818848E-02   1.824141E-02   1.829273E-02   1.834309E-02   1.834273E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              fission products        page  197
0                          fraction of total absorption rate
        power=    .00mw, burnup=  23237.mwd, flux= 2.94E+07n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.33E-03  5.34E-03  5.35E-03  5.35E-03  5.36E-03  5.36E-03
     nd143     2.20E-03  2.21E-03  2.22E-03  2.24E-03  2.25E-03  2.25E-03
     eu151     1.92E-03  1.92E-03  1.93E-03  1.93E-03  1.94E-03  1.94E-03
     rh103     1.07E-03  1.08E-03  1.08E-03  1.09E-03  1.10E-03  1.10E-03
     xe131     7.17E-04  7.21E-04  7.25E-04  7.28E-04  7.32E-04  7.32E-04
     cs133     5.59E-04  5.62E-04  5.65E-04  5.67E-04  5.70E-04  5.70E-04
     sm147     4.09E-04  4.11E-04  4.13E-04  4.16E-04  4.18E-04  4.18E-04
     tc 99     3.73E-04  3.74E-04  3.76E-04  3.77E-04  3.78E-04  3.78E-04
     nd145     3.15E-04  3.17E-04  3.18E-04  3.20E-04  3.22E-04  3.22E-04
     sm152     2.49E-04  2.50E-04  2.52E-04  2.53E-04  2.55E-04  2.55E-04
     gd155     2.30E-04  2.30E-04  2.30E-04  2.29E-04  2.29E-04  2.29E-04
     mo 95     2.19E-04  2.20E-04  2.21E-04  2.22E-04  2.23E-04  2.23E-04
```

sm150	1.66E-04	1.67E-04	1.68E-04	1.69E-04	1.70E-04	1.70E-04
kr 83	1.34E-04	1.35E-04	1.36E-04	1.36E-04	1.37E-04	1.37E-04
cs135	1.27E-04	1.27E-04	1.28E-04	1.29E-04	1.29E-04	1.29E-04
eu153	1.02E-04	1.03E-04	1.03E-04	1.04E-04	1.05E-04	1.05E-04
cd113	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04
ru101	9.85E-05	9.90E-05	9.95E-05	1.00E-04	1.01E-04	1.01E-04
pr141	9.45E-05	9.50E-05	9.55E-05	9.60E-05	9.65E-05	9.65E-05
la139	7.73E-05	7.77E-05	7.82E-05	7.86E-05	7.90E-05	7.90E-05
gd157	6.13E-05	6.12E-05	6.11E-05	6.09E-05	6.08E-05	6.08E-05
ag109	4.03E-05	4.05E-05	4.08E-05	4.10E-05	4.13E-05	4.13E-05
pd105	3.98E-05	4.00E-05	4.02E-05	4.04E-05	4.06E-05	4.06E-05
ba137	3.75E-05	3.77E-05	3.79E-05	3.80E-05	3.82E-05	3.82E-05
zr 93	3.02E-05	3.04E-05	3.05E-05	3.07E-05	3.08E-05	3.08E-05
i129	2.54E-05	2.55E-05	2.56E-05	2.58E-05	2.59E-05	2.59E-05
nd144	2.40E-05	2.41E-05	2.43E-05	2.44E-05	2.45E-05	2.45E-05
gd152	2.07E-05	2.08E-05	2.10E-05	2.12E-05	2.14E-05	2.14E-05
mo 97	1.76E-05	1.77E-05	1.77E-05	1.78E-05	1.79E-05	1.79E-05
pd108	9.68E-06	9.74E-06	9.80E-06	9.86E-06	9.92E-06	9.92E-06
zr 91	8.06E-06	8.10E-06	8.15E-06	8.19E-06	8.23E-06	8.23E-06
y 89	7.71E-06	7.75E-06	7.79E-06	7.83E-06	7.87E-06	7.87E-06
ru102	7.36E-06	7.40E-06	7.44E-06	7.48E-06	7.52E-06	7.52E-06
sm151	6.60E-06	6.88E-06	6.88E-06	6.88E-06	6.89E-06	6.60E-06
ce142	6.45E-06	6.48E-06	6.51E-06	6.55E-06	6.58E-06	6.58E-06
ru 99	5.90E-06	6.02E-06	6.15E-06	6.27E-06	6.39E-06	6.40E-06
nd148	6.21E-06	6.24E-06	6.27E-06	6.30E-06	6.34E-06	6.34E-06
nd146	5.24E-06	5.27E-06	5.29E-06	5.32E-06	5.35E-06	5.35E-06
pd107	4.87E-06	4.90E-06	4.93E-06	4.96E-06	4.99E-06	4.99E-06
in115	4.60E-06	4.63E-06	4.65E-06	4.67E-06	4.70E-06	4.70E-06
ba138	4.46E-06	4.48E-06	4.50E-06	4.53E-06	4.55E-06	4.55E-06
ce140	4.17E-06	4.19E-06	4.22E-06	4.24E-06	4.26E-06	4.26E-06
xe132	3.84E-06	3.86E-06	3.88E-06	3.90E-06	3.92E-06	3.92E-06
mo 98	2.56E-06	2.57E-06	2.59E-06	2.60E-06	2.61E-06	2.61E-06
mo100	2.50E-06	2.51E-06	2.52E-06	2.54E-06	2.55E-06	2.55E-06
xe134	2.47E-06	2.48E-06	2.49E-06	2.51E-06	2.52E-06	2.52E-06
zr 92	1.95E-06	1.96E-06	1.97E-06	1.98E-06	1.99E-06	1.99E-06
i127	1.86E-06	1.87E-06	1.88E-06	1.89E-06	1.90E-06	1.90E-06
ru104	1.70E-06	1.71E-06	1.72E-06	1.73E-06	1.74E-06	1.74E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 198
0 fraction of total absorption rate
power= .00mw, burnup= 23237.mwd, flux= 2.94E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	1.53E-06	1.54E-06	1.55E-06	1.56E-06	1.56E-06	1.56E-06
nd150	1.41E-06	1.41E-06	1.42E-06	1.43E-06	1.44E-06	1.44E-06
xe136	1.34E-06	1.34E-06	1.35E-06	1.36E-06	1.37E-06	1.37E-06
cd111	1.09E-06	1.10E-06	1.11E-06	1.11E-06	1.12E-06	1.12E-06
gd154	1.02E-06	1.03E-06	1.04E-06	1.05E-06	1.06E-06	1.06E-06
br 81	9.89E-07	9.94E-07	9.99E-07	1.00E-06	1.01E-06	1.01E-06
rb 85	9.46E-07	9.51E-07	9.55E-07	9.60E-07	9.65E-07	9.65E-07
zr 94	8.26E-07	8.30E-07	8.35E-07	8.39E-07	8.43E-07	8.43E-07
zr 90	7.60E-07	7.64E-07	7.68E-07	7.72E-07	7.76E-07	7.76E-07
sm154	6.65E-07	6.69E-07	6.73E-07	6.76E-07	6.80E-07	6.80E-07
ba135	6.02E-07	6.15E-07	6.28E-07	6.41E-07	6.55E-07	6.55E-07
te130	6.18E-07	6.21E-07	6.24E-07	6.28E-07	6.31E-07	6.31E-07
rb 87	5.44E-07	5.47E-07	5.50E-07	5.52E-07	5.55E-07	5.55E-07
pd106	4.09E-07	4.11E-07	4.14E-07	4.16E-07	4.18E-07	4.18E-07
se 77	3.99E-07	4.01E-07	4.03E-07	4.05E-07	4.07E-07	4.07E-07
gd156	3.90E-07	3.92E-07	3.94E-07	3.97E-07	3.99E-07	3.99E-07
ru100	2.75E-07	2.77E-07	2.80E-07	2.83E-07	2.86E-07	2.86E-07
kr 84	2.60E-07	2.61E-07	2.62E-07	2.64E-07	2.65E-07	2.65E-07

dy161	2.41E-07	2.42E-07	2.44E-07	2.45E-07	2.47E-07	2.47E-07
sb121	2.12E-07	2.14E-07	2.15E-07	2.16E-07	2.17E-07	2.17E-07
nd142	2.02E-07	2.04E-07	2.06E-07	2.08E-07	2.11E-07	2.11E-07
ba134	1.93E-07	1.95E-07	1.97E-07	1.99E-07	2.01E-07	2.01E-07
se 79	1.95E-07	1.96E-07	1.97E-07	1.97E-07	1.98E-07	1.98E-07
sm148	1.76E-07	1.77E-07	1.79E-07	1.81E-07	1.83E-07	1.83E-07
sb123	1.72E-07	1.73E-07	1.73E-07	1.74E-07	1.75E-07	1.75E-07
kr 86	1.44E-07	1.45E-07	1.46E-07	1.46E-07	1.47E-07	1.47E-07
te128	1.40E-07	1.41E-07	1.41E-07	1.42E-07	1.43E-07	1.43E-07
pd104	1.33E-07	1.34E-07	1.35E-07	1.37E-07	1.38E-07	1.38E-07
tb159	1.04E-07	1.04E-07	1.05E-07	1.06E-07	1.06E-07	1.06E-07
nb 93	9.57E-08	9.78E-08	9.98E-08	1.02E-07	1.04E-07	1.04E-07
se 80	9.56E-08	9.61E-08	9.66E-08	9.71E-08	9.76E-08	9.76E-08
te125	9.53E-08	9.59E-08	9.64E-08	9.69E-08	9.74E-08	9.74E-08
gd158	8.19E-08	8.24E-08	8.29E-08	8.34E-08	8.39E-08	8.39E-08
cd112	7.38E-08	7.43E-08	7.47E-08	7.51E-08	7.55E-08	7.55E-08
dy162	5.57E-08	5.61E-08	5.65E-08	5.69E-08	5.73E-08	5.73E-08
dy164	5.40E-08	5.43E-08	5.47E-08	5.50E-08	5.53E-08	5.53E-08
sn117	5.19E-08	5.22E-08	5.25E-08	5.28E-08	5.31E-08	5.31E-08
br 79	4.76E-08	4.86E-08	4.96E-08	5.06E-08	5.16E-08	5.16E-08
ag107	4.66E-08	4.77E-08	4.88E-08	4.99E-08	5.11E-08	5.11E-08
cd110	4.83E-08	4.89E-08	4.95E-08	5.00E-08	5.06E-08	5.06E-08
li 6	4.92E-08	4.95E-08	4.97E-08	4.99E-08	5.02E-08	5.02E-08
eu152	4.70E-08	6.20E-08	6.22E-08	6.24E-08	6.26E-08	4.70E-08
mo 96	4.40E-08	4.44E-08	4.49E-08	4.53E-08	4.58E-08	4.58E-08
cd114	4.42E-08	4.44E-08	4.47E-08	4.49E-08	4.52E-08	4.52E-08
sn119	3.95E-08	3.97E-08	3.99E-08	4.01E-08	4.03E-08	4.03E-08
pd110	3.65E-08	3.68E-08	3.70E-08	3.72E-08	3.74E-08	3.74E-08
sn115	3.61E-08	3.63E-08	3.65E-08	3.67E-08	3.69E-08	3.69E-08
xe129	2.90E-08	2.96E-08	3.02E-08	3.09E-08	3.15E-08	3.15E-08
sr 88	2.65E-08	2.66E-08	2.67E-08	2.69E-08	2.70E-08	2.70E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 199
0 fraction of total absorption rate
power= .00mw, burnup= 23237.mwd, flux= 2.94E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

xe130	2.16E-08	2.18E-08	2.20E-08	2.22E-08	2.24E-08	2.24E-08
ba136	1.84E-08	1.86E-08	1.88E-08	1.89E-08	1.91E-08	1.91E-08
se 82	1.82E-08	1.83E-08	1.84E-08	1.85E-08	1.86E-08	1.86E-08
te126	1.60E-08	1.63E-08	1.66E-08	1.69E-08	1.73E-08	1.73E-08
sn126	1.55E-08	1.55E-08	1.55E-08	1.56E-08	1.56E-08	1.56E-08
se 78	1.43E-08	1.44E-08	1.44E-08	1.45E-08	1.46E-08	1.46E-08
dy163	1.39E-08	1.40E-08	1.41E-08	1.42E-08	1.43E-08	1.43E-08
kr 82	1.36E-08	1.37E-08	1.38E-08	1.39E-08	1.40E-08	1.40E-08
sn124	1.25E-08	1.26E-08	1.27E-08	1.27E-08	1.28E-08	1.28E-08
eu155	1.04E-08	2.26E-08	2.25E-08	2.25E-08	2.25E-08	9.95E-09
as 75	8.39E-09	8.44E-09	8.48E-09	8.52E-09	8.57E-09	8.57E-09
pm147	8.30E-09	3.29E-08	3.29E-08	3.29E-08	3.29E-08	7.77E-09
in113	7.20E-09	7.24E-09	7.28E-09	7.32E-09	7.36E-09	7.36E-09
sn118	5.06E-09	5.08E-09	5.11E-09	5.14E-09	5.17E-09	5.17E-09
sn122	4.35E-09	4.37E-09	4.40E-09	4.42E-09	4.44E-09	4.44E-09
cd116	4.25E-09	4.27E-09	4.29E-09	4.32E-09	4.34E-09	4.34E-09
eu154	3.44E-09	5.29E-09	5.32E-09	5.35E-09	5.39E-09	3.45E-09
sn120	3.20E-09	3.22E-09	3.24E-09	3.25E-09	3.27E-09	3.27E-09
ge 73	2.41E-09	2.42E-09	2.44E-09	2.45E-09	2.46E-09	2.46E-09
sr 90	1.75E-09	2.00E-09	2.00E-09	2.00E-09	2.00E-09	1.75E-09
ho165	1.37E-09	1.38E-09	1.39E-09	1.40E-09	1.41E-09	1.41E-09
dy160	1.32E-09	1.33E-09	1.35E-09	1.36E-09	1.38E-09	1.38E-09
gd160	1.16E-09	1.17E-09	1.17E-09	1.18E-09	1.19E-09	1.19E-09
ge 76	8.17E-10	8.21E-10	8.25E-10	8.30E-10	8.34E-10	8.34E-10

xe128	7.73E-10	7.81E-10	7.89E-10	7.97E-10	8.06E-10	8.06E-10
cs137	4.06E-10	4.59E-10	4.59E-10	4.59E-10	4.60E-10	4.05E-10
sr 86	3.65E-10	3.68E-10	3.72E-10	3.75E-10	3.79E-10	3.79E-10
sn116	2.93E-10	2.96E-10	2.99E-10	3.02E-10	3.05E-10	3.05E-10
te124	2.63E-10	2.66E-10	2.68E-10	2.70E-10	2.72E-10	2.72E-10
nb 94	1.42E-10	1.43E-10	1.43E-10	1.44E-10	1.44E-10	1.44E-10
sr 87	1.26E-10	1.27E-10	1.28E-10	1.29E-10	1.31E-10	1.31E-10
te122	1.23E-10	1.24E-10	1.26E-10	1.27E-10	1.28E-10	1.28E-10
se 76	1.02E-10	1.03E-10	1.04E-10	1.05E-10	1.06E-10	1.06E-10
cs134	8.74E-11	5.13E-10	5.16E-10	5.19E-10	5.22E-10	8.20E-11
er166	6.53E-11	6.58E-11	6.63E-11	6.68E-11	6.72E-11	6.72E-11
kr 80	4.98E-11	5.06E-11	5.15E-11	5.24E-11	5.33E-11	5.33E-11
ge 74	4.82E-11	4.84E-11	4.87E-11	4.89E-11	4.92E-11	4.92E-11
kr 85	4.79E-11	6.73E-11	6.73E-11	6.74E-11	6.74E-11	4.72E-11
ge 72	3.57E-11	3.59E-11	3.60E-11	3.62E-11	3.64E-11	3.64E-11
er167	7.51E-12	7.61E-12	7.70E-12	7.80E-12	7.89E-12	7.89E-12
te123	5.87E-12	5.96E-12	6.05E-12	6.14E-12	6.22E-12	6.22E-12
cd108	3.53E-12	3.60E-12	3.67E-12	3.74E-12	3.81E-12	3.81E-12
y 90	1.67E-12	1.90E-12	1.90E-12	1.90E-12	1.91E-12	1.66E-12
ce144	6.71E-13	7.15E-11	7.15E-11	7.15E-11	7.16E-11	5.37E-13
sb125	5.72E-13	2.16E-12	2.16E-12	2.16E-12	2.16E-12	5.35E-13
ru106	1.36E-13	4.86E-12	4.85E-12	4.83E-12	4.82E-12	1.13E-13
be 9	1.02E-13	1.03E-13	1.04E-13	1.04E-13	1.05E-13	1.05E-13
sn114	7.76E-14	7.84E-14	7.93E-14	8.01E-14	8.09E-14	8.09E-14
li 7	4.22E-14	4.24E-14	4.27E-14	4.29E-14	4.31E-14	4.31E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 200

0 fraction of total absorption rate

power= .00mw, burnup= 23237.mwd, flux= 2.94E+07n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

sb126	1.77E-14	1.86E-14	1.86E-14	1.86E-14	1.87E-14	1.79E-14
te127m	5.73E-18	1.10E-12	1.10E-12	1.10E-12	1.10E-12	3.17E-18
cd109	9.83E-19	1.79E-17	1.83E-17	1.86E-17	1.89E-17	9.30E-19
sn123	5.46E-20	1.29E-15	1.29E-15	1.29E-15	1.29E-15	2.73E-20
nb 95	2.73E-20	1.82E-11	1.82E-11	1.82E-11	1.82E-11	2.73E-20

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 201

power= 4.890E-04mw, burnup=2.3237E+04mwd, flux= 2.94E+07n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
h 1	1.36E-03	1.36E-03	1.37E-03	1.38E-03	1.38E-03	1.38E-03
h 2	4.06E-06	4.08E-06	4.10E-06	4.12E-06	4.14E-06	4.14E-06
h 3	5.44E-12	7.31E-12	7.32E-12	7.33E-12	7.34E-12	5.39E-12
h 4	.00E+00	3.66E-36	3.67E-36	3.67E-36	3.68E-36	.00E+00
he 3	1.77E-08	1.78E-08	1.78E-08	1.79E-08	1.79E-08	1.79E-08
he 4	2.25E-04	2.26E-04	2.27E-04	2.29E-04	2.30E-04	2.30E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	2.71E-05	2.72E-05	2.73E-05	2.75E-05	2.76E-05	2.76E-05
ne 21	1.11E-08	1.12E-08	1.13E-08	1.14E-08	1.16E-08	1.16E-08
ne 22	1.78E-07	1.79E-07	1.80E-07	1.81E-07	1.82E-07	1.82E-07
ne 23	8.87E-31	8.85E-16	8.85E-16	8.85E-16	8.86E-16	8.86E-31
na 22	1.30E-12	5.25E-12	5.25E-12	5.26E-12	5.26E-12	1.21E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.23E-24	3.22E-09	3.22E-09	3.22E-09	3.22E-09	3.22E-24
na 24m	5.31E-31	5.28E-16	5.29E-16	5.29E-16	5.29E-16	5.29E-31
na 25	4.01E-39	4.05E-24	4.09E-24	4.13E-24	4.17E-24	4.17E-39
mg 24	1.75E-01	1.76E-01	1.77E-01	1.78E-01	1.78E-01	1.78E-01
mg 25	1.15E-06	1.16E-06	1.17E-06	1.18E-06	1.20E-06	1.20E-06
mg 26	4.05E-06	4.07E-06	4.09E-06	4.11E-06	4.13E-06	4.13E-06

	mg 27	2.65E-28	2.64E-13	2.64E-13	2.64E-13	2.64E-13	2.64E-28
	mg 28	.00E+00	6.62E-26	6.63E-26	6.64E-26	6.65E-26	.00E+00
	al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
	al 28	2.39E-26	2.38E-11	2.38E-11	2.39E-11	2.39E-11	2.39E-26
	al 29	3.27E-37	3.29E-22	3.33E-22	3.36E-22	3.39E-22	3.39E-37
	al 30	.00E+00	9.69E-32	9.84E-32	9.98E-32	1.01E-31	.00E+00
	si 28	5.10E-01	5.12E-01	5.14E-01	5.17E-01	5.19E-01	5.19E-01
	si 29	1.05E-05	1.06E-05	1.07E-05	1.08E-05	1.09E-05	1.09E-05
	si 30	2.29E-10	2.33E-10	2.36E-10	2.39E-10	2.43E-10	2.43E-10
	si 31	2.02E-38	2.05E-23	2.09E-23	2.12E-23	2.15E-23	2.15E-38
	si 32	4.28E-30	4.43E-30	4.51E-30	4.58E-30	4.65E-30	4.55E-30
	totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0	flux		2.94E+07	2.94E+07	2.94E+07	2.94E+07	2.94E-08
1							

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 202
power= 4.890E-04mw, burnup=2.3237E+04mwd, flux= 2.94E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	4.55E+01	4.62E+01	4.69E+01	4.75E+01	4.82E+01	4.82E+01
pb206	2.72E-01	2.79E-01	2.85E-01	2.92E-01	2.99E-01	2.99E-01
pb207	1.69E-02	1.73E-02	1.76E-02	1.80E-02	1.83E-02	1.84E-02
pb208	7.06E-04	7.13E-04	7.20E-04	7.27E-04	7.34E-04	7.34E-04
pb209	1.11E-09	1.13E-09	1.14E-09	1.16E-09	1.17E-09	1.17E-09
pb210	3.29E-04	3.32E-04	3.36E-04	3.39E-04	3.42E-04	3.42E-04
pb211	5.60E-11	5.62E-11	5.65E-11	5.68E-11	5.71E-11	5.72E-11
pb212	1.86E-11	1.92E-11	1.93E-11	1.94E-11	1.96E-11	1.90E-11
pb214	7.52E-10	7.59E-10	7.67E-10	7.75E-10	7.83E-10	7.83E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	4.81E-02	4.94E-02	5.07E-02	5.21E-02	5.34E-02	5.34E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.02E-07	2.04E-07	2.07E-07	2.09E-07	2.11E-07	2.11E-07
bi211	3.32E-12	3.33E-12	3.35E-12	3.37E-12	3.38E-12	3.39E-12
bi212	1.76E-12	1.82E-12	1.83E-12	1.84E-12	1.86E-12	1.80E-12
bi213	2.60E-10	2.63E-10	2.67E-10	2.70E-10	2.74E-10	2.74E-10
bi214	5.58E-10	5.64E-10	5.70E-10	5.75E-10	5.81E-10	5.81E-10
po210	5.59E-06	5.65E-06	5.70E-06	5.76E-06	5.82E-06	5.82E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.67E-17	3.68E-17	3.70E-17	3.72E-17	3.74E-17	3.75E-17
po212	9.27E-23	9.58E-23	9.64E-23	9.69E-23	9.75E-23	9.46E-23
po213	3.91E-19	3.96E-19	4.01E-19	4.06E-19	4.11E-19	4.11E-19
po214	7.68E-17	7.76E-17	7.84E-17	7.92E-17	7.99E-17	8.00E-17
po215	4.60E-17	4.62E-17	4.64E-17	4.67E-17	4.69E-17	4.70E-17
po216	7.04E-17	7.28E-17	7.32E-17	7.36E-17	7.40E-17	7.18E-17
po218	8.69E-11	8.79E-11	8.88E-11	8.96E-11	9.05E-11	9.05E-11
rn218	3.22E-44	3.40E-29	3.42E-29	3.44E-29	3.46E-29	3.22E-44
rn219	1.02E-13	1.03E-13	1.03E-13	1.04E-13	1.04E-13	1.05E-13
rn220	2.70E-14	2.79E-14	2.81E-14	2.82E-14	2.84E-14	2.76E-14
rn222	1.54E-07	1.56E-07	1.58E-07	1.59E-07	1.61E-07	1.61E-07
ra222	3.49E-41	3.69E-26	3.71E-26	3.73E-26	3.76E-26	3.56E-41
ra223	2.56E-08	2.56E-08	2.58E-08	2.59E-08	2.60E-08	2.61E-08
ra224	1.54E-10	1.59E-10	1.60E-10	1.61E-10	1.61E-10	1.57E-10
ra225	1.22E-07	1.23E-07	1.25E-07	1.26E-07	1.28E-07	1.28E-07
ra226	2.36E-02	2.38E-02	2.41E-02	2.43E-02	2.46E-02	2.46E-02
ra228	1.17E-10	1.19E-10	1.20E-10	1.21E-10	1.23E-10	1.23E-10
ac225	8.21E-08	8.32E-08	8.43E-08	8.54E-08	8.65E-08	8.65E-08
ac227	1.77E-05	1.78E-05	1.79E-05	1.80E-05	1.81E-05	1.81E-05
ac228	1.43E-14	1.45E-14	1.47E-14	1.48E-14	1.50E-14	1.50E-14
th226	1.70E-39	1.80E-24	1.81E-24	1.82E-24	1.83E-24	1.74E-39
th227	4.13E-08	4.14E-08	4.16E-08	4.18E-08	4.20E-08	4.21E-08

th228	2.93E-08	3.03E-08	3.05E-08	3.07E-08	3.08E-08	2.99E-08
th229	2.36E-02	2.40E-02	2.43E-02	2.46E-02	2.49E-02	2.49E-02
th230	1.15E+00	1.17E+00	1.18E+00	1.19E+00	1.20E+00	1.20E+00
th231	2.71E-09	3.36E-09	3.36E-09	3.37E-09	3.38E-09	2.71E-09
th232	2.86E-01	2.90E-01	2.93E-01	2.97E-01	3.01E-01	3.01E-01
th233	3.22E-28	3.26E-13	3.30E-13	3.34E-13	3.38E-13	3.38E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	2.67E-02	2.68E-02	2.70E-02	2.71E-02	2.72E-02	2.72E-02
pa232	5.63E-26	5.66E-11	5.70E-11	5.73E-11	5.76E-11	5.76E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 203
power= 4.890E-04mw, burnup=2.3237E+04mwd, flux= 2.94E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.40E-06	1.40E-06	1.40E-06	1.40E-06	1.40E-06	1.40E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.65E-36	1.74E-21	1.75E-21	1.77E-21	1.78E-21	1.68E-36
u231	5.47E-32	5.52E-17	5.58E-17	5.64E-17	5.69E-17	5.70E-32
u232	1.04E-06	1.10E-06	1.11E-06	1.12E-06	1.12E-06	1.06E-06
u233	5.93E-01	5.99E-01	6.05E-01	6.11E-01	6.17E-01	6.17E-01
u234	1.03E+01	1.03E+01	1.03E+01	1.03E+01	1.03E+01	1.03E+01
u235	6.55E+02	6.55E+02	6.55E+02	6.55E+02	6.55E+02	6.55E+02
u236	1.92E+02	1.92E+02	1.93E+02	1.93E+02	1.93E+02	1.93E+02
u237	5.51E-13	4.10E-07	4.10E-07	4.11E-07	4.11E-07	4.87E-13
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.74E-23	3.74E-08	3.74E-08	3.74E-08	3.75E-08	3.75E-23
u240	1.41E-34	1.48E-34	1.56E-34	1.64E-34	1.72E-34	1.72E-34
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	3.59E-14	1.03E-12	1.03E-12	1.03E-12	1.03E-12	3.05E-14
np236m	2.45E-28	2.44E-13	2.44E-13	2.44E-13	2.44E-13	2.44E-28
np236	2.52E-06	2.52E-06	2.53E-06	2.53E-06	2.54E-06	2.54E-06
np237	4.06E+01	4.06E+01	4.06E+01	4.06E+01	4.06E+01	4.06E+01
np238	7.53E-15	1.81E-07	1.82E-07	1.82E-07	1.82E-07	6.53E-15
np239	2.08E-13	5.40E-06	5.41E-06	5.41E-06	5.41E-06	1.93E-13
np240m	1.20E-36	1.27E-36	1.33E-36	1.40E-36	1.47E-36	1.47E-36
np240	1.75E-38	1.35E-16	1.35E-16	1.35E-16	1.35E-16	1.99E-38
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	4.35E-11	1.38E-10	1.38E-10	1.38E-10	1.38E-10	4.13E-11
pu237	5.83E-27	3.53E-14	3.51E-14	3.48E-14	3.46E-14	1.40E-27
pu238	2.64E-03	2.75E-03	2.75E-03	2.75E-03	2.75E-03	2.63E-03
pu239	3.04E+01	3.02E+01	2.99E+01	2.97E+01	2.95E+01	2.95E+01
pu240	4.65E-01	4.52E-01	4.39E-01	4.27E-01	4.16E-01	4.15E-01
pu241	1.79E-05	2.23E-05	2.17E-05	2.12E-05	2.06E-05	1.58E-05
pu242	4.73E-05	4.74E-05	4.75E-05	4.75E-05	4.76E-05	4.76E-05
pu243	1.48E-29	1.22E-14	1.22E-14	1.22E-14	1.22E-14	1.50E-29
pu244	7.01E-24	7.39E-24	7.78E-24	8.17E-24	8.57E-24	8.57E-24
pu245	.00E+00	3.73E-35	3.92E-35	4.13E-35	4.33E-35	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	2.44E-35	2.32E-20	2.25E-20	2.19E-20	2.13E-20	2.13E-35
am240	1.11E-32	1.06E-17	1.03E-17	1.00E-17	9.74E-18	9.73E-33
am241	7.18E-04	6.87E-04	6.65E-04	6.46E-04	6.29E-04	6.28E-04
am242m	4.07E-08	3.96E-08	3.84E-08	3.73E-08	3.62E-08	3.53E-08
am242	5.26E-13	3.13E-12	3.03E-12	2.95E-12	2.87E-12	4.55E-13
am243	2.38E-07	2.33E-07	2.29E-07	2.25E-07	2.21E-07	2.21E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	2.19E-31	2.15E-16	2.11E-16	2.08E-16	2.04E-16	2.04E-31
am245	5.37E-40	7.31E-36	7.70E-36	8.09E-36	8.49E-36	4.77E-40

```
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   5.79E-39  2.24E-23  2.18E-23  2.12E-23  2.06E-23  5.74E-39
     cm242   1.06E-10  6.32E-10  6.12E-10  5.95E-10  5.79E-10  9.20E-11
     cm243   1.63E-15  1.77E-15  1.72E-15  1.67E-15  1.63E-15  1.42E-15
     cm244   2.82E-12  3.38E-12  3.32E-12  3.26E-12  3.21E-12  2.60E-12
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page  204
       power= 4.890E-04mw, burnup=2.3237E+04mwd, flux= 2.94E+07n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
            charge ******* d ******* d ******* d ******* d ******* d
     cm245   1.46E-14  1.41E-14  1.36E-14  1.31E-14  1.27E-14  1.27E-14
     cm246   1.17E-16  1.13E-16  1.09E-16  1.05E-16  1.02E-16  1.01E-16
     cm247   7.54E-20  7.63E-20  7.72E-20  7.81E-20  7.89E-20  7.89E-20
     cm248   3.19E-22  3.26E-22  3.33E-22  3.40E-22  3.48E-22  3.48E-22
     cm249    .00E+00  1.25E-33  1.28E-33  1.31E-33  1.33E-33   .00E+00
     cm250   1.73E-37  1.72E-37  1.72E-37  1.72E-37  1.72E-37  1.72E-37
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              2.94E+07  2.94E+07  2.94E+07  2.94E+07  2.94E-08
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number 23 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *          made from modified card-image origen-s libraries of scale 4.2       *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
```

```
         *        see information above this box (if present) for later updates        *
         *                                                                              *
         ********************************************************************************
         *                                                                              *
0        ********************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/29/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page  205
        power=    .00mw, burnup=  23684.mwd, flux= 2.95E+07n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.288924E+06   1.288140E+06   1.287365E+06   1.286599E+06   1.285841E+06   1.285832E+06
     absorptions   1.049175E+06   1.048800E+06   1.048429E+06   1.048062E+06   1.047700E+06   1.047695E+06
     k infinity    1.228512E+00   1.228204E+00   1.227900E+00   1.227597E+00   1.227298E+00   1.227296E+00
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   1.029930E+06   1.029509E+06   1.029093E+06   1.028683E+06   1.028278E+06   1.028273E+06
     non-actinide
     abs. fracs.   1.834297E-02   1.839298E-02   1.844198E-02   1.849020E-02   1.853782E-02   1.853758E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                 fission products    page  206
0                                  fraction of total absorption rate
        power=    .00mw, burnup=  23684.mwd, flux= 2.95E+07n/cm**2-sec
0                initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.36E-03  5.37E-03  5.38E-03  5.38E-03  5.39E-03  5.39E-03
     nd143     2.25E-03  2.26E-03  2.27E-03  2.28E-03  2.29E-03  2.29E-03
     eu151     1.94E-03  1.94E-03  1.95E-03  1.95E-03  1.95E-03  1.95E-03
     rh103     1.10E-03  1.10E-03  1.11E-03  1.11E-03  1.12E-03  1.12E-03
     xe131     7.32E-04  7.35E-04  7.39E-04  7.43E-04  7.46E-04  7.46E-04
     cs133     5.70E-04  5.73E-04  5.76E-04  5.79E-04  5.82E-04  5.82E-04
     sm147     4.17E-04  4.20E-04  4.22E-04  4.24E-04  4.26E-04  4.26E-04
     tc 99     3.78E-04  3.79E-04  3.81E-04  3.82E-04  3.84E-04  3.84E-04
     nd145     3.22E-04  3.23E-04  3.25E-04  3.26E-04  3.28E-04  3.28E-04
     sm152     2.55E-04  2.56E-04  2.58E-04  2.59E-04  2.61E-04  2.61E-04
     gd155     2.29E-04  2.29E-04  2.29E-04  2.29E-04  2.28E-04  2.28E-04
     mo 95     2.23E-04  2.24E-04  2.25E-04  2.26E-04  2.28E-04  2.28E-04
     sm150     1.70E-04  1.71E-04  1.72E-04  1.73E-04  1.74E-04  1.74E-04
     kr 83     1.37E-04  1.38E-04  1.39E-04  1.39E-04  1.40E-04  1.40E-04
     cs135     1.29E-04  1.30E-04  1.30E-04  1.31E-04  1.32E-04  1.32E-04
     eu153     1.05E-04  1.05E-04  1.06E-04  1.06E-04  1.07E-04  1.07E-04
     cd113     1.03E-04  1.03E-04  1.03E-04  1.03E-04  1.03E-04  1.03E-04
     ru101     1.00E-04  1.01E-04  1.02E-04  1.02E-04  1.03E-04  1.03E-04
     pr141     9.65E-05  9.70E-05  9.75E-05  9.80E-05  9.85E-05  9.85E-05
     la139     7.90E-05  7.94E-05  7.98E-05  8.02E-05  8.06E-05  8.06E-05
     gd157     6.08E-05  6.07E-05  6.05E-05  6.04E-05  6.02E-05  6.02E-05
     ag109     4.13E-05  4.15E-05  4.18E-05  4.20E-05  4.23E-05  4.23E-05
     pd105     4.06E-05  4.09E-05  4.11E-05  4.13E-05  4.15E-05  4.15E-05
     ba137     3.83E-05  3.85E-05  3.87E-05  3.89E-05  3.91E-05  3.91E-05
     zr 93     3.08E-05  3.10E-05  3.11E-05  3.13E-05  3.14E-05  3.14E-05
      i129     2.59E-05  2.61E-05  2.62E-05  2.63E-05  2.65E-05  2.65E-05
     nd144     2.45E-05  2.47E-05  2.48E-05  2.49E-05  2.50E-05  2.50E-05
     gd152     2.14E-05  2.16E-05  2.17E-05  2.19E-05  2.21E-05  2.21E-05
```

mo 97	1.79E-05	1.80E-05	1.81E-05	1.82E-05	1.83E-05	1.83E-05
pd108	9.91E-06	9.97E-06	1.00E-05	1.01E-05	1.01E-05	1.01E-05
zr 91	8.23E-06	8.27E-06	8.32E-06	8.36E-06	8.40E-06	8.40E-06
y 89	7.87E-06	7.91E-06	7.95E-06	7.99E-06	8.03E-06	8.03E-06
ru102	7.52E-06	7.56E-06	7.60E-06	7.64E-06	7.68E-06	7.68E-06
ru 99	6.39E-06	6.52E-06	6.64E-06	6.77E-06	6.90E-06	6.90E-06
ce142	6.58E-06	6.62E-06	6.65E-06	6.69E-06	6.72E-06	6.72E-06
sm151	6.60E-06	6.89E-06	6.90E-06	6.90E-06	6.90E-06	6.60E-06
nd148	6.34E-06	6.37E-06	6.40E-06	6.44E-06	6.47E-06	6.47E-06
nd146	5.35E-06	5.38E-06	5.41E-06	5.43E-06	5.46E-06	5.46E-06
pd107	4.99E-06	5.02E-06	5.05E-06	5.07E-06	5.10E-06	5.10E-06
in115	4.70E-06	4.72E-06	4.75E-06	4.77E-06	4.80E-06	4.80E-06
ba138	4.55E-06	4.58E-06	4.60E-06	4.62E-06	4.65E-06	4.65E-06
ce140	4.26E-06	4.28E-06	4.31E-06	4.33E-06	4.35E-06	4.35E-06
xe132	3.92E-06	3.94E-06	3.96E-06	3.98E-06	4.00E-06	4.00E-06
mo 98	2.61E-06	2.62E-06	2.64E-06	2.65E-06	2.67E-06	2.67E-06
mo100	2.55E-06	2.56E-06	2.58E-06	2.59E-06	2.60E-06	2.60E-06
xe134	2.52E-06	2.53E-06	2.55E-06	2.56E-06	2.57E-06	2.57E-06
zr 92	1.99E-06	2.00E-06	2.01E-06	2.02E-06	2.03E-06	2.03E-06
i127	1.90E-06	1.91E-06	1.92E-06	1.93E-06	1.94E-06	1.94E-06
ru104	1.74E-06	1.75E-06	1.76E-06	1.77E-06	1.78E-06	1.78E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 207
0 fraction of total absorption rate
power= .00mw, burnup= 23684.mwd, flux= 2.95E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	1.56E-06	1.57E-06	1.58E-06	1.59E-06	1.59E-06	1.59E-06
nd150	1.44E-06	1.44E-06	1.45E-06	1.46E-06	1.47E-06	1.47E-06
xe136	1.37E-06	1.37E-06	1.38E-06	1.39E-06	1.39E-06	1.39E-06
cd111	1.12E-06	1.13E-06	1.13E-06	1.14E-06	1.15E-06	1.15E-06
gd154	1.06E-06	1.07E-06	1.08E-06	1.10E-06	1.11E-06	1.11E-06
br 81	1.01E-06	1.01E-06	1.02E-06	1.02E-06	1.03E-06	1.03E-06
rb 85	9.65E-07	9.70E-07	9.75E-07	9.80E-07	9.85E-07	9.85E-07
zr 94	8.43E-07	8.47E-07	8.52E-07	8.56E-07	8.60E-07	8.60E-07
zr 90	7.76E-07	7.80E-07	7.84E-07	7.88E-07	7.92E-07	7.92E-07
ba135	6.55E-07	6.68E-07	6.81E-07	6.95E-07	7.08E-07	7.08E-07
sm154	6.80E-07	6.84E-07	6.87E-07	6.91E-07	6.94E-07	6.94E-07
te130	6.31E-07	6.34E-07	6.38E-07	6.41E-07	6.44E-07	6.44E-07
rb 87	5.55E-07	5.58E-07	5.61E-07	5.64E-07	5.67E-07	5.67E-07
pd106	4.18E-07	4.21E-07	4.23E-07	4.25E-07	4.28E-07	4.28E-07
se 77	4.07E-07	4.09E-07	4.11E-07	4.14E-07	4.16E-07	4.16E-07
gd156	3.99E-07	4.01E-07	4.04E-07	4.06E-07	4.08E-07	4.08E-07
ru100	2.86E-07	2.88E-07	2.91E-07	2.94E-07	2.97E-07	2.97E-07
kr 84	2.65E-07	2.66E-07	2.68E-07	2.69E-07	2.70E-07	2.70E-07
dy161	2.47E-07	2.48E-07	2.50E-07	2.51E-07	2.53E-07	2.53E-07
sb121	2.17E-07	2.18E-07	2.19E-07	2.20E-07	2.22E-07	2.22E-07
nd142	2.11E-07	2.13E-07	2.15E-07	2.17E-07	2.19E-07	2.19E-07
ba134	2.01E-07	2.03E-07	2.05E-07	2.07E-07	2.09E-07	2.09E-07
se 79	1.98E-07	1.99E-07	2.00E-07	2.01E-07	2.02E-07	2.02E-07
sm148	1.83E-07	1.85E-07	1.87E-07	1.88E-07	1.90E-07	1.90E-07
sb123	1.75E-07	1.76E-07	1.77E-07	1.78E-07	1.79E-07	1.79E-07
kr 86	1.47E-07	1.48E-07	1.49E-07	1.50E-07	1.50E-07	1.50E-07
te128	1.43E-07	1.44E-07	1.44E-07	1.45E-07	1.46E-07	1.46E-07
pd104	1.38E-07	1.39E-07	1.41E-07	1.42E-07	1.44E-07	1.44E-07
nb 93	1.04E-07	1.06E-07	1.08E-07	1.10E-07	1.12E-07	1.12E-07
tb159	1.06E-07	1.07E-07	1.08E-07	1.08E-07	1.09E-07	1.09E-07
se 80	9.76E-08	9.81E-08	9.86E-08	9.91E-08	9.96E-08	9.96E-08
te125	9.74E-08	9.79E-08	9.85E-08	9.90E-08	9.95E-08	9.95E-08
gd158	8.39E-08	8.44E-08	8.49E-08	8.54E-08	8.59E-08	8.59E-08
cd112	7.56E-08	7.60E-08	7.64E-08	7.68E-08	7.72E-08	7.72E-08

	dy162	5.73E-08	5.77E-08	5.81E-08	5.85E-08	5.89E-08	5.89E-08
	dy164	5.53E-08	5.56E-08	5.59E-08	5.62E-08	5.65E-08	5.65E-08
	br 79	5.16E-08	5.27E-08	5.37E-08	5.47E-08	5.58E-08	5.58E-08
	ag107	5.11E-08	5.22E-08	5.34E-08	5.45E-08	5.57E-08	5.57E-08
	sn117	5.31E-08	5.34E-08	5.37E-08	5.40E-08	5.42E-08	5.42E-08
	cd110	5.07E-08	5.13E-08	5.19E-08	5.25E-08	5.31E-08	5.31E-08
	li 6	5.02E-08	5.04E-08	5.07E-08	5.09E-08	5.11E-08	5.11E-08
	mo 96	4.58E-08	4.62E-08	4.67E-08	4.71E-08	4.76E-08	4.76E-08
	eu152	4.70E-08	6.28E-08	6.30E-08	6.31E-08	6.33E-08	4.69E-08
	cd114	4.51E-08	4.54E-08	4.57E-08	4.59E-08	4.62E-08	4.62E-08
	sn119	4.04E-08	4.06E-08	4.08E-08	4.10E-08	4.12E-08	4.12E-08
	pd110	3.74E-08	3.76E-08	3.79E-08	3.81E-08	3.83E-08	3.83E-08
	sn115	3.69E-08	3.71E-08	3.73E-08	3.75E-08	3.77E-08	3.77E-08
	xe129	3.15E-08	3.22E-08	3.28E-08	3.35E-08	3.41E-08	3.41E-08
	sr 88	2.70E-08	2.72E-08	2.73E-08	2.74E-08	2.76E-08	2.76E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 208
0 fraction of total absorption rate
power= .00mw, burnup= 23684.mwd, flux= 2.95E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

	xe130	2.24E-08	2.26E-08	2.29E-08	2.31E-08	2.33E-08	2.33E-08
	ba136	1.91E-08	1.92E-08	1.94E-08	1.95E-08	1.97E-08	1.97E-08
	se 82	1.86E-08	1.87E-08	1.88E-08	1.89E-08	1.90E-08	1.90E-08
	te126	1.73E-08	1.76E-08	1.79E-08	1.82E-08	1.86E-08	1.86E-08
	sn126	1.56E-08	1.57E-08	1.57E-08	1.57E-08	1.58E-08	1.58E-08
	se 78	1.46E-08	1.47E-08	1.47E-08	1.48E-08	1.49E-08	1.49E-08
	dy163	1.43E-08	1.44E-08	1.45E-08	1.46E-08	1.47E-08	1.47E-08
	kr 82	1.40E-08	1.41E-08	1.42E-08	1.43E-08	1.44E-08	1.44E-08
	sn124	1.28E-08	1.29E-08	1.29E-08	1.30E-08	1.31E-08	1.31E-08
	eu155	9.95E-09	2.25E-08	2.24E-08	2.24E-08	2.24E-08	9.56E-09
	as 75	8.57E-09	8.61E-09	8.66E-09	8.70E-09	8.75E-09	8.75E-09
	in113	7.36E-09	7.40E-09	7.44E-09	7.48E-09	7.52E-09	7.52E-09
	pm147	7.77E-09	3.29E-08	3.29E-08	3.30E-08	3.30E-08	7.30E-09
	sn118	5.16E-09	5.19E-09	5.22E-09	5.25E-09	5.27E-09	5.27E-09
	sn122	4.45E-09	4.47E-09	4.49E-09	4.52E-09	4.54E-09	4.54E-09
	cd116	4.34E-09	4.36E-09	4.38E-09	4.41E-09	4.43E-09	4.43E-09
	eu154	3.46E-09	5.42E-09	5.45E-09	5.49E-09	5.52E-09	3.47E-09
	sn120	3.27E-09	3.29E-09	3.30E-09	3.32E-09	3.34E-09	3.34E-09
	ge 73	2.46E-09	2.48E-09	2.49E-09	2.50E-09	2.51E-09	2.51E-09
	sr 90	1.75E-09	2.00E-09	2.00E-09	2.01E-09	2.01E-09	1.74E-09
	ho165	1.41E-09	1.42E-09	1.44E-09	1.45E-09	1.46E-09	1.46E-09
	dy160	1.38E-09	1.39E-09	1.41E-09	1.42E-09	1.44E-09	1.44E-09
	gd160	1.19E-09	1.20E-09	1.20E-09	1.21E-09	1.22E-09	1.22E-09
	ge 76	8.34E-10	8.38E-10	8.43E-10	8.47E-10	8.51E-10	8.51E-10
	xe128	8.06E-10	8.14E-10	8.22E-10	8.31E-10	8.39E-10	8.39E-10
	cs137	4.05E-10	4.60E-10	4.60E-10	4.60E-10	4.60E-10	4.03E-10
	sr 86	3.79E-10	3.83E-10	3.86E-10	3.90E-10	3.94E-10	3.94E-10
	sn116	3.05E-10	3.08E-10	3.11E-10	3.14E-10	3.18E-10	3.18E-10
	te124	2.72E-10	2.74E-10	2.76E-10	2.79E-10	2.81E-10	2.81E-10
	nb 94	1.44E-10	1.45E-10	1.46E-10	1.47E-10	1.48E-10	1.48E-10
	sr 87	1.31E-10	1.32E-10	1.33E-10	1.34E-10	1.35E-10	1.35E-10
	te122	1.28E-10	1.30E-10	1.31E-10	1.32E-10	1.34E-10	1.34E-10
	se 76	1.06E-10	1.07E-10	1.08E-10	1.09E-10	1.10E-10	1.10E-10
	cs134	8.20E-11	5.25E-10	5.28E-10	5.31E-10	5.34E-10	7.72E-11
	er166	6.73E-11	6.77E-11	6.82E-11	6.87E-11	6.91E-11	6.91E-11
	kr 80	5.33E-11	5.42E-11	5.52E-11	5.61E-11	5.71E-11	5.71E-11
	ge 74	4.92E-11	4.95E-11	4.97E-11	5.00E-11	5.03E-11	5.03E-11
	kr 85	4.72E-11	6.75E-11	6.75E-11	6.76E-11	6.76E-11	4.66E-11
	ge 72	3.65E-11	3.67E-11	3.68E-11	3.70E-11	3.72E-11	3.72E-11
	er167	7.89E-12	7.99E-12	8.09E-12	8.18E-12	8.28E-12	8.28E-12

te123	6.22E-12	6.32E-12	6.41E-12	6.50E-12	6.59E-12	6.59E-12
cd108	3.81E-12	3.89E-12	3.96E-12	4.04E-12	4.12E-12	4.12E-12
y 90	1.66E-12	1.91E-12	1.91E-12	1.91E-12	1.91E-12	1.66E-12
sb125	5.35E-13	2.16E-12	2.16E-12	2.15E-12	2.15E-12	5.01E-13
ce144	5.37E-13	7.16E-11	7.17E-11	7.17E-11	7.17E-11	4.33E-13
be 9	1.05E-13	1.05E-13	1.06E-13	1.06E-13	1.07E-13	1.07E-13
ru106	1.13E-13	4.81E-12	4.80E-12	4.79E-12	4.78E-12	9.50E-14
sn114	8.10E-14	8.18E-14	8.27E-14	8.35E-14	8.44E-14	8.44E-14
li 7	4.31E-14	4.34E-14	4.36E-14	4.38E-14	4.40E-14	4.40E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 209
0 fraction of total absorption rate
power= .00mw, burnup= 23684.mwd, flux= 2.95E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sb126	1.79E-14	1.87E-14	1.88E-14	1.88E-14	1.88E-14	1.81E-14
te127m	3.17E-18	1.10E-12	1.10E-12	1.10E-12	1.09E-12	1.78E-18
cd109	9.28E-19	1.93E-17	1.96E-17	2.00E-17	2.04E-17	8.75E-19
sn123	2.73E-20	1.29E-15	1.29E-15	1.29E-15	1.29E-15	2.73E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 210
power= 4.890E-04mw, burnup=2.3684E+04mwd, flux= 2.95E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d	******* d
h 1	1.38E-03	1.39E-03	1.40E-03	1.40E-03	1.41E-03	1.41E-03
h 2	4.14E-06	4.16E-06	4.18E-06	4.20E-06	4.22E-06	4.22E-06
h 3	5.39E-12	7.35E-12	7.36E-12	7.37E-12	7.38E-12	5.34E-12
h 4	.00E+00	3.68E-36	3.69E-36	3.70E-36	3.71E-36	.00E+00
he 3	1.79E-08	1.79E-08	1.80E-08	1.80E-08	1.81E-08	1.81E-08
he 4	2.30E-04	2.31E-04	2.32E-04	2.33E-04	2.34E-04	2.34E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	2.76E-05	2.77E-05	2.79E-05	2.80E-05	2.81E-05	2.81E-05
ne 21	1.16E-08	1.17E-08	1.18E-08	1.19E-08	1.20E-08	1.20E-08
ne 22	1.82E-07	1.83E-07	1.84E-07	1.84E-07	1.85E-07	1.85E-07
ne 23	8.86E-31	8.85E-16	8.85E-16	8.86E-16	8.86E-16	8.86E-31
na 22	1.21E-12	5.25E-12	5.25E-12	5.26E-12	5.26E-12	1.14E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.22E-24	3.22E-09	3.22E-09	3.22E-09	3.22E-09	3.22E-24
na 24m	5.29E-31	5.29E-16	5.29E-16	5.29E-16	5.30E-16	5.30E-31
na 25	4.17E-39	4.20E-24	4.24E-24	4.29E-24	4.33E-24	4.33E-39
mg 24	1.78E-01	1.79E-01	1.80E-01	1.81E-01	1.82E-01	1.82E-01
mg 25	1.20E-06	1.21E-06	1.22E-06	1.23E-06	1.24E-06	1.24E-06
mg 26	4.13E-06	4.15E-06	4.17E-06	4.19E-06	4.21E-06	4.21E-06
mg 27	2.64E-28	2.64E-13	2.64E-13	2.64E-13	2.64E-13	2.64E-28
mg 28	.00E+00	6.64E-26	6.65E-26	6.66E-26	6.66E-26	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.39E-26	2.39E-11	2.39E-11	2.39E-11	2.39E-11	2.39E-26
al 29	3.39E-37	3.42E-22	3.46E-22	3.49E-22	3.53E-22	3.53E-37
al 30	.00E+00	1.03E-31	1.04E-31	1.06E-31	1.07E-31	.00E+00
si 28	5.19E-01	5.22E-01	5.24E-01	5.27E-01	5.29E-01	5.29E-01
si 29	1.09E-05	1.10E-05	1.11E-05	1.12E-05	1.13E-05	1.13E-05
si 30	2.43E-10	2.46E-10	2.50E-10	2.53E-10	2.57E-10	2.57E-10
si 31	2.15E-38	2.18E-23	2.21E-23	2.25E-23	2.28E-23	2.28E-38
si 32	4.55E-30	4.72E-30	4.80E-30	4.87E-30	4.95E-30	4.83E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.94E+07	2.94E+07	2.95E+07	2.95E+07	2.95E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 211
power= 4.890E-04mw, burnup=2.3684E+04mwd, flux= 2.95E+07n/cm**2-sec
0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge *******	d *******	d *******	d *******	d *******	d
he 4	4.82E+01	4.88E+01	4.95E+01	5.01E+01	5.08E+01	5.08E+01
pb206	2.99E-01	3.05E-01	3.12E-01	3.19E-01	3.26E-01	3.26E-01
pb207	1.84E-02	1.87E-02	1.91E-02	1.94E-02	1.98E-02	1.98E-02
pb208	7.34E-04	7.41E-04	7.48E-04	7.55E-04	7.63E-04	7.63E-04
pb209	1.17E-09	1.19E-09	1.20E-09	1.22E-09	1.23E-09	1.23E-09
pb210	3.42E-04	3.46E-04	3.49E-04	3.52E-04	3.56E-04	3.56E-04
pb211	5.72E-11	5.74E-11	5.76E-11	5.79E-11	5.82E-11	5.83E-11
pb212	1.90E-11	1.97E-11	1.98E-11	1.99E-11	2.00E-11	1.94E-11
pb214	7.83E-10	7.90E-10	7.98E-10	8.06E-10	8.13E-10	8.13E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	5.34E-02	5.48E-02	5.62E-02	5.76E-02	5.91E-02	5.91E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.11E-07	2.13E-07	2.15E-07	2.17E-07	2.19E-07	2.19E-07
bi211	3.39E-12	3.40E-12	3.42E-12	3.43E-12	3.45E-12	3.46E-12
bi212	1.80E-12	1.87E-12	1.88E-12	1.89E-12	1.90E-12	1.84E-12
bi213	2.74E-10	2.77E-10	2.81E-10	2.84E-10	2.87E-10	2.87E-10
bi214	5.81E-10	5.87E-10	5.92E-10	5.98E-10	6.04E-10	6.04E-10
po210	5.82E-06	5.88E-06	5.93E-06	5.99E-06	6.05E-06	6.05E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.75E-17	3.76E-17	3.78E-17	3.79E-17	3.81E-17	3.82E-17
po212	9.46E-23	9.80E-23	9.85E-23	9.91E-23	9.96E-23	9.64E-23
po213	4.11E-19	4.17E-19	4.22E-19	4.27E-19	4.32E-19	4.32E-19
po214	8.00E-17	8.07E-17	8.15E-17	8.23E-17	8.31E-17	8.31E-17
po215	4.70E-17	4.71E-17	4.74E-17	4.76E-17	4.78E-17	4.79E-17
po216	7.18E-17	7.44E-17	7.49E-17	7.53E-17	7.57E-17	7.33E-17
po218	9.05E-11	9.14E-11	9.23E-11	9.32E-11	9.41E-11	9.41E-11
rn218	3.22E-44	3.47E-29	3.50E-29	3.52E-29	3.54E-29	3.36E-44
rn219	1.05E-13	1.05E-13	1.05E-13	1.06E-13	1.06E-13	1.07E-13
rn220	2.76E-14	2.85E-14	2.87E-14	2.89E-14	2.90E-14	2.81E-14
rn222	1.61E-07	1.62E-07	1.64E-07	1.66E-07	1.67E-07	1.67E-07
ra222	3.56E-41	3.77E-26	3.79E-26	3.82E-26	3.84E-26	3.63E-41
ra223	2.61E-08	2.62E-08	2.63E-08	2.64E-08	2.65E-08	2.66E-08
ra224	1.57E-10	1.62E-10	1.63E-10	1.64E-10	1.65E-10	1.60E-10
ra225	1.28E-07	1.30E-07	1.31E-07	1.33E-07	1.34E-07	1.34E-07
ra226	2.46E-02	2.48E-02	2.51E-02	2.53E-02	2.55E-02	2.55E-02
ra228	1.23E-10	1.24E-10	1.26E-10	1.27E-10	1.29E-10	1.29E-10
ac225	8.65E-08	8.75E-08	8.86E-08	8.97E-08	9.08E-08	9.08E-08
ac227	1.81E-05	1.82E-05	1.83E-05	1.84E-05	1.85E-05	1.85E-05
ac228	1.50E-14	1.52E-14	1.54E-14	1.55E-14	1.57E-14	1.57E-14
th226	1.74E-39	1.84E-24	1.85E-24	1.86E-24	1.87E-24	1.77E-39
th227	4.21E-08	4.22E-08	4.24E-08	4.26E-08	4.28E-08	4.29E-08
th228	2.99E-08	3.10E-08	3.12E-08	3.13E-08	3.15E-08	3.05E-08
th229	2.49E-02	2.52E-02	2.55E-02	2.58E-02	2.61E-02	2.61E-02
th230	1.20E+00	1.21E+00	1.22E+00	1.23E+00	1.24E+00	1.24E+00
th231	2.71E-09	3.38E-09	3.39E-09	3.39E-09	3.40E-09	2.71E-09
th232	3.01E-01	3.04E-01	3.08E-01	3.11E-01	3.15E-01	3.15E-01
th233	3.38E-28	3.42E-13	3.47E-13	3.51E-13	3.55E-13	3.55E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	2.72E-02	2.74E-02	2.75E-02	2.76E-02	2.78E-02	2.78E-02
pa232	5.76E-26	5.79E-11	5.82E-11	5.85E-11	5.88E-11	5.89E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 212
power= 4.890E-04mw, burnup=2.3684E+04mwd, flux= 2.95E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge *******	d *******	d *******	d *******	d *******	d
pa233	1.40E-06	1.40E-06	1.40E-06	1.40E-06	1.40E-06	1.40E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11

pa234	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.68E-36	1.78E-21	1.79E-21	1.81E-21	1.82E-21	1.72E-36
u231	5.70E-32	5.74E-17	5.80E-17	5.86E-17	5.92E-17	5.92E-32
u232	1.06E-06	1.13E-06	1.14E-06	1.14E-06	1.15E-06	1.08E-06
u233	6.17E-01	6.24E-01	6.30E-01	6.36E-01	6.42E-01	6.42E-01
u234	1.03E+01	1.03E+01	1.03E+01	1.03E+01	1.03E+01	1.03E+01
u235	6.55E+02	6.55E+02	6.55E+02	6.55E+02	6.55E+02	6.55E+02
u236	1.93E+02	1.93E+02	1.93E+02	1.93E+02	1.93E+02	1.93E+02
u237	4.87E-13	4.11E-07	4.11E-07	4.12E-07	4.12E-07	4.36E-13
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.75E-23	3.74E-08	3.75E-08	3.75E-08	3.75E-08	3.75E-23
u240	1.72E-34	1.80E-34	1.89E-34	1.97E-34	2.06E-34	2.06E-34
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	3.05E-14	1.03E-12	1.03E-12	1.03E-12	1.03E-12	2.60E-14
np236m	2.44E-28	2.44E-13	2.44E-13	2.44E-13	2.44E-13	2.44E-28
np236	2.54E-06	2.54E-06	2.55E-06	2.55E-06	2.56E-06	2.56E-06
np237	4.06E+01	4.06E+01	4.05E+01	4.05E+01	4.05E+01	4.05E+01
np238	6.53E-15	1.82E-07	1.82E-07	1.82E-07	1.82E-07	5.89E-15
np239	1.93E-13	5.41E-06	5.41E-06	5.42E-06	5.42E-06	1.82E-13
np240m	1.47E-36	1.54E-36	1.61E-36	1.68E-36	1.76E-36	1.76E-36
np240	1.99E-38	1.35E-16	1.35E-16	1.35E-16	1.36E-16	2.27E-38
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	4.13E-11	1.38E-10	1.38E-10	1.38E-10	1.38E-10	3.92E-11
pu237	1.40E-27	3.43E-14	3.41E-14	3.39E-14	3.37E-14	3.70E-28
pu238	2.63E-03	2.75E-03	2.75E-03	2.75E-03	2.75E-03	2.63E-03
pu239	2.95E+01	2.93E+01	2.91E+01	2.89E+01	2.86E+01	2.86E+01
pu240	4.15E-01	4.05E-01	3.95E-01	3.85E-01	3.76E-01	3.76E-01
pu241	1.58E-05	2.01E-05	1.96E-05	1.91E-05	1.87E-05	1.41E-05
pu242	4.76E-05	4.77E-05	4.77E-05	4.78E-05	4.78E-05	4.78E-05
pu243	1.50E-29	1.23E-14	1.23E-14	1.23E-14	1.23E-14	1.52E-29
pu244	8.57E-24	8.98E-24	9.40E-24	9.83E-24	1.03E-23	1.03E-23
pu245	.00E+00	4.54E-35	4.76E-35	4.98E-35	5.20E-35	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	2.13E-35	2.06E-20	2.02E-20	1.97E-20	1.92E-20	1.92E-35
am240	9.73E-33	9.43E-18	9.22E-18	9.00E-18	8.79E-18	8.79E-33
am241	6.28E-04	6.10E-04	5.95E-04	5.81E-04	5.68E-04	5.67E-04
am242m	3.53E-08	3.51E-08	3.43E-08	3.35E-08	3.27E-08	3.18E-08
am242	4.55E-13	2.78E-12	2.72E-12	2.65E-12	2.59E-12	4.11E-13
am243	2.21E-07	2.18E-07	2.14E-07	2.11E-07	2.08E-07	2.08E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	2.04E-31	2.01E-16	1.98E-16	1.95E-16	1.92E-16	1.92E-31
am245	4.77E-40	8.91E-36	9.33E-36	9.76E-36	1.02E-35	4.18E-40
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	5.74E-39	1.99E-23	1.95E-23	1.91E-23	1.86E-23	5.73E-39
cm242	9.20E-11	5.61E-10	5.49E-10	5.36E-10	5.24E-10	8.30E-11
cm243	1.42E-15	1.58E-15	1.54E-15	1.51E-15	1.47E-15	1.28E-15
cm244	2.60E-12	3.15E-12	3.11E-12	3.06E-12	3.02E-12	2.43E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 213
power= 4.890E-04mw, burnup=2.3684E+04mwd, flux= 2.95E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d
cm245	1.27E-14	1.23E-14	1.19E-14	1.15E-14	1.12E-14	1.12E-14
cm246	1.01E-16	9.79E-17	9.45E-17	9.13E-17	8.81E-17	8.81E-17
cm247	7.89E-20	7.97E-20	8.05E-20	8.12E-20	8.19E-20	8.19E-20
cm248	3.48E-22	3.55E-22	3.62E-22	3.69E-22	3.77E-22	3.77E-22
cm249	.00E+00	1.36E-33	1.39E-33	1.42E-33	1.45E-33	.00E+00
cm250	1.72E-37	1.72E-37	1.72E-37	1.72E-37	1.72E-37	1.72E-37

```
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.94E+07  2.94E+07  2.95E+07  2.95E+07  2.95E-08
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number 24 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *         see information above this box (if present) for later updates        *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                 8/29/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
                        879    number of fission product nuclides
0                      7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    page  214
       power=    .00mw, burnup=  24130.mwd, flux= 2.95E+07n/cm**2-sec
0                                    basis =
```

0 (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)

0		initial	******* d	******* d	******* d	******* d	******* d
	productions	1.286968E+06	1.286217E+06	1.285473E+06	1.284738E+06	1.284011E+06	1.284001E+06
	absorptions	1.048220E+06	1.047862E+06	1.047508E+06	1.047158E+06	1.046813E+06	1.046807E+06
	k infinity	1.227765E+00	1.227468E+00	1.227173E+00	1.226880E+00	1.226590E+00	1.226588E+00
0		initial	******* d	******* d	******* d	******* d	******* d
	actinide absorptions	1.028791E+06	1.028390E+06	1.027995E+06	1.027604E+06	1.027218E+06	1.027212E+06
	non-actinide abs. fracs.	1.853555E-02	1.858240E-02	1.862854E-02	1.867402E-02	1.871920E-02	1.871884E-02

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 215

0 fraction of total absorption rate

power= .00mw, burnup= 24130.mwd, flux= 2.95E+07n/cm**2-sec

0	initial	******* d	******* d	******* d	******* d	******* d
sm149	5.39E-03	5.40E-03	5.40E-03	5.40E-03	5.41E-03	5.41E-03
nd143	2.29E-03	2.30E-03	2.32E-03	2.33E-03	2.34E-03	2.34E-03
eu151	1.96E-03	1.96E-03	1.96E-03	1.97E-03	1.97E-03	1.97E-03
rh103	1.12E-03	1.12E-03	1.13E-03	1.13E-03	1.14E-03	1.14E-03
xe131	7.46E-04	7.50E-04	7.54E-04	7.57E-04	7.61E-04	7.61E-04
cs133	5.82E-04	5.84E-04	5.87E-04	5.90E-04	5.93E-04	5.93E-04
sm147	4.26E-04	4.28E-04	4.30E-04	4.32E-04	4.34E-04	4.34E-04
tc 99	3.83E-04	3.85E-04	3.86E-04	3.87E-04	3.89E-04	3.89E-04
nd145	3.28E-04	3.30E-04	3.31E-04	3.33E-04	3.35E-04	3.35E-04
sm152	2.60E-04	2.62E-04	2.63E-04	2.65E-04	2.66E-04	2.66E-04
mo 95	2.28E-04	2.29E-04	2.30E-04	2.31E-04	2.32E-04	2.32E-04
gd155	2.28E-04	2.28E-04	2.28E-04	2.28E-04	2.27E-04	2.27E-04
sm150	1.74E-04	1.75E-04	1.75E-04	1.76E-04	1.77E-04	1.77E-04
kr 83	1.40E-04	1.41E-04	1.41E-04	1.42E-04	1.43E-04	1.43E-04
cs135	1.32E-04	1.32E-04	1.33E-04	1.34E-04	1.34E-04	1.34E-04
eu153	1.07E-04	1.08E-04	1.08E-04	1.09E-04	1.09E-04	1.09E-04
ru101	1.02E-04	1.03E-04	1.03E-04	1.04E-04	1.05E-04	1.05E-04
cd113	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04
pr141	9.85E-05	9.90E-05	9.95E-05	1.00E-04	1.01E-04	1.01E-04
la139	8.06E-05	8.10E-05	8.14E-05	8.19E-05	8.23E-05	8.23E-05
gd157	6.02E-05	6.01E-05	5.99E-05	5.98E-05	5.96E-05	5.96E-05
ag109	4.22E-05	4.25E-05	4.27E-05	4.30E-05	4.32E-05	4.32E-05
pd105	4.15E-05	4.17E-05	4.19E-05	4.22E-05	4.24E-05	4.24E-05
ba137	3.91E-05	3.93E-05	3.95E-05	3.97E-05	3.99E-05	3.99E-05
zr 93	3.14E-05	3.16E-05	3.17E-05	3.19E-05	3.20E-05	3.20E-05
i129	2.65E-05	2.66E-05	2.68E-05	2.69E-05	2.70E-05	2.70E-05
nd144	2.51E-05	2.52E-05	2.53E-05	2.55E-05	2.56E-05	2.56E-05
gd152	2.21E-05	2.23E-05	2.25E-05	2.26E-05	2.28E-05	2.28E-05
mo 97	1.83E-05	1.84E-05	1.85E-05	1.86E-05	1.87E-05	1.87E-05
pd108	1.01E-05	1.02E-05	1.03E-05	1.03E-05	1.04E-05	1.04E-05
zr 91	8.40E-06	8.44E-06	8.49E-06	8.53E-06	8.57E-06	8.57E-06
y 89	8.04E-06	8.08E-06	8.12E-06	8.16E-06	8.20E-06	8.20E-06
ru102	7.68E-06	7.72E-06	7.76E-06	7.80E-06	7.84E-06	7.84E-06
ru 99	6.90E-06	7.02E-06	7.15E-06	7.28E-06	7.40E-06	7.40E-06
ce142	6.72E-06	6.76E-06	6.79E-06	6.82E-06	6.86E-06	6.86E-06
sm151	6.61E-06	6.91E-06	6.91E-06	6.91E-06	6.92E-06	6.60E-06
nd148	6.47E-06	6.50E-06	6.53E-06	6.57E-06	6.60E-06	6.60E-06
nd146	5.46E-06	5.49E-06	5.52E-06	5.55E-06	5.58E-06	5.58E-06
pd107	5.10E-06	5.13E-06	5.16E-06	5.19E-06	5.22E-06	5.22E-06
in115	4.80E-06	4.82E-06	4.84E-06	4.87E-06	4.89E-06	4.89E-06
ba138	4.65E-06	4.67E-06	4.70E-06	4.72E-06	4.74E-06	4.74E-06
ce140	4.35E-06	4.37E-06	4.40E-06	4.42E-06	4.44E-06	4.44E-06
xe132	4.00E-06	4.02E-06	4.04E-06	4.06E-06	4.08E-06	4.08E-06
mo 98	2.66E-06	2.68E-06	2.69E-06	2.70E-06	2.72E-06	2.72E-06
mo100	2.60E-06	2.62E-06	2.63E-06	2.64E-06	2.66E-06	2.66E-06

xe134	2.57E-06	2.59E-06	2.60E-06	2.61E-06	2.62E-06	2.62E-06
zr 92	2.04E-06	2.05E-06	2.06E-06	2.07E-06	2.08E-06	2.08E-06
i127	1.94E-06	1.95E-06	1.96E-06	1.97E-06	1.98E-06	1.98E-06
ru104	1.77E-06	1.78E-06	1.79E-06	1.80E-06	1.81E-06	1.81E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 216
0 fraction of total absorption rate

power= .00mw, burnup= 24130.mwd, flux= 2.95E+07n/cm**2-sec

	initial	******* d	******* d	******* d	******* d	******* d
zr 96	1.59E-06	1.60E-06	1.61E-06	1.62E-06	1.62E-06	1.62E-06
nd150	1.47E-06	1.47E-06	1.48E-06	1.49E-06	1.50E-06	1.50E-06
xe136	1.39E-06	1.40E-06	1.41E-06	1.42E-06	1.42E-06	1.42E-06
cd111	1.15E-06	1.15E-06	1.16E-06	1.16E-06	1.17E-06	1.17E-06
gd154	1.11E-06	1.12E-06	1.13E-06	1.14E-06	1.15E-06	1.15E-06
br 81	1.03E-06	1.04E-06	1.04E-06	1.05E-06	1.05E-06	1.05E-06
rb 85	9.85E-07	9.90E-07	9.95E-07	1.00E-06	1.00E-06	1.00E-06
zr 94	8.60E-07	8.64E-07	8.69E-07	8.73E-07	8.77E-07	8.77E-07
zr 90	7.92E-07	7.96E-07	8.00E-07	8.04E-07	8.08E-07	8.08E-07
ba135	7.08E-07	7.22E-07	7.35E-07	7.49E-07	7.63E-07	7.63E-07
sm154	6.95E-07	6.98E-07	7.02E-07	7.06E-07	7.09E-07	7.09E-07
te130	6.45E-07	6.48E-07	6.51E-07	6.54E-07	6.58E-07	6.58E-07
rb 87	5.66E-07	5.69E-07	5.72E-07	5.75E-07	5.78E-07	5.78E-07
pd106	4.28E-07	4.30E-07	4.32E-07	4.35E-07	4.37E-07	4.37E-07
se 77	4.16E-07	4.18E-07	4.20E-07	4.22E-07	4.24E-07	4.24E-07
gd156	4.08E-07	4.10E-07	4.13E-07	4.15E-07	4.18E-07	4.18E-07
ru100	2.97E-07	3.00E-07	3.03E-07	3.05E-07	3.08E-07	3.08E-07
kr 84	2.70E-07	2.72E-07	2.73E-07	2.74E-07	2.76E-07	2.76E-07
dy161	2.53E-07	2.54E-07	2.56E-07	2.57E-07	2.58E-07	2.58E-07
nd142	2.19E-07	2.22E-07	2.24E-07	2.26E-07	2.28E-07	2.28E-07
sb121	2.21E-07	2.23E-07	2.24E-07	2.25E-07	2.26E-07	2.26E-07
ba134	2.09E-07	2.11E-07	2.13E-07	2.15E-07	2.18E-07	2.18E-07
se 79	2.02E-07	2.03E-07	2.03E-07	2.04E-07	2.05E-07	2.05E-07
sm148	1.90E-07	1.92E-07	1.94E-07	1.96E-07	1.98E-07	1.98E-07
sb123	1.79E-07	1.80E-07	1.81E-07	1.82E-07	1.83E-07	1.83E-07
kr 86	1.50E-07	1.51E-07	1.52E-07	1.53E-07	1.53E-07	1.53E-07
pd104	1.43E-07	1.45E-07	1.46E-07	1.48E-07	1.49E-07	1.49E-07
te128	1.46E-07	1.47E-07	1.47E-07	1.48E-07	1.49E-07	1.49E-07
nb 93	1.12E-07	1.15E-07	1.17E-07	1.19E-07	1.21E-07	1.21E-07
tb159	1.09E-07	1.09E-07	1.10E-07	1.11E-07	1.11E-07	1.11E-07
se 80	9.97E-08	1.00E-07	1.01E-07	1.01E-07	1.02E-07	1.02E-07
te125	9.95E-08	1.00E-07	1.01E-07	1.01E-07	1.02E-07	1.02E-07
gd158	8.58E-08	8.63E-08	8.68E-08	8.73E-08	8.78E-08	8.78E-08
cd112	7.73E-08	7.77E-08	7.81E-08	7.85E-08	7.89E-08	7.89E-08
dy162	5.89E-08	5.93E-08	5.96E-08	6.00E-08	6.04E-08	6.04E-08
ag107	5.57E-08	5.69E-08	5.80E-08	5.92E-08	6.04E-08	6.04E-08
br 79	5.58E-08	5.68E-08	5.79E-08	5.89E-08	6.00E-08	6.00E-08
dy164	5.65E-08	5.68E-08	5.71E-08	5.74E-08	5.77E-08	5.77E-08
cd110	5.31E-08	5.37E-08	5.43E-08	5.49E-08	5.56E-08	5.56E-08
sn117	5.43E-08	5.45E-08	5.48E-08	5.51E-08	5.54E-08	5.54E-08
li 6	5.11E-08	5.14E-08	5.16E-08	5.18E-08	5.21E-08	5.21E-08
mo 96	4.76E-08	4.80E-08	4.85E-08	4.90E-08	4.94E-08	4.94E-08
cd114	4.61E-08	4.64E-08	4.66E-08	4.69E-08	4.72E-08	4.72E-08
eu152	4.70E-08	6.35E-08	6.37E-08	6.39E-08	6.41E-08	4.69E-08
sn119	4.12E-08	4.15E-08	4.17E-08	4.19E-08	4.21E-08	4.21E-08
pd110	3.83E-08	3.85E-08	3.87E-08	3.89E-08	3.91E-08	3.91E-08
sn115	3.77E-08	3.79E-08	3.81E-08	3.83E-08	3.85E-08	3.85E-08
xe129	3.41E-08	3.48E-08	3.55E-08	3.61E-08	3.68E-08	3.68E-08
sr 88	2.76E-08	2.77E-08	2.79E-08	2.80E-08	2.81E-08	2.81E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 217
0 fraction of total absorption rate

power= .00mw, burnup= 24130.mwd, flux= 2.95E+07n/cm**2-sec

0	initial	******* d	******* d	******* d	******* d	******* d
xe130	2.33E-08	2.35E-08	2.37E-08	2.40E-08	2.42E-08	2.42E-08
ba136	1.97E-08	1.99E-08	2.00E-08	2.02E-08	2.03E-08	2.03E-08
te126	1.86E-08	1.89E-08	1.92E-08	1.96E-08	1.99E-08	1.99E-08
se 82	1.90E-08	1.91E-08	1.92E-08	1.93E-08	1.94E-08	1.94E-08
sn126	1.58E-08	1.58E-08	1.58E-08	1.59E-08	1.59E-08	1.59E-08
se 78	1.49E-08	1.50E-08	1.50E-08	1.51E-08	1.52E-08	1.52E-08
dy163	1.47E-08	1.48E-08	1.49E-08	1.50E-08	1.51E-08	1.51E-08
kr 82	1.44E-08	1.45E-08	1.46E-08	1.47E-08	1.49E-08	1.49E-08
sn124	1.31E-08	1.31E-08	1.32E-08	1.33E-08	1.33E-08	1.33E-08
eu155	9.55E-09	2.24E-08	2.24E-08	2.23E-08	2.23E-08	9.17E-09
as 75	8.75E-09	8.79E-09	8.83E-09	8.88E-09	8.92E-09	8.92E-09
in113	7.52E-09	7.56E-09	7.60E-09	7.64E-09	7.68E-09	7.68E-09
pm147	7.29E-09	3.30E-08	3.30E-08	3.30E-08	3.30E-08	6.83E-09
sn118	5.27E-09	5.30E-09	5.32E-09	5.35E-09	5.38E-09	5.38E-09
sn122	4.54E-09	4.57E-09	4.59E-09	4.61E-09	4.64E-09	4.64E-09
cd116	4.43E-09	4.45E-09	4.47E-09	4.50E-09	4.52E-09	4.52E-09
eu154	3.47E-09	5.56E-09	5.59E-09	5.62E-09	5.66E-09	3.48E-09
sn120	3.34E-09	3.36E-09	3.37E-09	3.39E-09	3.41E-09	3.41E-09
ge 73	2.51E-09	2.53E-09	2.54E-09	2.55E-09	2.57E-09	2.57E-09
sr 90	1.74E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	1.74E-09
ho165	1.46E-09	1.47E-09	1.48E-09	1.49E-09	1.51E-09	1.51E-09
dy160	1.44E-09	1.45E-09	1.47E-09	1.48E-09	1.50E-09	1.50E-09
gd160	1.22E-09	1.22E-09	1.23E-09	1.24E-09	1.25E-09	1.25E-09
xe128	8.40E-10	8.48E-10	8.56E-10	8.65E-10	8.74E-10	8.74E-10
ge 76	8.51E-10	8.56E-10	8.60E-10	8.64E-10	8.68E-10	8.68E-10
sr 86	3.94E-10	3.98E-10	4.01E-10	4.05E-10	4.09E-10	4.09E-10
cs137	4.03E-10	4.60E-10	4.60E-10	4.60E-10	4.61E-10	4.01E-10
sn116	3.17E-10	3.20E-10	3.24E-10	3.27E-10	3.30E-10	3.30E-10
te124	2.81E-10	2.83E-10	2.85E-10	2.88E-10	2.90E-10	2.90E-10
nb 94	1.48E-10	1.48E-10	1.49E-10	1.50E-10	1.52E-10	1.52E-10
sr 87	1.35E-10	1.36E-10	1.37E-10	1.38E-10	1.39E-10	1.39E-10
te122	1.34E-10	1.35E-10	1.36E-10	1.38E-10	1.39E-10	1.39E-10
se 76	1.10E-10	1.11E-10	1.12E-10	1.13E-10	1.14E-10	1.14E-10
cs134	7.72E-11	5.36E-10	5.39E-10	5.42E-10	5.45E-10	7.24E-11
er166	6.92E-11	6.96E-11	7.01E-11	7.05E-11	7.10E-11	7.10E-11
kr 80	5.71E-11	5.81E-11	5.91E-11	6.01E-11	6.12E-11	6.12E-11
ge 74	5.03E-11	5.05E-11	5.08E-11	5.11E-11	5.13E-11	5.13E-11
kr 85	4.66E-11	6.77E-11	6.77E-11	6.78E-11	6.78E-11	4.60E-11
ge 72	3.73E-11	3.75E-11	3.76E-11	3.78E-11	3.80E-11	3.80E-11
er167	8.28E-12	8.38E-12	8.48E-12	8.58E-12	8.68E-12	8.68E-12
te123	6.59E-12	6.69E-12	6.78E-12	6.88E-12	6.97E-12	6.97E-12
cd108	4.12E-12	4.21E-12	4.29E-12	4.37E-12	4.46E-12	4.46E-12
y 90	1.66E-12	1.91E-12	1.91E-12	1.92E-12	1.92E-12	1.65E-12
sb125	5.01E-13	2.15E-12	2.15E-12	2.15E-12	2.15E-12	4.69E-13
ce144	4.33E-13	7.18E-11	7.18E-11	7.19E-11	7.19E-11	3.46E-13
be 9	1.07E-13	1.07E-13	1.08E-13	1.08E-13	1.09E-13	1.09E-13
sn114	8.44E-14	8.53E-14	8.62E-14	8.70E-14	8.79E-14	8.79E-14
ru106	9.49E-14	4.77E-12	4.76E-12	4.75E-12	4.74E-12	7.92E-14
li 7	4.40E-14	4.43E-14	4.45E-14	4.47E-14	4.49E-14	4.49E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 218

0 fraction of total absorption rate

power= .00mw, burnup= 24130.mwd, flux= 2.95E+07n/cm**2-sec

0	initial	******* d	******* d	******* d	******* d	******* d
sb126	1.81E-14	1.89E-14	1.89E-14	1.89E-14	1.90E-14	1.82E-14
te127m	1.80E-18	1.09E-12	1.09E-12	1.09E-12	1.09E-12	9.84E-19
cd109	8.73E-19	2.08E-17	2.12E-17	2.16E-17	2.20E-17	8.20E-19

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 219
power= 4.890E-04mw, burnup=2.4130E+04mwd, flux= 2.95E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
h 1	1.41E-03	1.42E-03	1.42E-03	1.43E-03	1.44E-03	1.44E-03
h 2	4.22E-06	4.24E-06	4.26E-06	4.28E-06	4.30E-06	4.30E-06
h 3	5.34E-12	7.38E-12	7.39E-12	7.40E-12	7.42E-12	5.29E-12
h 4	.00E+00	3.71E-36	3.72E-36	3.73E-36	3.73E-36	.00E+00
he 3	1.81E-08	1.81E-08	1.81E-08	1.82E-08	1.82E-08	1.82E-08
he 4	2.34E-04	2.35E-04	2.36E-04	2.37E-04	2.39E-04	2.39E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	2.81E-05	2.83E-05	2.84E-05	2.85E-05	2.87E-05	2.87E-05
ne 21	1.20E-08	1.21E-08	1.22E-08	1.23E-08	1.24E-08	1.24E-08
ne 22	1.85E-07	1.86E-07	1.87E-07	1.88E-07	1.89E-07	1.89E-07
ne 23	8.86E-31	8.85E-16	8.85E-16	8.86E-16	8.86E-16	8.86E-31
na 22	1.14E-12	5.25E-12	5.25E-12	5.26E-12	5.26E-12	1.06E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.22E-24	3.22E-09	3.22E-09	3.22E-09	3.22E-09	3.22E-24
na 24m	5.30E-31	5.29E-16	5.29E-16	5.29E-16	5.30E-16	5.30E-31
na 25	4.33E-39	4.36E-24	4.41E-24	4.45E-24	4.49E-24	4.49E-39
mg 24	1.82E-01	1.83E-01	1.83E-01	1.84E-01	1.85E-01	1.85E-01
mg 25	1.24E-06	1.25E-06	1.26E-06	1.28E-06	1.29E-06	1.29E-06
mg 26	4.21E-06	4.23E-06	4.25E-06	4.27E-06	4.29E-06	4.29E-06
mg 27	2.64E-28	2.64E-13	2.64E-13	2.64E-13	2.64E-13	2.64E-28
mg 28	.00E+00	6.66E-26	6.67E-26	6.67E-26	6.68E-26	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.39E-26	2.39E-11	2.39E-11	2.39E-11	2.39E-11	2.39E-26
al 29	3.53E-37	3.55E-22	3.59E-22	3.62E-22	3.66E-22	3.66E-37
al 30	.00E+00	1.09E-31	1.10E-31	1.12E-31	1.14E-31	.00E+00
si 28	5.29E-01	5.31E-01	5.34E-01	5.36E-01	5.39E-01	5.39E-01
si 29	1.13E-05	1.14E-05	1.15E-05	1.16E-05	1.17E-05	1.17E-05
si 30	2.57E-10	2.61E-10	2.64E-10	2.68E-10	2.72E-10	2.72E-10
si 31	2.28E-38	2.31E-23	2.35E-23	2.38E-23	2.42E-23	2.42E-38
si 32	4.83E-30	5.01E-30	5.10E-30	5.18E-30	5.25E-30	5.13E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.95E+07	2.95E+07	2.95E+07	2.95E+07	2.95E-08

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 220
power= 4.890E-04mw, burnup=2.4130E+04mwd, flux= 2.95E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	5.08E+01	5.14E+01	5.21E+01	5.27E+01	5.33E+01	5.33E+01
pb206	3.26E-01	3.33E-01	3.40E-01	3.47E-01	3.54E-01	3.54E-01
pb207	1.98E-02	2.02E-02	2.05E-02	2.09E-02	2.13E-02	2.13E-02
pb208	7.63E-04	7.70E-04	7.77E-04	7.84E-04	7.91E-04	7.92E-04
pb209	1.23E-09	1.24E-09	1.26E-09	1.27E-09	1.29E-09	1.29E-09
pb210	3.56E-04	3.59E-04	3.62E-04	3.66E-04	3.69E-04	3.69E-04
pb211	5.83E-11	5.85E-11	5.87E-11	5.90E-11	5.93E-11	5.94E-11
pb212	1.94E-11	2.01E-11	2.02E-11	2.03E-11	2.04E-11	1.97E-11
pb214	8.13E-10	8.21E-10	8.28E-10	8.35E-10	8.43E-10	8.43E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	5.91E-02	6.05E-02	6.20E-02	6.35E-02	6.49E-02	6.50E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.19E-07	2.21E-07	2.23E-07	2.25E-07	2.27E-07	2.27E-07
bi211	3.46E-12	3.47E-12	3.48E-12	3.50E-12	3.51E-12	3.52E-12
bi212	1.84E-12	1.91E-12	1.92E-12	1.93E-12	1.93E-12	1.87E-12
bi213	2.87E-10	2.91E-10	2.94E-10	2.98E-10	3.01E-10	3.01E-10

bi214	6.04E-10	6.09E-10	6.15E-10	6.20E-10	6.26E-10	6.26E-10
po210	6.05E-06	6.10E-06	6.16E-06	6.21E-06	6.27E-06	6.27E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.82E-17	3.83E-17	3.85E-17	3.87E-17	3.88E-17	3.89E-17
po212	9.64E-23	1.00E-22	1.01E-22	1.01E-22	1.02E-22	9.82E-23
po213	4.32E-19	4.37E-19	4.42E-19	4.47E-19	4.52E-19	4.52E-19
po214	8.31E-17	8.38E-17	8.46E-17	8.53E-17	8.61E-17	8.61E-17
po215	4.79E-17	4.81E-17	4.83E-17	4.85E-17	4.87E-17	4.88E-17
po216	7.33E-17	7.60E-17	7.64E-17	7.68E-17	7.72E-17	7.46E-17
po218	9.41E-11	9.49E-11	9.58E-11	9.67E-11	9.75E-11	9.75E-11
rn218	3.36E-44	3.55E-29	3.57E-29	3.59E-29	3.61E-29	3.36E-44
rn219	1.07E-13	1.07E-13	1.07E-13	1.08E-13	1.08E-13	1.09E-13
rn220	2.81E-14	2.92E-14	2.93E-14	2.95E-14	2.96E-14	2.86E-14
rn222	1.67E-07	1.69E-07	1.70E-07	1.72E-07	1.73E-07	1.73E-07
ra222	3.63E-41	3.85E-26	3.88E-26	3.90E-26	3.92E-26	3.70E-41
ra223	2.66E-08	2.67E-08	2.68E-08	2.69E-08	2.70E-08	2.71E-08
ra224	1.60E-10	1.66E-10	1.67E-10	1.68E-10	1.68E-10	1.63E-10
ra225	1.34E-07	1.36E-07	1.38E-07	1.39E-07	1.41E-07	1.41E-07
ra226	2.55E-02	2.58E-02	2.60E-02	2.62E-02	2.65E-02	2.65E-02
ra228	1.29E-10	1.30E-10	1.32E-10	1.33E-10	1.35E-10	1.35E-10
ac225	9.08E-08	9.19E-08	9.29E-08	9.40E-08	9.51E-08	9.51E-08
ac227	1.85E-05	1.85E-05	1.86E-05	1.87E-05	1.88E-05	1.88E-05
ac228	1.57E-14	1.59E-14	1.61E-14	1.63E-14	1.64E-14	1.64E-14
th226	1.77E-39	1.88E-24	1.89E-24	1.90E-24	1.91E-24	1.80E-39
th227	4.29E-08	4.30E-08	4.32E-08	4.34E-08	4.36E-08	4.37E-08
th228	3.05E-08	3.17E-08	3.18E-08	3.20E-08	3.22E-08	3.10E-08
th229	2.61E-02	2.64E-02	2.67E-02	2.71E-02	2.74E-02	2.74E-02
th230	1.24E+00	1.25E+00	1.27E+00	1.28E+00	1.29E+00	1.29E+00
th231	2.71E-09	3.41E-09	3.41E-09	3.42E-09	3.42E-09	2.71E-09
th232	3.15E-01	3.18E-01	3.22E-01	3.26E-01	3.29E-01	3.29E-01
th233	3.55E-28	3.59E-13	3.63E-13	3.68E-13	3.72E-13	3.72E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	2.78E-02	2.79E-02	2.80E-02	2.82E-02	2.83E-02	2.83E-02
pa232	5.89E-26	5.92E-11	5.95E-11	5.98E-11	6.01E-11	6.01E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 221
power= 4.890E-04mw, burnup=2.4130E+04mwd, flux= 2.95E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d	******* d
pa233	1.40E-06	1.40E-06	1.40E-06	1.40E-06	1.40E-06	1.40E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.72E-36	1.82E-21	1.83E-21	1.84E-21	1.85E-21	1.75E-36
u231	5.92E-32	5.97E-17	6.03E-17	6.09E-17	6.14E-17	6.15E-32
u232	1.08E-06	1.15E-06	1.16E-06	1.17E-06	1.17E-06	1.10E-06
u233	6.42E-01	6.48E-01	6.54E-01	6.60E-01	6.66E-01	6.66E-01
u234	1.03E+01	1.03E+01	1.03E+01	1.03E+01	1.03E+01	1.03E+01
u235	6.55E+02	6.55E+02	6.55E+02	6.55E+02	6.55E+02	6.55E+02
u236	1.93E+02	1.93E+02	1.93E+02	1.93E+02	1.94E+02	1.94E+02
u237	4.36E-13	4.12E-07	4.12E-07	4.13E-07	4.13E-07	3.95E-13
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.75E-23	3.75E-08	3.75E-08	3.75E-08	3.75E-08	3.75E-23
u240	2.06E-34	2.15E-34	2.24E-34	2.34E-34	2.43E-34	2.43E-34
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	2.60E-14	1.03E-12	1.03E-12	1.03E-12	1.03E-12	2.21E-14
np236m	2.44E-28	2.44E-13	2.44E-13	2.44E-13	2.44E-13	2.44E-28
np236	2.56E-06	2.56E-06	2.57E-06	2.57E-06	2.58E-06	2.58E-06
np237	4.05E+01	4.05E+01	4.05E+01	4.05E+01	4.05E+01	4.05E+01

np238	5.89E-15	1.82E-07	1.82E-07	1.82E-07	1.82E-07	5.38E-15
np239	1.82E-13	5.42E-06	5.42E-06	5.42E-06	5.42E-06	1.73E-13
np240m	1.76E-36	1.84E-36	1.91E-36	1.99E-36	2.07E-36	2.07E-36
np240	2.27E-38	1.35E-16	1.36E-16	1.36E-16	1.36E-16	2.57E-38
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	3.92E-11	1.38E-10	1.38E-10	1.38E-10	1.38E-10	3.73E-11
pu237	3.70E-28	3.35E-14	3.33E-14	3.31E-14	3.29E-14	1.12E-28
pu238	2.63E-03	2.75E-03	2.75E-03	2.75E-03	2.75E-03	2.62E-03
pu239	2.86E+01	2.84E+01	2.82E+01	2.81E+01	2.79E+01	2.79E+01
pu240	3.76E-01	3.67E-01	3.59E-01	3.52E-01	3.44E-01	3.44E-01
pu241	1.41E-05	1.82E-05	1.78E-05	1.75E-05	1.71E-05	1.28E-05
pu242	4.78E-05	4.79E-05	4.79E-05	4.80E-05	4.80E-05	4.80E-05
pu243	1.52E-29	1.23E-14	1.23E-14	1.24E-14	1.24E-14	1.54E-29
pu244	1.03E-23	1.07E-23	1.12E-23	1.16E-23	1.21E-23	1.21E-23
pu245	.00E+00	5.43E-35	5.66E-35	5.90E-35	6.14E-35	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.92E-35	1.87E-20	1.83E-20	1.79E-20	1.76E-20	1.76E-35
am240	8.79E-33	8.54E-18	8.37E-18	8.20E-18	8.04E-18	8.03E-33
am241	5.67E-04	5.52E-04	5.41E-04	5.30E-04	5.19E-04	5.18E-04
am242m	3.18E-08	3.18E-08	3.12E-08	3.06E-08	3.00E-08	2.91E-08
am242	4.11E-13	2.52E-12	2.47E-12	2.42E-12	2.37E-12	3.75E-13
am243	2.08E-07	2.05E-07	2.03E-07	2.01E-07	1.98E-07	1.98E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.92E-31	1.90E-16	1.87E-16	1.85E-16	1.83E-16	1.83E-31
am245	4.18E-40	1.06E-35	1.11E-35	1.16E-35	1.20E-35	3.73E-40
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	5.73E-39	1.81E-23	1.77E-23	1.74E-23	1.71E-23	1.26E-43
cm242	8.30E-11	5.09E-10	4.99E-10	4.89E-10	4.79E-10	7.58E-11
cm243	1.28E-15	1.43E-15	1.40E-15	1.38E-15	1.35E-15	1.17E-15
cm244	2.43E-12	2.98E-12	2.95E-12	2.91E-12	2.88E-12	2.29E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 222
power= 4.890E-04mw, burnup=2.4130E+04mwd, flux= 2.95E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d
cm245	1.12E-14	1.08E-14	1.05E-14	1.02E-14	9.86E-15	9.85E-15
cm246	8.81E-17	8.50E-17	8.22E-17	7.94E-17	7.67E-17	7.67E-17
cm247	8.19E-20	8.26E-20	8.33E-20	8.39E-20	8.45E-20	8.45E-20
cm248	3.77E-22	3.84E-22	3.92E-22	3.99E-22	4.07E-22	4.07E-22
cm249	.00E+00	1.48E-33	1.51E-33	1.54E-33	1.57E-33	.00E+00
cm250	1.72E-37	1.73E-37	1.73E-37	1.74E-37	1.74E-37	1.74E-37
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.95E+07	2.95E+07	2.95E+07	2.95E+07	2.95E-08

0 1q array has 20 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 4q array has 1 entries.
0 54q array has 12 entries.
1library information...

cross-section data taken from position number 25 of library on unit 33.

pass 1
pass 0
scale-system control module sas2 library
used a time-dependent neutron spectrum, for each of the above passes
pass 0 applies start-up fuel densiities

```
          pass n applies mid time densities of nth library interval
         first library updated was...
         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
          pass 0 applies start-up fuel densiities
          pass n applies mid time densities of nth library interval
         first library updated was...
         ********************************************************************************
         *                                                                              *
         *            prelim lwr origen-s binary working library--id = 1143             *
         *          made from modified card-image origen-s libraries of scale 4.2       *
         *       data from the light element, actinide, and fission product libraries   *
         *         decay data, including gamma and total energy, are from endf/b-vi     *
         *                                                                              *
         *       neutron flux spectrum factors and cross sections were produced from    *
         *      the "presas2" case updating all nuclides on the scale "burnup" library  *
         *                                                                              *
         *                    fission product yields are from endf/b-v                  *
         *                                                                              *
         *              photon libraries use an 18-energy-group structure               *
         *             the photon data are from the master photon data base,            *
         *              produced to include bremsstrahlung from uo2 matrix              *
         *                                                                              *
         *        see information above this box (if present) for later updates         *
         *                                                                              *
         ********************************************************************************
         *                                                                              *
0        ********************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/29/1996    date library was produced
0                    1697    total number of nuclides in library
                      689    number of light-element nuclides
                      129    number of actinide nuclides
                      879    number of fission product nuclides
0                    7993    number of nonzero off-diagonal matrix elements
0        ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page  223
        power=    .00mw, burnup=  24577.mwd, flux= 2.95E+07n/cm**2-sec
0                                      basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.284710E+06   1.283989E+06   1.283275E+06   1.282569E+06   1.281870E+06   1.281861E+06
     absorptions   1.047033E+06   1.046691E+06   1.046354E+06   1.046020E+06   1.045690E+06   1.045685E+06
     k infinity    1.227001E+00   1.226712E+00   1.226426E+00   1.226142E+00   1.225860E+00   1.225858E+00
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   1.027433E+06   1.027051E+06   1.026673E+06   1.026300E+06   1.025931E+06   1.025926E+06
     non-actinide
     abs. fracs.   1.871938E-02   1.876444E-02   1.880848E-02   1.885235E-02   1.889551E-02   1.889545E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              fission products        page  224
0                              fraction of total absorption rate
        power=    .00mw, burnup=  24577.mwd, flux= 2.95E+07n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.41E-03  5.41E-03  5.41E-03  5.41E-03  5.42E-03  5.42E-03
     nd143     2.34E-03  2.35E-03  2.36E-03  2.37E-03  2.38E-03  2.38E-03
     eu151     1.97E-03  1.98E-03  1.98E-03  1.99E-03  1.99E-03  1.99E-03
```

rh103	1.14E-03	1.15E-03	1.15E-03	1.16E-03	1.16E-03	1.16E-03
xe131	7.61E-04	7.64E-04	7.68E-04	7.72E-04	7.75E-04	7.75E-04
cs133	5.93E-04	5.96E-04	5.99E-04	6.02E-04	6.05E-04	6.05E-04
sm147	4.34E-04	4.36E-04	4.38E-04	4.40E-04	4.42E-04	4.42E-04
tc 99	3.88E-04	3.90E-04	3.91E-04	3.92E-04	3.94E-04	3.94E-04
nd145	3.35E-04	3.36E-04	3.38E-04	3.40E-04	3.41E-04	3.41E-04
sm152	2.66E-04	2.68E-04	2.69E-04	2.71E-04	2.72E-04	2.72E-04
mo 95	2.32E-04	2.33E-04	2.34E-04	2.35E-04	2.37E-04	2.37E-04
gd155	2.27E-04	2.27E-04	2.27E-04	2.26E-04	2.26E-04	2.26E-04
sm150	1.77E-04	1.78E-04	1.79E-04	1.80E-04	1.81E-04	1.81E-04
kr 83	1.43E-04	1.43E-04	1.44E-04	1.45E-04	1.45E-04	1.45E-04
cs135	1.34E-04	1.35E-04	1.36E-04	1.36E-04	1.37E-04	1.37E-04
eu153	1.09E-04	1.10E-04	1.11E-04	1.11E-04	1.12E-04	1.12E-04
ru101	1.04E-04	1.05E-04	1.05E-04	1.06E-04	1.07E-04	1.07E-04
cd113	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04
pr141	1.01E-04	1.01E-04	1.02E-04	1.02E-04	1.03E-04	1.03E-04
la139	8.23E-05	8.27E-05	8.31E-05	8.35E-05	8.39E-05	8.39E-05
gd157	5.96E-05	5.95E-05	5.93E-05	5.92E-05	5.90E-05	5.90E-05
ag109	4.32E-05	4.34E-05	4.37E-05	4.39E-05	4.42E-05	4.42E-05
pd105	4.24E-05	4.26E-05	4.28E-05	4.30E-05	4.32E-05	4.32E-05
ba137	3.99E-05	4.01E-05	4.03E-05	4.05E-05	4.07E-05	4.07E-05
zr 93	3.20E-05	3.21E-05	3.23E-05	3.24E-05	3.26E-05	3.26E-05
i129	2.70E-05	2.72E-05	2.73E-05	2.74E-05	2.76E-05	2.76E-05
nd144	2.56E-05	2.57E-05	2.59E-05	2.60E-05	2.61E-05	2.61E-05
gd152	2.28E-05	2.30E-05	2.32E-05	2.34E-05	2.36E-05	2.36E-05
mo 97	1.87E-05	1.88E-05	1.89E-05	1.90E-05	1.91E-05	1.91E-05
pd108	1.04E-05	1.04E-05	1.05E-05	1.05E-05	1.06E-05	1.06E-05
zr 91	8.57E-06	8.61E-06	8.66E-06	8.70E-06	8.74E-06	8.74E-06
y 89	8.20E-06	8.24E-06	8.28E-06	8.32E-06	8.36E-06	8.36E-06
ru102	7.84E-06	7.88E-06	7.92E-06	7.96E-06	7.99E-06	7.99E-06
ru 99	7.40E-06	7.53E-06	7.66E-06	7.79E-06	7.92E-06	7.92E-06
ce142	6.86E-06	6.90E-06	6.93E-06	6.96E-06	7.00E-06	7.00E-06
nd148	6.60E-06	6.63E-06	6.67E-06	6.70E-06	6.73E-06	6.73E-06
sm151	6.61E-06	6.92E-06	6.93E-06	6.93E-06	6.93E-06	6.61E-06
nd146	5.58E-06	5.61E-06	5.63E-06	5.66E-06	5.69E-06	5.69E-06
pd107	5.22E-06	5.25E-06	5.28E-06	5.30E-06	5.33E-06	5.33E-06
in115	4.89E-06	4.92E-06	4.94E-06	4.96E-06	4.99E-06	4.99E-06
ba138	4.74E-06	4.77E-06	4.79E-06	4.81E-06	4.84E-06	4.84E-06
ce140	4.44E-06	4.46E-06	4.49E-06	4.51E-06	4.53E-06	4.53E-06
xe132	4.08E-06	4.10E-06	4.12E-06	4.14E-06	4.16E-06	4.16E-06
mo 98	2.72E-06	2.73E-06	2.74E-06	2.76E-06	2.77E-06	2.77E-06
mo100	2.66E-06	2.67E-06	2.68E-06	2.69E-06	2.71E-06	2.71E-06
xe134	2.62E-06	2.64E-06	2.65E-06	2.66E-06	2.68E-06	2.68E-06
zr 92	2.08E-06	2.09E-06	2.10E-06	2.11E-06	2.12E-06	2.12E-06
i127	1.98E-06	1.99E-06	2.00E-06	2.01E-06	2.02E-06	2.02E-06
ru104	1.81E-06	1.82E-06	1.83E-06	1.84E-06	1.85E-06	1.85E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 225
0 fraction of total absorption rate
power= .00mw, burnup= 24577.mwd, flux= 2.95E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	1.62E-06	1.63E-06	1.64E-06	1.65E-06	1.65E-06	1.65E-06
nd150	1.50E-06	1.50E-06	1.51E-06	1.52E-06	1.53E-06	1.53E-06
xe136	1.42E-06	1.43E-06	1.44E-06	1.44E-06	1.45E-06	1.45E-06
gd154	1.15E-06	1.17E-06	1.18E-06	1.19E-06	1.20E-06	1.20E-06
cd111	1.17E-06	1.18E-06	1.18E-06	1.19E-06	1.20E-06	1.20E-06
br 81	1.05E-06	1.06E-06	1.06E-06	1.07E-06	1.07E-06	1.07E-06
rb 85	1.00E-06	1.01E-06	1.01E-06	1.02E-06	1.02E-06	1.02E-06
zr 94	8.77E-07	8.81E-07	8.86E-07	8.90E-07	8.94E-07	8.94E-07
zr 90	8.08E-07	8.12E-07	8.16E-07	8.20E-07	8.24E-07	8.24E-07

ba135	7.63E-07	7.77E-07	7.91E-07	8.04E-07	8.18E-07	8.19E-07
sm154	7.09E-07	7.13E-07	7.16E-07	7.20E-07	7.24E-07	7.24E-07
te130	6.58E-07	6.61E-07	6.64E-07	6.68E-07	6.71E-07	6.71E-07
rb 87	5.78E-07	5.81E-07	5.83E-07	5.86E-07	5.89E-07	5.89E-07
pd106	4.37E-07	4.39E-07	4.41E-07	4.44E-07	4.46E-07	4.46E-07
se 77	4.24E-07	4.26E-07	4.29E-07	4.31E-07	4.33E-07	4.33E-07
gd156	4.17E-07	4.20E-07	4.22E-07	4.24E-07	4.27E-07	4.27E-07
ru100	3.08E-07	3.11E-07	3.14E-07	3.17E-07	3.20E-07	3.20E-07
kr 84	2.76E-07	2.77E-07	2.78E-07	2.80E-07	2.81E-07	2.81E-07
dy161	2.58E-07	2.60E-07	2.61E-07	2.63E-07	2.64E-07	2.64E-07
nd142	2.28E-07	2.30E-07	2.33E-07	2.35E-07	2.37E-07	2.37E-07
sb121	2.26E-07	2.27E-07	2.28E-07	2.29E-07	2.31E-07	2.31E-07
ba134	2.18E-07	2.20E-07	2.22E-07	2.24E-07	2.26E-07	2.26E-07
se 79	2.05E-07	2.06E-07	2.07E-07	2.08E-07	2.08E-07	2.08E-07
sm148	1.98E-07	2.00E-07	2.02E-07	2.04E-07	2.05E-07	2.05E-07
sb123	1.83E-07	1.83E-07	1.84E-07	1.85E-07	1.86E-07	1.86E-07
kr 86	1.53E-07	1.54E-07	1.55E-07	1.56E-07	1.56E-07	1.56E-07
pd104	1.49E-07	1.51E-07	1.52E-07	1.53E-07	1.55E-07	1.55E-07
te128	1.49E-07	1.50E-07	1.50E-07	1.51E-07	1.52E-07	1.52E-07
nb 93	1.21E-07	1.23E-07	1.25E-07	1.28E-07	1.30E-07	1.30E-07
tb159	1.11E-07	1.12E-07	1.12E-07	1.13E-07	1.14E-07	1.14E-07
se 80	1.02E-07	1.02E-07	1.03E-07	1.03E-07	1.04E-07	1.04E-07
te125	1.02E-07	1.02E-07	1.03E-07	1.03E-07	1.04E-07	1.04E-07
gd158	8.78E-08	8.83E-08	8.87E-08	8.92E-08	8.97E-08	8.97E-08
cd112	7.89E-08	7.94E-08	7.98E-08	8.02E-08	8.06E-08	8.06E-08
ag107	6.04E-08	6.16E-08	6.28E-08	6.40E-08	6.52E-08	6.52E-08
br 79	6.00E-08	6.10E-08	6.21E-08	6.32E-08	6.42E-08	6.42E-08
dy162	6.04E-08	6.08E-08	6.12E-08	6.16E-08	6.19E-08	6.19E-08
dy164	5.77E-08	5.80E-08	5.83E-08	5.86E-08	5.88E-08	5.88E-08
cd110	5.56E-08	5.62E-08	5.68E-08	5.75E-08	5.81E-08	5.81E-08
sn117	5.54E-08	5.57E-08	5.60E-08	5.63E-08	5.65E-08	5.65E-08
li 6	5.21E-08	5.23E-08	5.25E-08	5.28E-08	5.30E-08	5.30E-08
mo 96	4.94E-08	4.99E-08	5.04E-08	5.09E-08	5.13E-08	5.13E-08
cd114	4.71E-08	4.74E-08	4.76E-08	4.79E-08	4.81E-08	4.81E-08
eu152	4.69E-08	6.43E-08	6.44E-08	6.46E-08	6.48E-08	4.68E-08
sn119	4.21E-08	4.23E-08	4.25E-08	4.28E-08	4.30E-08	4.30E-08
pd110	3.91E-08	3.93E-08	3.96E-08	3.98E-08	4.00E-08	4.00E-08
xe129	3.68E-08	3.75E-08	3.82E-08	3.88E-08	3.95E-08	3.95E-08
sn115	3.85E-08	3.87E-08	3.89E-08	3.91E-08	3.93E-08	3.93E-08
sr 88	2.81E-08	2.83E-08	2.84E-08	2.86E-08	2.87E-08	2.87E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 226
0 fraction of total absorption rate
power= .00mw, burnup= 24577.mwd, flux= 2.95E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

xe130	2.42E-08	2.44E-08	2.46E-08	2.49E-08	2.51E-08	2.51E-08
te126	1.99E-08	2.02E-08	2.06E-08	2.09E-08	2.12E-08	2.12E-08
ba136	2.03E-08	2.05E-08	2.07E-08	2.08E-08	2.10E-08	2.10E-08
se 82	1.94E-08	1.95E-08	1.96E-08	1.97E-08	1.98E-08	1.98E-08
sn126	1.59E-08	1.59E-08	1.60E-08	1.60E-08	1.60E-08	1.60E-08
se 78	1.52E-08	1.53E-08	1.54E-08	1.54E-08	1.55E-08	1.55E-08
dy163	1.51E-08	1.52E-08	1.53E-08	1.54E-08	1.55E-08	1.55E-08
kr 82	1.49E-08	1.50E-08	1.51E-08	1.52E-08	1.53E-08	1.53E-08
sn124	1.33E-08	1.34E-08	1.35E-08	1.35E-08	1.36E-08	1.36E-08
as 75	8.92E-09	8.97E-09	9.01E-09	9.06E-09	9.10E-09	9.10E-09
eu155	9.17E-09	2.23E-08	2.23E-08	2.22E-08	2.22E-08	8.80E-09
in113	7.68E-09	7.71E-09	7.75E-09	7.79E-09	7.83E-09	7.83E-09
pm147	6.83E-09	3.30E-08	3.30E-08	3.30E-08	3.30E-08	6.40E-09
sn118	5.37E-09	5.40E-09	5.43E-09	5.46E-09	5.48E-09	5.48E-09
sn122	4.64E-09	4.66E-09	4.68E-09	4.71E-09	4.73E-09	4.73E-09

cd116	4.52E-09	4.54E-09	4.56E-09	4.59E-09	4.61E-09	4.61E-09
eu154	3.49E-09	5.69E-09	5.72E-09	5.76E-09	5.79E-09	3.50E-09
sn120	3.41E-09	3.43E-09	3.44E-09	3.46E-09	3.48E-09	3.48E-09
ge 73	2.57E-09	2.58E-09	2.59E-09	2.61E-09	2.62E-09	2.62E-09
sr 90	1.74E-09	2.01E-09	2.02E-09	2.02E-09	2.02E-09	1.73E-09
dy160	1.50E-09	1.51E-09	1.53E-09	1.55E-09	1.56E-09	1.56E-09
ho165	1.51E-09	1.52E-09	1.53E-09	1.54E-09	1.55E-09	1.55E-09
gd160	1.25E-09	1.25E-09	1.26E-09	1.27E-09	1.27E-09	1.27E-09
xe128	8.74E-10	8.83E-10	8.91E-10	9.00E-10	9.09E-10	9.09E-10
ge 76	8.68E-10	8.73E-10	8.77E-10	8.81E-10	8.86E-10	8.86E-10
sr 86	4.09E-10	4.13E-10	4.17E-10	4.20E-10	4.24E-10	4.24E-10
cs137	4.01E-10	4.61E-10	4.61E-10	4.61E-10	4.61E-10	3.99E-10
sn116	3.30E-10	3.33E-10	3.36E-10	3.40E-10	3.43E-10	3.43E-10
te124	2.90E-10	2.92E-10	2.94E-10	2.97E-10	2.99E-10	2.99E-10
nb 94	1.51E-10	1.53E-10	1.54E-10	1.55E-10	1.56E-10	1.56E-10
te122	1.39E-10	1.40E-10	1.42E-10	1.43E-10	1.45E-10	1.45E-10
sr 87	1.39E-10	1.40E-10	1.41E-10	1.43E-10	1.44E-10	1.44E-10
se 76	1.14E-10	1.15E-10	1.16E-10	1.17E-10	1.18E-10	1.18E-10
er166	7.10E-11	7.15E-11	7.19E-11	7.24E-11	7.29E-11	7.29E-11
cs134	7.24E-11	5.48E-10	5.51E-10	5.54E-10	5.57E-10	6.79E-11
kr 80	6.12E-11	6.23E-11	6.33E-11	6.44E-11	6.56E-11	6.56E-11
ge 74	5.13E-11	5.16E-11	5.18E-11	5.21E-11	5.24E-11	5.24E-11
kr 85	4.60E-11	6.79E-11	6.79E-11	6.79E-11	6.80E-11	4.54E-11
ge 72	3.81E-11	3.82E-11	3.84E-11	3.86E-11	3.88E-11	3.88E-11
er167	8.68E-12	8.78E-12	8.88E-12	8.98E-12	9.09E-12	9.09E-12
te123	6.97E-12	7.07E-12	7.17E-12	7.27E-12	7.37E-12	7.37E-12
cd108	4.46E-12	4.55E-12	4.64E-12	4.73E-12	4.83E-12	4.83E-12
y 90	1.65E-12	1.92E-12	1.92E-12	1.92E-12	1.92E-12	1.65E-12
sb125	4.69E-13	2.15E-12	2.14E-12	2.14E-12	2.14E-12	4.38E-13
ce144	3.46E-13	7.19E-11	7.20E-11	7.20E-11	7.20E-11	2.77E-13
be 9	1.09E-13	1.09E-13	1.10E-13	1.10E-13	1.11E-13	1.11E-13
sn114	8.80E-14	8.88E-14	8.97E-14	9.06E-14	9.15E-14	9.15E-14
ru106	7.92E-14	4.73E-12	4.72E-12	4.71E-12	4.70E-12	6.62E-14
li 7	4.50E-14	4.52E-14	4.54E-14	4.56E-14	4.58E-14	4.58E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 227
0 fraction of total absorption rate
power= .00mw, burnup= 24577.mwd, flux= 2.95E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sb126	1.82E-14	1.90E-14	1.91E-14	1.91E-14	1.91E-14	1.84E-14
cd109	8.18E-19	2.24E-17	2.28E-17	2.33E-17	2.37E-17	7.65E-19
te127m	9.82E-19	1.09E-12	1.09E-12	1.09E-12	1.09E-12	5.46E-19

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 228
power= 4.890E-04mw, burnup=2.4577E+04mwd, flux= 2.95E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
h 1	1.44E-03	1.44E-03	1.45E-03	1.46E-03	1.46E-03	1.46E-03
h 2	4.30E-06	4.32E-06	4.34E-06	4.36E-06	4.38E-06	4.38E-06
h 3	5.29E-12	7.42E-12	7.43E-12	7.44E-12	7.45E-12	5.24E-12
h 4	.00E+00	3.74E-36	3.75E-36	3.75E-36	3.76E-36	.00E+00
he 3	1.82E-08	1.83E-08	1.83E-08	1.83E-08	1.84E-08	1.84E-08
he 4	2.39E-04	2.40E-04	2.41E-04	2.42E-04	2.43E-04	2.43E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	2.87E-05	2.88E-05	2.89E-05	2.91E-05	2.92E-05	2.92E-05
ne 21	1.24E-08	1.26E-08	1.27E-08	1.28E-08	1.29E-08	1.29E-08
ne 22	1.89E-07	1.90E-07	1.91E-07	1.91E-07	1.92E-07	1.92E-07
ne 23	8.86E-31	8.85E-16	8.86E-16	8.86E-16	8.87E-16	8.87E-31
na 22	1.06E-12	5.25E-12	5.25E-12	5.26E-12	5.26E-12	9.93E-13

na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.22E-24	3.22E-09	3.22E-09	3.22E-09	3.23E-09	3.23E-24
na 24m	5.30E-31	5.29E-16	5.30E-16	5.30E-16	5.30E-16	5.30E-31
na 25	4.49E-39	4.53E-24	4.57E-24	4.61E-24	4.66E-24	4.66E-39
mg 24	1.85E-01	1.86E-01	1.87E-01	1.88E-01	1.88E-01	1.88E-01
mg 25	1.29E-06	1.30E-06	1.31E-06	1.32E-06	1.33E-06	1.33E-06
mg 26	4.29E-06	4.31E-06	4.33E-06	4.35E-06	4.37E-06	4.37E-06
mg 27	2.64E-28	2.64E-13	2.64E-13	2.64E-13	2.64E-13	2.64E-28
mg 28	.00E+00	6.68E-26	6.68E-26	6.69E-26	6.70E-26	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.39E-26	2.39E-11	2.39E-11	2.39E-11	2.39E-11	2.39E-26
al 29	3.66E-37	3.69E-22	3.73E-22	3.76E-22	3.80E-22	3.80E-37
al 30	.00E+00	1.15E-31	1.17E-31	1.18E-31	1.20E-31	.00E+00
si 28	5.39E-01	5.41E-01	5.44E-01	5.46E-01	5.48E-01	5.48E-01
si 29	1.17E-05	1.18E-05	1.19E-05	1.20E-05	1.21E-05	1.21E-05
si 30	2.72E-10	2.76E-10	2.79E-10	2.83E-10	2.87E-10	2.87E-10
si 31	2.42E-38	2.45E-23	2.49E-23	2.52E-23	2.56E-23	2.56E-38
si 32	5.13E-30	5.32E-30	5.41E-30	5.49E-30	5.58E-30	5.44E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.95E+07	2.95E+07	2.95E+07	2.96E+07	2.96E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 229

power= 4.890E-04mw, burnup=2.4577E+04mwd, flux= 2.95E+07n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

charge *******	d *******	d *******	d *******	d *******	d
he 4	5.33E+01	5.39E+01	5.46E+01	5.52E+01	5.58E+01	5.58E+01
pb206	3.54E-01	3.62E-01	3.69E-01	3.76E-01	3.84E-01	3.84E-01
pb207	2.13E-02	2.17E-02	2.20E-02	2.24E-02	2.28E-02	2.28E-02
pb208	7.92E-04	7.99E-04	8.06E-04	8.14E-04	8.21E-04	8.21E-04
pb209	1.29E-09	1.30E-09	1.32E-09	1.33E-09	1.35E-09	1.35E-09
pb210	3.69E-04	3.72E-04	3.75E-04	3.78E-04	3.81E-04	3.81E-04
pb211	5.94E-11	5.96E-11	5.98E-11	6.01E-11	6.03E-11	6.05E-11
pb212	1.97E-11	2.05E-11	2.06E-11	2.07E-11	2.08E-11	2.01E-11
pb214	8.43E-10	8.50E-10	8.57E-10	8.65E-10	8.72E-10	8.72E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	6.50E-02	6.65E-02	6.80E-02	6.96E-02	7.11E-02	7.11E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.27E-07	2.29E-07	2.31E-07	2.33E-07	2.35E-07	2.35E-07
bi211	3.52E-12	3.53E-12	3.55E-12	3.56E-12	3.58E-12	3.58E-12
bi212	1.87E-12	1.94E-12	1.95E-12	1.96E-12	1.97E-12	1.90E-12
bi213	3.01E-10	3.04E-10	3.08E-10	3.11E-10	3.14E-10	3.14E-10
bi214	6.26E-10	6.31E-10	6.37E-10	6.42E-10	6.47E-10	6.47E-10
po210	6.27E-06	6.32E-06	6.38E-06	6.43E-06	6.48E-06	6.49E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.89E-17	3.90E-17	3.92E-17	3.94E-17	3.95E-17	3.96E-17
po212	9.82E-23	1.02E-22	1.03E-22	1.03E-22	1.04E-22	1.00E-22
po213	4.52E-19	4.57E-19	4.62E-19	4.68E-19	4.73E-19	4.73E-19
po214	8.61E-17	8.68E-17	8.76E-17	8.83E-17	8.90E-17	8.91E-17
po215	4.88E-17	4.89E-17	4.92E-17	4.94E-17	4.96E-17	4.97E-17
po216	7.46E-17	7.76E-17	7.80E-17	7.84E-17	7.88E-17	7.59E-17
po218	9.75E-11	9.84E-11	9.92E-11	1.00E-10	1.01E-10	1.01E-10
rn218	3.36E-44	3.63E-29	3.65E-29	3.67E-29	3.68E-29	3.50E-44
rn219	1.09E-13	1.09E-13	1.09E-13	1.10E-13	1.10E-13	1.11E-13
rn220	2.86E-14	2.98E-14	2.99E-14	3.01E-14	3.02E-14	2.91E-14
rn222	1.73E-07	1.75E-07	1.76E-07	1.78E-07	1.79E-07	1.79E-07
ra222	3.70E-41	3.94E-26	3.96E-26	3.98E-26	4.00E-26	3.76E-41
ra223	2.71E-08	2.72E-08	2.73E-08	2.74E-08	2.75E-08	2.76E-08
ra224	1.63E-10	1.69E-10	1.70E-10	1.71E-10	1.72E-10	1.66E-10
ra225	1.41E-07	1.42E-07	1.44E-07	1.45E-07	1.47E-07	1.47E-07

ra226	2.65E-02	2.67E-02	2.69E-02	2.72E-02	2.74E-02	2.74E-02
ra228	1.35E-10	1.36E-10	1.38E-10	1.39E-10	1.41E-10	1.41E-10
ac225	9.51E-08	9.61E-08	9.72E-08	9.82E-08	9.93E-08	9.93E-08
ac227	1.88E-05	1.89E-05	1.90E-05	1.91E-05	1.91E-05	1.91E-05
ac228	1.64E-14	1.66E-14	1.68E-14	1.70E-14	1.72E-14	1.72E-14
th226	1.80E-39	1.92E-24	1.93E-24	1.94E-24	1.95E-24	1.84E-39
th227	4.37E-08	4.38E-08	4.40E-08	4.42E-08	4.44E-08	4.45E-08
th228	3.10E-08	3.23E-08	3.25E-08	3.26E-08	3.28E-08	3.16E-08
th229	2.74E-02	2.77E-02	2.80E-02	2.83E-02	2.86E-02	2.86E-02
th230	1.29E+00	1.30E+00	1.31E+00	1.32E+00	1.33E+00	1.33E+00
th231	2.71E-09	3.43E-09	3.44E-09	3.44E-09	3.45E-09	2.71E-09
th232	3.29E-01	3.33E-01	3.36E-01	3.40E-01	3.44E-01	3.44E-01
th233	3.72E-28	3.76E-13	3.80E-13	3.84E-13	3.89E-13	3.89E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	2.83E-02	2.84E-02	2.85E-02	2.87E-02	2.88E-02	2.88E-02
pa232	6.01E-26	6.04E-11	6.07E-11	6.10E-11	6.13E-11	6.13E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 230
power= 4.890E-04mw, burnup=2.4577E+04mwd, flux= 2.95E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.40E-06	1.40E-06	1.40E-06	1.40E-06	1.40E-06	1.40E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.75E-36	1.86E-21	1.87E-21	1.88E-21	1.89E-21	1.78E-36
u231	6.15E-32	6.19E-17	6.25E-17	6.31E-17	6.37E-17	6.37E-32
u232	1.10E-06	1.18E-06	1.18E-06	1.19E-06	1.19E-06	1.12E-06
u233	6.66E-01	6.72E-01	6.77E-01	6.83E-01	6.89E-01	6.89E-01
u234	1.03E+01	1.02E+01	1.02E+01	1.02E+01	1.02E+01	1.02E+01
u235	6.55E+02	6.55E+02	6.55E+02	6.55E+02	6.55E+02	6.55E+02
u236	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02
u237	3.95E-13	4.13E-07	4.13E-07	4.14E-07	4.14E-07	3.61E-13
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.75E-23	3.75E-08	3.75E-08	3.76E-08	3.76E-08	3.76E-23
u240	2.43E-34	2.53E-34	2.63E-34	2.73E-34	2.83E-34	2.83E-34
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	2.21E-14	1.03E-12	1.03E-12	1.03E-12	1.03E-12	1.88E-14
np236m	2.44E-28	2.43E-13	2.44E-13	2.44E-13	2.44E-13	2.44E-28
np236	2.58E-06	2.58E-06	2.58E-06	2.59E-06	2.59E-06	2.59E-06
np237	4.05E+01	4.05E+01	4.05E+01	4.04E+01	4.04E+01	4.04E+01
np238	5.38E-15	1.82E-07	1.82E-07	1.82E-07	1.82E-07	4.97E-15
np239	1.73E-13	5.42E-06	5.43E-06	5.43E-06	5.43E-06	1.67E-13
np240m	2.07E-36	2.16E-36	2.24E-36	2.33E-36	2.41E-36	2.41E-36
np240	2.57E-38	1.36E-16	1.36E-16	1.36E-16	1.36E-16	2.90E-38
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	3.73E-11	1.38E-10	1.38E-10	1.38E-10	1.38E-10	3.54E-11
pu237	1.12E-28	3.27E-14	3.25E-14	3.23E-14	3.21E-14	5.07E-29
pu238	2.62E-03	2.75E-03	2.75E-03	2.75E-03	2.75E-03	2.62E-03
pu239	2.79E+01	2.77E+01	2.75E+01	2.73E+01	2.71E+01	2.71E+01
pu240	3.44E-01	3.37E-01	3.31E-01	3.25E-01	3.19E-01	3.19E-01
pu241	1.28E-05	1.68E-05	1.64E-05	1.61E-05	1.59E-05	1.17E-05
pu242	4.80E-05	4.80E-05	4.81E-05	4.81E-05	4.82E-05	4.82E-05
pu243	1.54E-29	1.24E-14	1.24E-14	1.24E-14	1.24E-14	1.55E-29
pu244	1.21E-23	1.26E-23	1.31E-23	1.36E-23	1.41E-23	1.41E-23
pu245	.00E+00	6.39E-35	6.65E-35	6.90E-35	7.16E-35	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.76E-35	1.71E-20	1.68E-20	1.65E-20	1.63E-20	1.62E-35
am240	8.03E-33	7.83E-18	7.70E-18	7.56E-18	7.43E-18	7.42E-33

```
     am241   5.18E-04  5.06E-04  4.97E-04  4.88E-04  4.80E-04  4.79E-04
     am242m  2.91E-08  2.92E-08  2.87E-08  2.82E-08  2.77E-08  2.69E-08
     am242   3.75E-13  2.32E-12  2.28E-12  2.24E-12  2.20E-12  3.47E-13
     am243   1.98E-07  1.96E-07  1.94E-07  1.92E-07  1.90E-07  1.90E-07
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   1.83E-31  1.81E-16  1.79E-16  1.78E-16  1.76E-16  1.76E-31
     am245   3.73E-40  1.25E-35  1.30E-35  1.35E-35  1.40E-35  3.28E-40
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   1.26E-43  1.66E-23  1.63E-23  1.61E-23  1.58E-23  1.68E-44
     cm242   7.58E-11  4.68E-10  4.60E-10  4.52E-10  4.44E-10  7.00E-11
     cm243   1.17E-15  1.32E-15  1.29E-15  1.27E-15  1.25E-15  1.07E-15
     cm244   2.29E-12  2.85E-12  2.82E-12  2.79E-12  2.77E-12  2.18E-12
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page  231
       power= 4.890E-04mw, burnup=2.4577E+04mwd, flux= 2.95E+07n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
            charge ******* d ******* d ******* d ******* d ******* d
     cm245   9.85E-15  9.57E-15  9.29E-15  9.03E-15  8.78E-15  8.77E-15
     cm246   7.67E-17  7.41E-17  7.17E-17  6.93E-17  6.71E-17  6.70E-17
     cm247   8.45E-20  8.51E-20  8.57E-20  8.62E-20  8.68E-20  8.68E-20
     cm248   4.07E-22  4.15E-22  4.23E-22  4.30E-22  4.38E-22  4.38E-22
     cm249    .00E+00  1.59E-33  1.63E-33  1.66E-33  1.69E-33   .00E+00
     cm250   1.74E-37  1.75E-37  1.76E-37  1.77E-37  1.78E-37  1.78E-37
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              2.95E+07  2.95E+07  2.95E+07  2.96E+07  2.96E-08
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number 26 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *          made from modified card-image origen-s libraries of scale 4.2       *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
```

```
          *                                                                     *
          *                  fission product yields are from endf/b-v           *
          *                                                                     *
          *              photon libraries use an 18-energy-group structure      *
          *             the photon data are from the master photon data base,   *
          *              produced to include bremsstrahlung from uo2 matrix     *
          *                                                                     *
          *        see information above this box (if present) for later updates*
          *                                                                     *
          ***********************************************************************
          *                                                                     *
0         ***********************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                 8/29/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0          ************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page  232
         power=    .00mw, burnup=  25023.mwd, flux= 2.96E+07n/cm**2-sec
0                                      basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.282571E+06   1.281878E+06   1.281192E+06   1.280512E+06   1.279839E+06   1.279830E+06
     absorptions   1.045925E+06   1.045599E+06   1.045277E+06   1.044958E+06   1.044643E+06   1.044637E+06
     k infinity    1.226255E+00   1.225974E+00   1.225696E+00   1.225420E+00   1.225146E+00   1.225143E+00
0                    initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   1.026161E+06   1.025796E+06   1.025435E+06   1.025078E+06   1.024725E+06   1.024719E+06
     non-actinide
     abs. fracs.   1.889569E-02   1.893938E-02   1.898199E-02   1.902443E-02   1.906663E-02   1.906627E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              fission products         page  233
0                              fraction of total absorption rate
         power=    .00mw, burnup=  25023.mwd, flux= 2.96E+07n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.42E-03  5.42E-03  5.42E-03  5.42E-03  5.42E-03  5.42E-03
     nd143     2.38E-03  2.40E-03  2.41E-03  2.42E-03  2.43E-03  2.43E-03
     eu151     1.99E-03  2.00E-03  2.00E-03  2.00E-03  2.01E-03  2.01E-03
     rh103     1.16E-03  1.17E-03  1.17E-03  1.18E-03  1.18E-03  1.18E-03
     xe131     7.75E-04  7.79E-04  7.82E-04  7.86E-04  7.90E-04  7.90E-04
     cs133     6.04E-04  6.07E-04  6.10E-04  6.13E-04  6.16E-04  6.16E-04
     sm147     4.42E-04  4.44E-04  4.46E-04  4.49E-04  4.51E-04  4.51E-04
     tc 99     3.94E-04  3.95E-04  3.96E-04  3.97E-04  3.99E-04  3.99E-04
     nd145     3.41E-04  3.43E-04  3.44E-04  3.46E-04  3.48E-04  3.48E-04
     sm152     2.72E-04  2.74E-04  2.75E-04  2.77E-04  2.78E-04  2.78E-04
     mo 95     2.37E-04  2.38E-04  2.39E-04  2.40E-04  2.41E-04  2.41E-04
     gd155     2.26E-04  2.26E-04  2.26E-04  2.25E-04  2.25E-04  2.25E-04
     sm150     1.81E-04  1.82E-04  1.83E-04  1.84E-04  1.85E-04  1.85E-04
     kr 83     1.46E-04  1.46E-04  1.47E-04  1.48E-04  1.48E-04  1.48E-04
     cs135     1.37E-04  1.37E-04  1.38E-04  1.39E-04  1.39E-04  1.39E-04
     eu153     1.12E-04  1.12E-04  1.13E-04  1.14E-04  1.14E-04  1.14E-04
     ru101     1.06E-04  1.07E-04  1.07E-04  1.08E-04  1.09E-04  1.09E-04
     pr141     1.03E-04  1.03E-04  1.04E-04  1.04E-04  1.05E-04  1.05E-04
     cd113     1.03E-04  1.03E-04  1.02E-04  1.02E-04  1.02E-04  1.02E-04
     la139     8.39E-05  8.43E-05  8.47E-05  8.51E-05  8.56E-05  8.56E-05
     gd157     5.90E-05  5.89E-05  5.87E-05  5.86E-05  5.84E-05  5.84E-05
```

ag109	4.41E-05	4.44E-05	4.46E-05	4.48E-05	4.51E-05	4.51E-05
pd105	4.32E-05	4.34E-05	4.37E-05	4.39E-05	4.41E-05	4.41E-05
ba137	4.07E-05	4.09E-05	4.11E-05	4.13E-05	4.15E-05	4.15E-05
zr 93	3.26E-05	3.27E-05	3.29E-05	3.30E-05	3.32E-05	3.32E-05
i129	2.76E-05	2.77E-05	2.78E-05	2.80E-05	2.81E-05	2.81E-05
nd144	2.61E-05	2.63E-05	2.64E-05	2.65E-05	2.67E-05	2.67E-05
gd152	2.36E-05	2.37E-05	2.39E-05	2.41E-05	2.43E-05	2.43E-05
mo 97	1.91E-05	1.91E-05	1.92E-05	1.93E-05	1.94E-05	1.94E-05
pd108	1.06E-05	1.06E-05	1.07E-05	1.08E-05	1.08E-05	1.08E-05
zr 91	8.74E-06	8.79E-06	8.83E-06	8.87E-06	8.91E-06	8.91E-06
y 89	8.36E-06	8.40E-06	8.45E-06	8.49E-06	8.53E-06	8.53E-06
ru 99	7.92E-06	8.05E-06	8.18E-06	8.31E-06	8.44E-06	8.44E-06
ru102	8.00E-06	8.04E-06	8.08E-06	8.11E-06	8.15E-06	8.15E-06
ce142	7.00E-06	7.03E-06	7.07E-06	7.10E-06	7.14E-06	7.14E-06
nd148	6.73E-06	6.76E-06	6.80E-06	6.83E-06	6.86E-06	6.86E-06
sm151	6.61E-06	6.94E-06	6.94E-06	6.94E-06	6.95E-06	6.61E-06
nd146	5.69E-06	5.72E-06	5.75E-06	5.77E-06	5.80E-06	5.80E-06
pd107	5.33E-06	5.36E-06	5.39E-06	5.42E-06	5.44E-06	5.44E-06
in115	4.99E-06	5.01E-06	5.03E-06	5.06E-06	5.08E-06	5.08E-06
ba138	4.84E-06	4.86E-06	4.89E-06	4.91E-06	4.93E-06	4.93E-06
ce140	4.53E-06	4.55E-06	4.58E-06	4.60E-06	4.62E-06	4.62E-06
xe132	4.16E-06	4.18E-06	4.21E-06	4.23E-06	4.25E-06	4.25E-06
mo 98	2.77E-06	2.78E-06	2.80E-06	2.81E-06	2.82E-06	2.82E-06
mo100	2.71E-06	2.72E-06	2.73E-06	2.75E-06	2.76E-06	2.76E-06
xe134	2.68E-06	2.69E-06	2.70E-06	2.72E-06	2.73E-06	2.73E-06
zr 92	2.12E-06	2.13E-06	2.14E-06	2.15E-06	2.16E-06	2.16E-06
i127	2.02E-06	2.03E-06	2.04E-06	2.05E-06	2.06E-06	2.06E-06
ru104	1.85E-06	1.86E-06	1.87E-06	1.88E-06	1.88E-06	1.88E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 234
0 fraction of total absorption rate
power= .00mw, burnup= 25023.mwd, flux= 2.96E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	1.65E-06	1.66E-06	1.67E-06	1.68E-06	1.69E-06	1.69E-06
nd150	1.53E-06	1.53E-06	1.54E-06	1.55E-06	1.56E-06	1.56E-06
xe136	1.45E-06	1.46E-06	1.47E-06	1.47E-06	1.48E-06	1.48E-06
gd154	1.20E-06	1.21E-06	1.23E-06	1.24E-06	1.25E-06	1.25E-06
cd111	1.20E-06	1.20E-06	1.21E-06	1.22E-06	1.22E-06	1.22E-06
br 81	1.07E-06	1.08E-06	1.08E-06	1.09E-06	1.09E-06	1.09E-06
rb 85	1.02E-06	1.03E-06	1.03E-06	1.04E-06	1.04E-06	1.04E-06
zr 94	8.94E-07	8.98E-07	9.03E-07	9.07E-07	9.11E-07	9.11E-07
ba135	8.19E-07	8.33E-07	8.47E-07	8.61E-07	8.75E-07	8.75E-07
zr 90	8.24E-07	8.28E-07	8.32E-07	8.36E-07	8.40E-07	8.40E-07
sm154	7.24E-07	7.27E-07	7.31E-07	7.35E-07	7.38E-07	7.38E-07
te130	6.71E-07	6.75E-07	6.78E-07	6.81E-07	6.84E-07	6.84E-07
rb 87	5.89E-07	5.92E-07	5.95E-07	5.98E-07	6.00E-07	6.00E-07
pd106	4.46E-07	4.48E-07	4.50E-07	4.53E-07	4.55E-07	4.55E-07
se 77	4.33E-07	4.35E-07	4.37E-07	4.39E-07	4.41E-07	4.41E-07
gd156	4.26E-07	4.29E-07	4.31E-07	4.33E-07	4.36E-07	4.36E-07
ru100	3.20E-07	3.23E-07	3.26E-07	3.29E-07	3.32E-07	3.32E-07
kr 84	2.81E-07	2.82E-07	2.84E-07	2.85E-07	2.86E-07	2.86E-07
dy161	2.64E-07	2.65E-07	2.67E-07	2.68E-07	2.69E-07	2.69E-07
nd142	2.37E-07	2.40E-07	2.42E-07	2.44E-07	2.46E-07	2.46E-07
sb121	2.30E-07	2.32E-07	2.33E-07	2.34E-07	2.35E-07	2.35E-07
ba134	2.26E-07	2.28E-07	2.30E-07	2.32E-07	2.35E-07	2.35E-07
sm148	2.05E-07	2.07E-07	2.09E-07	2.11E-07	2.13E-07	2.13E-07
se 79	2.09E-07	2.09E-07	2.10E-07	2.11E-07	2.12E-07	2.12E-07
sb123	1.86E-07	1.87E-07	1.88E-07	1.89E-07	1.90E-07	1.90E-07
pd104	1.55E-07	1.56E-07	1.58E-07	1.59E-07	1.61E-07	1.61E-07
kr 86	1.56E-07	1.57E-07	1.58E-07	1.59E-07	1.59E-07	1.59E-07

te128	1.52E-07	1.53E-07	1.53E-07	1.54E-07	1.55E-07	1.55E-07
nb 93	1.30E-07	1.32E-07	1.34E-07	1.37E-07	1.39E-07	1.39E-07
tb159	1.14E-07	1.14E-07	1.15E-07	1.15E-07	1.16E-07	1.16E-07
se 80	1.04E-07	1.04E-07	1.05E-07	1.05E-07	1.06E-07	1.06E-07
te125	1.04E-07	1.04E-07	1.05E-07	1.05E-07	1.06E-07	1.06E-07
gd158	8.97E-08	9.02E-08	9.06E-08	9.11E-08	9.16E-08	9.16E-08
cd112	8.06E-08	8.10E-08	8.14E-08	8.18E-08	8.23E-08	8.23E-08
ag107	6.52E-08	6.65E-08	6.77E-08	6.89E-08	7.01E-08	7.02E-08
br 79	6.42E-08	6.53E-08	6.64E-08	6.75E-08	6.86E-08	6.86E-08
dy162	6.19E-08	6.23E-08	6.27E-08	6.31E-08	6.34E-08	6.34E-08
cd110	5.81E-08	5.88E-08	5.94E-08	6.01E-08	6.07E-08	6.07E-08
dy164	5.89E-08	5.91E-08	5.94E-08	5.97E-08	5.99E-08	5.99E-08
sn117	5.66E-08	5.68E-08	5.71E-08	5.74E-08	5.77E-08	5.77E-08
li 6	5.30E-08	5.33E-08	5.35E-08	5.37E-08	5.39E-08	5.39E-08
mo 96	5.13E-08	5.18E-08	5.23E-08	5.28E-08	5.33E-08	5.33E-08
cd114	4.81E-08	4.84E-08	4.86E-08	4.89E-08	4.91E-08	4.91E-08
eu152	4.68E-08	6.50E-08	6.51E-08	6.53E-08	6.55E-08	4.67E-08
sn119	4.30E-08	4.32E-08	4.34E-08	4.36E-08	4.38E-08	4.38E-08
xe129	3.95E-08	4.02E-08	4.09E-08	4.16E-08	4.23E-08	4.23E-08
pd110	4.00E-08	4.02E-08	4.04E-08	4.06E-08	4.08E-08	4.08E-08
sn115	3.93E-08	3.95E-08	3.97E-08	3.99E-08	4.01E-08	4.01E-08
sr 88	2.87E-08	2.88E-08	2.90E-08	2.91E-08	2.93E-08	2.93E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 235
0 fraction of total absorption rate
power= .00mw, burnup= 25023.mwd, flux= 2.96E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

xe130	2.51E-08	2.53E-08	2.56E-08	2.58E-08	2.60E-08	2.60E-08
te126	2.12E-08	2.16E-08	2.19E-08	2.22E-08	2.26E-08	2.26E-08
ba136	2.10E-08	2.11E-08	2.13E-08	2.15E-08	2.16E-08	2.16E-08
se 82	1.98E-08	1.99E-08	2.00E-08	2.00E-08	2.01E-08	2.01E-08
sn126	1.61E-08	1.61E-08	1.61E-08	1.61E-08	1.62E-08	1.62E-08
dy163	1.55E-08	1.56E-08	1.57E-08	1.57E-08	1.58E-08	1.58E-08
se 78	1.55E-08	1.56E-08	1.57E-08	1.57E-08	1.58E-08	1.58E-08
kr 82	1.53E-08	1.54E-08	1.55E-08	1.56E-08	1.57E-08	1.57E-08
sn124	1.36E-08	1.37E-08	1.37E-08	1.38E-08	1.39E-08	1.39E-08
as 75	9.10E-09	9.14E-09	9.19E-09	9.23E-09	9.28E-09	9.28E-09
eu155	8.80E-09	2.22E-08	2.22E-08	2.22E-08	2.22E-08	8.45E-09
in113	7.83E-09	7.87E-09	7.91E-09	7.95E-09	7.99E-09	7.99E-09
pm147	6.39E-09	3.30E-08	3.31E-08	3.31E-08	3.31E-08	6.00E-09
sn118	5.48E-09	5.51E-09	5.53E-09	5.56E-09	5.59E-09	5.59E-09
sn122	4.73E-09	4.76E-09	4.78E-09	4.80E-09	4.83E-09	4.83E-09
cd116	4.61E-09	4.63E-09	4.65E-09	4.67E-09	4.70E-09	4.70E-09
sn120	3.48E-09	3.49E-09	3.51E-09	3.53E-09	3.55E-09	3.55E-09
eu154	3.50E-09	5.83E-09	5.86E-09	5.89E-09	5.93E-09	3.51E-09
ge 73	2.62E-09	2.63E-09	2.64E-09	2.66E-09	2.67E-09	2.67E-09
sr 90	1.73E-09	2.02E-09	2.02E-09	2.02E-09	2.02E-09	1.72E-09
dy160	1.56E-09	1.58E-09	1.59E-09	1.61E-09	1.63E-09	1.63E-09
ho165	1.55E-09	1.56E-09	1.57E-09	1.59E-09	1.60E-09	1.60E-09
gd160	1.27E-09	1.28E-09	1.29E-09	1.29E-09	1.30E-09	1.30E-09
xe128	9.09E-10	9.18E-10	9.27E-10	9.35E-10	9.44E-10	9.44E-10
ge 76	8.86E-10	8.90E-10	8.94E-10	8.99E-10	9.03E-10	9.03E-10
sr 86	4.24E-10	4.28E-10	4.32E-10	4.36E-10	4.40E-10	4.40E-10
cs137	3.99E-10	4.61E-10	4.61E-10	4.61E-10	4.62E-10	3.97E-10
sn116	3.43E-10	3.46E-10	3.49E-10	3.53E-10	3.56E-10	3.56E-10
te124	2.99E-10	3.01E-10	3.04E-10	3.06E-10	3.08E-10	3.08E-10
nb 94	1.56E-10	1.58E-10	1.59E-10	1.60E-10	1.62E-10	1.62E-10
te122	1.44E-10	1.46E-10	1.47E-10	1.49E-10	1.50E-10	1.50E-10
sr 87	1.44E-10	1.45E-10	1.46E-10	1.47E-10	1.48E-10	1.48E-10
se 76	1.18E-10	1.19E-10	1.20E-10	1.21E-10	1.22E-10	1.22E-10

er166	7.29E-11	7.33E-11	7.38E-11	7.42E-11	7.47E-11	7.47E-11
kr 80	6.56E-11	6.67E-11	6.79E-11	6.91E-11	7.03E-11	7.03E-11
cs134	6.79E-11	5.59E-10	5.62E-10	5.65E-10	5.68E-10	6.37E-11
ge 74	5.24E-11	5.26E-11	5.29E-11	5.31E-11	5.34E-11	5.34E-11
kr 85	4.54E-11	6.80E-11	6.81E-11	6.81E-11	6.81E-11	4.47E-11
ge 72	3.88E-11	3.90E-11	3.92E-11	3.94E-11	3.96E-11	3.96E-11
er167	9.09E-12	9.19E-12	9.30E-12	9.40E-12	9.50E-12	9.50E-12
te123	7.37E-12	7.47E-12	7.57E-12	7.67E-12	7.78E-12	7.78E-12
cd108	4.83E-12	4.92E-12	5.02E-12	5.12E-12	5.22E-12	5.22E-12
y 90	1.65E-12	1.92E-12	1.93E-12	1.93E-12	1.93E-12	1.64E-12
sb125	4.38E-13	2.14E-12	2.14E-12	2.14E-12	2.14E-12	4.11E-13
ce144	2.77E-13	7.21E-11	7.21E-11	7.21E-11	7.22E-11	2.22E-13
be 9	1.11E-13	1.11E-13	1.12E-13	1.12E-13	1.13E-13	1.13E-13
sn114	9.15E-14	9.24E-14	9.34E-14	9.43E-14	9.52E-14	9.52E-14
ru106	6.61E-14	4.69E-12	4.68E-12	4.68E-12	4.67E-12	5.54E-14
li 7	4.59E-14	4.61E-14	4.63E-14	4.65E-14	4.68E-14	4.68E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 236
0 fraction of total absorption rate
power= .00mw, burnup= 25023.mwd, flux= 2.96E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sb126	1.84E-14	1.92E-14	1.92E-14	1.92E-14	1.93E-14	1.85E-14
cd109	7.64E-19	2.42E-17	2.47E-17	2.51E-17	2.56E-17	7.37E-19
te127m	5.45E-19	1.09E-12	1.09E-12	1.09E-12	1.09E-12	3.00E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 237
power= 4.890E-04mw, burnup=2.5023E+04mwd, flux= 2.96E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge ******* d	******* d	******* d	******* d	******* d	******* d
h 1	1.46E-03	1.47E-03	1.48E-03	1.48E-03	1.49E-03	1.49E-03
h 2	4.38E-06	4.40E-06	4.42E-06	4.44E-06	4.46E-06	4.46E-06
h 3	5.24E-12	7.45E-12	7.47E-12	7.48E-12	7.49E-12	5.19E-12
h 4	.00E+00	3.76E-36	3.77E-36	3.78E-36	3.79E-36	.00E+00
he 3	1.84E-08	1.84E-08	1.85E-08	1.85E-08	1.85E-08	1.85E-08
he 4	2.43E-04	2.44E-04	2.45E-04	2.46E-04	2.47E-04	2.47E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	2.92E-05	2.93E-05	2.95E-05	2.96E-05	2.97E-05	2.97E-05
ne 21	1.29E-08	1.30E-08	1.31E-08	1.32E-08	1.34E-08	1.34E-08
ne 22	1.92E-07	1.93E-07	1.94E-07	1.95E-07	1.96E-07	1.96E-07
ne 23	8.87E-31	8.86E-16	8.86E-16	8.86E-16	8.87E-16	8.87E-31
na 22	9.93E-13	5.25E-12	5.26E-12	5.26E-12	5.26E-12	9.29E-13
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.23E-24	3.22E-09	3.23E-09	3.23E-09	3.23E-09	3.23E-24
na 24m	5.30E-31	5.30E-16	5.30E-16	5.30E-16	5.30E-16	5.31E-31
na 25	4.66E-39	4.70E-24	4.74E-24	4.78E-24	4.83E-24	4.83E-39
mg 24	1.88E-01	1.89E-01	1.90E-01	1.91E-01	1.92E-01	1.92E-01
mg 25	1.33E-06	1.35E-06	1.36E-06	1.37E-06	1.38E-06	1.38E-06
mg 26	4.37E-06	4.39E-06	4.41E-06	4.43E-06	4.45E-06	4.45E-06
mg 27	2.64E-28	2.64E-13	2.64E-13	2.64E-13	2.65E-13	2.65E-28
mg 28	.00E+00	6.69E-26	6.70E-26	6.71E-26	6.71E-26	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.39E-26	2.39E-11	2.39E-11	2.39E-11	2.39E-11	2.39E-26
al 29	3.80E-37	3.83E-22	3.86E-22	3.90E-22	3.94E-22	3.94E-37
al 30	.00E+00	1.21E-31	1.23E-31	1.25E-31	1.27E-31	.00E+00
si 28	5.48E-01	5.51E-01	5.53E-01	5.56E-01	5.58E-01	5.58E-01
si 29	1.21E-05	1.23E-05	1.24E-05	1.25E-05	1.26E-05	1.26E-05
si 30	2.87E-10	2.91E-10	2.95E-10	2.99E-10	3.03E-10	3.03E-10
si 31	2.56E-38	2.59E-23	2.63E-23	2.67E-23	2.70E-23	2.71E-38
si 32	5.44E-30	5.65E-30	5.74E-30	5.82E-30	5.91E-30	5.76E-30

totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.96E+07	2.96E+07	2.96E+07	2.96E+07	2.96E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 238

power= 4.890E-04mw, burnup=2.5023E+04mwd, flux= 2.96E+07n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

charge *******	d *******	d *******	d *******	d *******	d
he 4	5.58E+01	5.64E+01	5.70E+01	5.76E+01	5.82E+01	5.82E+01
pb206	3.84E-01	3.91E-01	3.99E-01	4.06E-01	4.14E-01	4.14E-01
pb207	2.28E-02	2.32E-02	2.36E-02	2.40E-02	2.43E-02	2.43E-02
pb208	8.21E-04	8.28E-04	8.36E-04	8.44E-04	8.51E-04	8.51E-04
pb209	1.35E-09	1.36E-09	1.37E-09	1.39E-09	1.40E-09	1.40E-09
pb210	3.81E-04	3.85E-04	3.88E-04	3.91E-04	3.94E-04	3.94E-04
pb211	6.05E-11	6.06E-11	6.09E-11	6.11E-11	6.14E-11	6.15E-11
pb212	2.01E-11	2.09E-11	2.10E-11	2.11E-11	2.12E-11	2.04E-11
pb214	8.72E-10	8.79E-10	8.86E-10	8.93E-10	9.00E-10	9.00E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	7.11E-02	7.27E-02	7.43E-02	7.59E-02	7.75E-02	7.76E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.35E-07	2.37E-07	2.39E-07	2.40E-07	2.42E-07	2.42E-07
bi211	3.58E-12	3.59E-12	3.61E-12	3.62E-12	3.64E-12	3.65E-12
bi212	1.90E-12	1.98E-12	1.99E-12	2.00E-12	2.01E-12	1.93E-12
bi213	3.14E-10	3.18E-10	3.21E-10	3.24E-10	3.28E-10	3.28E-10
bi214	6.47E-10	6.53E-10	6.58E-10	6.63E-10	6.68E-10	6.68E-10
po210	6.49E-06	6.54E-06	6.59E-06	6.64E-06	6.69E-06	6.70E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.96E-17	3.97E-17	3.99E-17	4.00E-17	4.02E-17	4.03E-17
po212	1.00E-22	1.04E-22	1.05E-22	1.05E-22	1.06E-22	1.02E-22
po213	4.73E-19	4.78E-19	4.83E-19	4.88E-19	4.93E-19	4.93E-19
po214	8.91E-17	8.98E-17	9.05E-17	9.12E-17	9.19E-17	9.19E-17
po215	4.97E-17	4.98E-17	5.00E-17	5.02E-17	5.04E-17	5.05E-17
po216	7.59E-17	7.91E-17	7.95E-17	7.99E-17	8.03E-17	7.72E-17
po218	1.01E-10	1.02E-10	1.02E-10	1.03E-10	1.04E-10	1.04E-10
rn218	3.50E-44	3.70E-29	3.72E-29	3.74E-29	3.76E-29	3.50E-44
rn219	1.11E-13	1.11E-13	1.11E-13	1.12E-13	1.12E-13	1.12E-13
rn220	2.91E-14	3.03E-14	3.05E-14	3.06E-14	3.08E-14	2.96E-14
rn222	1.79E-07	1.81E-07	1.82E-07	1.84E-07	1.85E-07	1.85E-07
ra222	3.76E-41	4.02E-26	4.04E-26	4.06E-26	4.08E-26	3.83E-41
ra223	2.76E-08	2.76E-08	2.78E-08	2.79E-08	2.80E-08	2.80E-08
ra224	1.66E-10	1.73E-10	1.73E-10	1.74E-10	1.75E-10	1.68E-10
ra225	1.47E-07	1.49E-07	1.50E-07	1.52E-07	1.53E-07	1.53E-07
ra226	2.74E-02	2.76E-02	2.78E-02	2.80E-02	2.83E-02	2.83E-02
ra228	1.41E-10	1.42E-10	1.43E-10	1.45E-10	1.46E-10	1.46E-10
ac225	9.93E-08	1.00E-07	1.01E-07	1.02E-07	1.04E-07	1.04E-07
ac227	1.91E-05	1.92E-05	1.93E-05	1.94E-05	1.95E-05	1.95E-05
ac228	1.72E-14	1.73E-14	1.75E-14	1.77E-14	1.79E-14	1.79E-14
th226	1.84E-39	1.96E-24	1.97E-24	1.98E-24	1.99E-24	1.87E-39
th227	4.45E-08	4.46E-08	4.48E-08	4.50E-08	4.52E-08	4.53E-08
th228	3.16E-08	3.29E-08	3.31E-08	3.33E-08	3.34E-08	3.21E-08
th229	2.86E-02	2.89E-02	2.92E-02	2.95E-02	2.98E-02	2.98E-02
th230	1.33E+00	1.34E+00	1.35E+00	1.36E+00	1.37E+00	1.37E+00
th231	2.71E-09	3.45E-09	3.46E-09	3.47E-09	3.47E-09	2.71E-09
th232	3.44E-01	3.47E-01	3.51E-01	3.54E-01	3.58E-01	3.58E-01
th233	3.89E-28	3.93E-13	3.97E-13	4.01E-13	4.06E-13	4.06E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	2.88E-02	2.89E-02	2.90E-02	2.92E-02	2.93E-02	2.93E-02
pa232	6.13E-26	6.16E-11	6.19E-11	6.21E-11	6.24E-11	6.25E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 239

power= 4.890E-04mw, burnup=2.5023E+04mwd, flux= 2.96E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d	******* d
pa233	1.40E-06	1.40E-06	1.40E-06	1.40E-06	1.40E-06	1.40E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.78E-36	1.90E-21	1.91E-21	1.92E-21	1.93E-21	1.81E-36
u231	6.37E-32	6.41E-17	6.47E-17	6.53E-17	6.58E-17	6.58E-32
u232	1.12E-06	1.20E-06	1.21E-06	1.21E-06	1.22E-06	1.14E-06
u233	6.89E-01	6.95E-01	7.01E-01	7.07E-01	7.12E-01	7.12E-01
u234	1.02E+01	1.02E+01	1.02E+01	1.02E+01	1.02E+01	1.02E+01
u235	6.55E+02	6.55E+02	6.55E+02	6.55E+02	6.55E+02	6.55E+02
u236	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02
u237	3.61E-13	4.14E-07	4.14E-07	4.15E-07	4.15E-07	3.34E-13
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.76E-23	3.76E-08	3.76E-08	3.76E-08	3.76E-08	3.76E-23
u240	2.83E-34	2.93E-34	3.04E-34	3.15E-34	3.25E-34	3.26E-34
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	1.88E-14	1.02E-12	1.02E-12	1.02E-12	1.02E-12	1.60E-14
np236m	2.44E-28	2.43E-13	2.43E-13	2.43E-13	2.43E-13	2.43E-28
np236	2.59E-06	2.60E-06	2.60E-06	2.61E-06	2.61E-06	2.61E-06
np237	4.04E+01	4.04E+01	4.04E+01	4.04E+01	4.04E+01	4.04E+01
np238	4.97E-15	1.82E-07	1.82E-07	1.82E-07	1.82E-07	4.64E-15
np239	1.67E-13	5.43E-06	5.43E-06	5.43E-06	5.44E-06	1.61E-13
np240m	2.41E-36	2.50E-36	2.59E-36	2.68E-36	2.78E-36	2.78E-36
np240	2.90E-38	1.36E-16	1.36E-16	1.37E-16	1.37E-16	3.26E-38
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	3.54E-11	1.38E-10	1.38E-10	1.38E-10	1.38E-10	3.37E-11
pu237	5.07E-29	3.19E-14	3.18E-14	3.16E-14	3.14E-14	3.58E-29
pu238	2.62E-03	2.75E-03	2.75E-03	2.75E-03	2.75E-03	2.62E-03
pu239	2.71E+01	2.70E+01	2.68E+01	2.66E+01	2.65E+01	2.65E+01
pu240	3.19E-01	3.13E-01	3.08E-01	3.03E-01	2.98E-01	2.98E-01
pu241	1.17E-05	1.56E-05	1.53E-05	1.51E-05	1.48E-05	1.08E-05
pu242	4.82E-05	4.82E-05	4.82E-05	4.83E-05	4.83E-05	4.83E-05
pu243	1.55E-29	1.24E-14	1.24E-14	1.25E-14	1.25E-14	1.56E-29
pu244	1.41E-23	1.46E-23	1.51E-23	1.57E-23	1.62E-23	1.62E-23
pu245	.00E+00	7.43E-35	7.70E-35	7.98E-35	8.26E-35	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.62E-35	1.59E-20	1.56E-20	1.54E-20	1.52E-20	1.52E-35
am240	7.42E-33	7.26E-18	7.15E-18	7.04E-18	6.94E-18	6.93E-33
am241	4.79E-04	4.69E-04	4.62E-04	4.55E-04	4.48E-04	4.47E-04
am242m	2.69E-08	2.70E-08	2.67E-08	2.63E-08	2.59E-08	2.51E-08
am242	3.47E-13	2.15E-12	2.12E-12	2.09E-12	2.05E-12	3.23E-13
am243	1.90E-07	1.89E-07	1.87E-07	1.86E-07	1.84E-07	1.84E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.76E-31	1.75E-16	1.73E-16	1.72E-16	1.71E-16	1.71E-31
am245	3.28E-40	1.46E-35	1.51E-35	1.56E-35	1.62E-35	2.98E-40
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	1.68E-44	1.54E-23	1.52E-23	1.50E-23	1.48E-23	.00E+00
cm242	7.00E-11	4.34E-10	4.28E-10	4.21E-10	4.15E-10	6.53E-11
cm243	1.07E-15	1.22E-15	1.21E-15	1.19E-15	1.17E-15	1.00E-15
cm244	2.18E-12	2.74E-12	2.72E-12	2.70E-12	2.68E-12	2.09E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 240

power= 4.890E-04mw, burnup=2.5023E+04mwd, flux= 2.96E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge ******* d ******* d ******* d ******* d ******* d

```
     cm245   8.77E-15  8.53E-15  8.30E-15  8.09E-15  7.88E-15  7.87E-15
     cm246   6.70E-17  6.49E-17  6.28E-17  6.09E-17  5.90E-17  5.89E-17
     cm247   8.68E-20  8.73E-20  8.78E-20  8.83E-20  8.87E-20  8.87E-20
     cm248   4.38E-22  4.46E-22  4.54E-22  4.62E-22  4.70E-22  4.70E-22
     cm249    .00E+00  1.72E-33  1.75E-33  1.78E-33  1.81E-33   .00E+00
     cm250   1.78E-37  1.79E-37  1.80E-37  1.81E-37  1.82E-37  1.82E-37
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.96E+07  2.96E+07  2.96E+07  2.96E+07  2.96E-08
0       1q array has      20 entries.
0       3q array has       1 entries.
0       3q array has       1 entries.
0       3q array has       1 entries.
0       4q array has       1 entries.
0      54q array has      12 entries.
1library information...

          cross-section data taken from position number 27 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *      data from the light element, actinide, and fission product libraries    *
          *        decay data, including gamma and total energy, are from endf/b-vi      *
          *                                                                              *
          *      neutron flux spectrum factors and cross sections were produced from     *
          *     the "presas2" case updating all nuclides on the scale "burnup" library   *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *        see information above this box (if present) for later updates         *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                  8/29/1996    date library was produced
0                       1697    total number of nuclides in library
                         689    number of light-element nuclides
                         129    number of actinide nuclides
```

879 number of fission product nuclides
7993 number of nonzero off-diagonal matrix elements
****

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 page 241
power= .00mw, burnup= 25470.mwd, flux= 2.96E+07n/cm**2-sec
basis =
(note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)

	initial	******* d	******* d	******* d	******* d	******* d
productions	1.280524E+06	1.279857E+06	1.279196E+06	1.278541E+06	1.277893E+06	1.277883E+06
absorptions	1.044879E+06	1.044567E+06	1.044258E+06	1.043953E+06	1.043652E+06	1.043646E+06
k infinity	1.225524E+00	1.225251E+00	1.224980E+00	1.224711E+00	1.224444E+00	1.224442E+00

	initial	******* d	******* d	******* d	******* d	******* d
actinide absorptions	1.024956E+06	1.024606E+06	1.024260E+06	1.023918E+06	1.023578E+06	1.023573E+06
non-actinide abs. fracs.	1.906675E-02	1.910883E-02	1.915073E-02	1.919210E-02	1.923358E-02	1.923329E-02

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 242
fraction of total absorption rate
power= .00mw, burnup= 25470.mwd, flux= 2.96E+07n/cm**2-sec

	initial	******* d	******* d	******* d	******* d	******* d
sm149	5.42E-03	5.42E-03	5.42E-03	5.42E-03	5.42E-03	5.42E-03
nd143	2.43E-03	2.44E-03	2.45E-03	2.46E-03	2.47E-03	2.47E-03
eu151	2.01E-03	2.01E-03	2.02E-03	2.02E-03	2.02E-03	2.03E-03
rh103	1.18E-03	1.19E-03	1.19E-03	1.20E-03	1.21E-03	1.21E-03
xe131	7.89E-04	7.93E-04	7.97E-04	8.00E-04	8.04E-04	8.04E-04
cs133	6.16E-04	6.19E-04	6.22E-04	6.24E-04	6.27E-04	6.27E-04
sm147	4.50E-04	4.53E-04	4.55E-04	4.57E-04	4.59E-04	4.59E-04
tc 99	3.99E-04	4.00E-04	4.01E-04	4.02E-04	4.04E-04	4.04E-04
nd145	3.48E-04	3.49E-04	3.51E-04	3.53E-04	3.54E-04	3.54E-04
sm152	2.78E-04	2.80E-04	2.81E-04	2.83E-04	2.84E-04	2.84E-04
mo 95	2.41E-04	2.42E-04	2.43E-04	2.44E-04	2.46E-04	2.46E-04
gd155	2.25E-04	2.25E-04	2.25E-04	2.24E-04	2.24E-04	2.24E-04
sm150	1.85E-04	1.86E-04	1.86E-04	1.87E-04	1.88E-04	1.88E-04
kr 83	1.48E-04	1.49E-04	1.50E-04	1.50E-04	1.51E-04	1.51E-04
cs135	1.39E-04	1.40E-04	1.41E-04	1.41E-04	1.42E-04	1.42E-04
eu153	1.14E-04	1.15E-04	1.15E-04	1.16E-04	1.17E-04	1.17E-04
ru101	1.08E-04	1.09E-04	1.09E-04	1.10E-04	1.11E-04	1.11E-04
pr141	1.05E-04	1.05E-04	1.06E-04	1.06E-04	1.07E-04	1.07E-04
cd113	1.02E-04	1.02E-04	1.02E-04	1.02E-04	1.02E-04	1.02E-04
la139	8.56E-05	8.60E-05	8.64E-05	8.68E-05	8.72E-05	8.72E-05
gd157	5.85E-05	5.83E-05	5.82E-05	5.80E-05	5.79E-05	5.79E-05
ag109	4.51E-05	4.53E-05	4.55E-05	4.58E-05	4.60E-05	4.60E-05
pd105	4.41E-05	4.43E-05	4.45E-05	4.47E-05	4.49E-05	4.49E-05
ba137	4.15E-05	4.17E-05	4.19E-05	4.21E-05	4.23E-05	4.23E-05
zr 93	3.32E-05	3.33E-05	3.35E-05	3.36E-05	3.38E-05	3.38E-05
i129	2.81E-05	2.83E-05	2.84E-05	2.85E-05	2.87E-05	2.87E-05
nd144	2.67E-05	2.68E-05	2.69E-05	2.71E-05	2.72E-05	2.72E-05
gd152	2.43E-05	2.45E-05	2.47E-05	2.49E-05	2.50E-05	2.50E-05
mo 97	1.94E-05	1.95E-05	1.96E-05	1.97E-05	1.98E-05	1.98E-05
pd108	1.08E-05	1.09E-05	1.09E-05	1.10E-05	1.10E-05	1.10E-05
zr 91	8.91E-06	8.96E-06	9.00E-06	9.04E-06	9.08E-06	9.08E-06
ru 99	8.44E-06	8.57E-06	8.70E-06	8.84E-06	8.97E-06	8.97E-06
y 89	8.53E-06	8.57E-06	8.61E-06	8.65E-06	8.69E-06	8.69E-06
ru102	8.16E-06	8.19E-06	8.23E-06	8.27E-06	8.31E-06	8.31E-06
ce142	7.14E-06	7.17E-06	7.21E-06	7.24E-06	7.27E-06	7.27E-06
nd148	6.86E-06	6.90E-06	6.93E-06	6.96E-06	6.99E-06	6.99E-06
sm151	6.61E-06	6.95E-06	6.96E-06	6.96E-06	6.96E-06	6.61E-06
nd146	5.80E-06	5.83E-06	5.86E-06	5.89E-06	5.92E-06	5.92E-06
pd107	5.45E-06	5.47E-06	5.50E-06	5.53E-06	5.56E-06	5.56E-06

in115	5.08E-06	5.10E-06	5.13E-06	5.15E-06	5.18E-06	5.18E-06
ba138	4.94E-06	4.96E-06	4.98E-06	5.01E-06	5.03E-06	5.03E-06
ce140	4.62E-06	4.64E-06	4.67E-06	4.69E-06	4.71E-06	4.71E-06
xe132	4.25E-06	4.27E-06	4.29E-06	4.31E-06	4.33E-06	4.33E-06
mo 98	2.82E-06	2.83E-06	2.85E-06	2.86E-06	2.87E-06	2.87E-06
mo100	2.76E-06	2.77E-06	2.79E-06	2.80E-06	2.81E-06	2.81E-06
xe134	2.73E-06	2.74E-06	2.76E-06	2.77E-06	2.78E-06	2.78E-06
zr 92	2.16E-06	2.17E-06	2.18E-06	2.19E-06	2.20E-06	2.20E-06
i127	2.06E-06	2.07E-06	2.08E-06	2.09E-06	2.10E-06	2.10E-06
ru104	1.88E-06	1.89E-06	1.90E-06	1.91E-06	1.92E-06	1.92E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 243
0 fraction of total absorption rate
power= .00mw, burnup= 25470.mwd, flux= 2.96E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	1.68E-06	1.69E-06	1.70E-06	1.71E-06	1.72E-06	1.72E-06
nd150	1.56E-06	1.56E-06	1.57E-06	1.58E-06	1.59E-06	1.59E-06
xe136	1.48E-06	1.49E-06	1.49E-06	1.50E-06	1.51E-06	1.51E-06
gd154	1.25E-06	1.26E-06	1.28E-06	1.29E-06	1.30E-06	1.30E-06
cd111	1.22E-06	1.23E-06	1.23E-06	1.24E-06	1.25E-06	1.25E-06
br 81	1.09E-06	1.10E-06	1.10E-06	1.11E-06	1.11E-06	1.11E-06
rb 85	1.04E-06	1.05E-06	1.05E-06	1.06E-06	1.06E-06	1.06E-06
ba135	8.75E-07	8.90E-07	9.04E-07	9.18E-07	9.33E-07	9.33E-07
zr 94	9.11E-07	9.15E-07	9.20E-07	9.24E-07	9.28E-07	9.28E-07
zr 90	8.40E-07	8.44E-07	8.48E-07	8.52E-07	8.56E-07	8.56E-07
sm154	7.38E-07	7.42E-07	7.45E-07	7.49E-07	7.53E-07	7.53E-07
te130	6.85E-07	6.88E-07	6.91E-07	6.94E-07	6.98E-07	6.98E-07
rb 87	6.00E-07	6.03E-07	6.06E-07	6.09E-07	6.12E-07	6.12E-07
pd106	4.55E-07	4.57E-07	4.59E-07	4.62E-07	4.64E-07	4.64E-07
se 77	4.41E-07	4.44E-07	4.46E-07	4.48E-07	4.50E-07	4.50E-07
gd156	4.35E-07	4.38E-07	4.40E-07	4.42E-07	4.45E-07	4.45E-07
ru100	3.32E-07	3.35E-07	3.38E-07	3.41E-07	3.44E-07	3.44E-07
kr 84	2.86E-07	2.88E-07	2.89E-07	2.90E-07	2.92E-07	2.92E-07
dy161	2.70E-07	2.71E-07	2.72E-07	2.73E-07	2.75E-07	2.75E-07
nd142	2.47E-07	2.49E-07	2.51E-07	2.54E-07	2.56E-07	2.56E-07
ba134	2.35E-07	2.37E-07	2.39E-07	2.41E-07	2.43E-07	2.44E-07
sb121	2.35E-07	2.36E-07	2.37E-07	2.38E-07	2.39E-07	2.39E-07
sm148	2.13E-07	2.15E-07	2.17E-07	2.19E-07	2.21E-07	2.21E-07
se 79	2.12E-07	2.13E-07	2.14E-07	2.14E-07	2.15E-07	2.15E-07
sb123	1.90E-07	1.91E-07	1.92E-07	1.93E-07	1.93E-07	1.93E-07
pd104	1.61E-07	1.62E-07	1.64E-07	1.65E-07	1.67E-07	1.67E-07
kr 86	1.60E-07	1.60E-07	1.61E-07	1.62E-07	1.63E-07	1.63E-07
te128	1.55E-07	1.55E-07	1.56E-07	1.57E-07	1.58E-07	1.58E-07
nb 93	1.39E-07	1.41E-07	1.43E-07	1.46E-07	1.48E-07	1.48E-07
tb159	1.16E-07	1.17E-07	1.17E-07	1.18E-07	1.18E-07	1.18E-07
se 80	1.06E-07	1.06E-07	1.07E-07	1.07E-07	1.08E-07	1.08E-07
te125	1.06E-07	1.06E-07	1.07E-07	1.07E-07	1.08E-07	1.08E-07
gd158	9.16E-08	9.21E-08	9.25E-08	9.30E-08	9.35E-08	9.35E-08
cd112	8.23E-08	8.27E-08	8.31E-08	8.35E-08	8.39E-08	8.39E-08
ag107	7.02E-08	7.14E-08	7.27E-08	7.39E-08	7.52E-08	7.52E-08
br 79	6.86E-08	6.97E-08	7.08E-08	7.19E-08	7.30E-08	7.30E-08
dy162	6.34E-08	6.38E-08	6.42E-08	6.46E-08	6.49E-08	6.49E-08
cd110	6.07E-08	6.14E-08	6.20E-08	6.27E-08	6.34E-08	6.34E-08
dy164	6.00E-08	6.02E-08	6.05E-08	6.07E-08	6.10E-08	6.10E-08
sn117	5.77E-08	5.80E-08	5.83E-08	5.85E-08	5.88E-08	5.88E-08
mo 96	5.33E-08	5.38E-08	5.42E-08	5.47E-08	5.52E-08	5.52E-08
li 6	5.40E-08	5.42E-08	5.44E-08	5.47E-08	5.49E-08	5.49E-08
cd114	4.91E-08	4.93E-08	4.96E-08	4.98E-08	5.01E-08	5.01E-08
eu152	4.67E-08	6.56E-08	6.58E-08	6.60E-08	6.61E-08	4.65E-08
xe129	4.23E-08	4.30E-08	4.37E-08	4.44E-08	4.51E-08	4.51E-08

sn119	4.38E-08	4.41E-08	4.43E-08	4.45E-08	4.47E-08	4.47E-08
pd110	4.08E-08	4.10E-08	4.12E-08	4.14E-08	4.16E-08	4.16E-08
sn115	4.01E-08	4.03E-08	4.05E-08	4.07E-08	4.09E-08	4.09E-08
sr 88	2.93E-08	2.94E-08	2.95E-08	2.97E-08	2.98E-08	2.98E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 244
0 fraction of total absorption rate
power= .00mw, burnup= 25470.mwd, flux= 2.96E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

xe130	2.60E-08	2.63E-08	2.65E-08	2.67E-08	2.70E-08	2.70E-08
te126	2.26E-08	2.29E-08	2.33E-08	2.36E-08	2.39E-08	2.39E-08
ba136	2.16E-08	2.18E-08	2.20E-08	2.21E-08	2.23E-08	2.23E-08
se 82	2.02E-08	2.02E-08	2.03E-08	2.04E-08	2.05E-08	2.05E-08
sn126	1.62E-08	1.62E-08	1.62E-08	1.63E-08	1.63E-08	1.63E-08
dy163	1.58E-08	1.59E-08	1.60E-08	1.61E-08	1.62E-08	1.62E-08
se 78	1.58E-08	1.59E-08	1.60E-08	1.60E-08	1.61E-08	1.61E-08
kr 82	1.57E-08	1.58E-08	1.59E-08	1.60E-08	1.61E-08	1.61E-08
sn124	1.39E-08	1.39E-08	1.40E-08	1.41E-08	1.41E-08	1.41E-08
as 75	9.28E-09	9.32E-09	9.37E-09	9.41E-09	9.45E-09	9.45E-09
in113	7.99E-09	8.03E-09	8.07E-09	8.10E-09	8.14E-09	8.14E-09
eu155	8.45E-09	2.21E-08	2.21E-08	2.21E-08	2.21E-08	8.12E-09
sn118	5.59E-09	5.61E-09	5.64E-09	5.67E-09	5.69E-09	5.69E-09
pm147	5.99E-09	3.31E-08	3.31E-08	3.31E-08	3.31E-08	5.62E-09
sn122	4.83E-09	4.85E-09	4.87E-09	4.90E-09	4.92E-09	4.92E-09
cd116	4.70E-09	4.72E-09	4.74E-09	4.76E-09	4.79E-09	4.79E-09
sn120	3.55E-09	3.56E-09	3.58E-09	3.60E-09	3.61E-09	3.61E-09
eu154	3.51E-09	5.96E-09	5.99E-09	6.03E-09	6.06E-09	3.51E-09
ge 73	2.67E-09	2.68E-09	2.70E-09	2.71E-09	2.72E-09	2.72E-09
sr 90	1.72E-09	2.03E-09	2.03E-09	2.03E-09	2.03E-09	1.72E-09
dy160	1.63E-09	1.64E-09	1.66E-09	1.67E-09	1.69E-09	1.69E-09
ho165	1.60E-09	1.61E-09	1.62E-09	1.63E-09	1.64E-09	1.64E-09
gd160	1.30E-09	1.31E-09	1.31E-09	1.32E-09	1.33E-09	1.33E-09
xe128	9.45E-10	9.54E-10	9.63E-10	9.72E-10	9.81E-10	9.81E-10
ge 76	9.03E-10	9.07E-10	9.12E-10	9.16E-10	9.20E-10	9.20E-10
sr 86	4.40E-10	4.44E-10	4.48E-10	4.52E-10	4.56E-10	4.56E-10
cs137	3.97E-10	4.62E-10	4.62E-10	4.62E-10	4.62E-10	3.95E-10
sn116	3.56E-10	3.59E-10	3.63E-10	3.66E-10	3.69E-10	3.69E-10
te124	3.08E-10	3.11E-10	3.13E-10	3.15E-10	3.17E-10	3.17E-10
nb 94	1.62E-10	1.63E-10	1.65E-10	1.66E-10	1.68E-10	1.68E-10
te122	1.50E-10	1.52E-10	1.53E-10	1.54E-10	1.56E-10	1.56E-10
sr 87	1.48E-10	1.49E-10	1.50E-10	1.52E-10	1.53E-10	1.53E-10
se 76	1.22E-10	1.23E-10	1.24E-10	1.25E-10	1.26E-10	1.26E-10
er166	7.47E-11	7.51E-11	7.56E-11	7.60E-11	7.65E-11	7.65E-11
kr 80	7.03E-11	7.15E-11	7.27E-11	7.40E-11	7.53E-11	7.53E-11
cs134	6.38E-11	5.71E-10	5.74E-10	5.77E-10	5.80E-10	5.98E-11
ge 74	5.34E-11	5.37E-11	5.39E-11	5.42E-11	5.45E-11	5.45E-11
kr 85	4.47E-11	6.82E-11	6.82E-11	6.83E-11	6.83E-11	4.41E-11
ge 72	3.96E-11	3.98E-11	4.00E-11	4.02E-11	4.04E-11	4.04E-11
er167	9.51E-12	9.61E-12	9.72E-12	9.82E-12	9.93E-12	9.93E-12
te123	7.78E-12	7.88E-12	7.99E-12	8.10E-12	8.20E-12	8.20E-12
cd108	5.22E-12	5.33E-12	5.43E-12	5.54E-12	5.64E-12	5.64E-12
y 90	1.64E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.64E-12
sb125	4.10E-13	2.14E-12	2.13E-12	2.13E-12	2.13E-12	3.85E-13
ce144	2.22E-13	7.22E-11	7.22E-11	7.23E-11	7.23E-11	1.79E-13
be 9	1.13E-13	1.13E-13	1.14E-13	1.14E-13	1.15E-13	1.15E-13
sn114	9.52E-14	9.61E-14	9.71E-14	9.80E-14	9.89E-14	9.89E-14
li 7	4.68E-14	4.70E-14	4.72E-14	4.74E-14	4.77E-14	4.77E-14
ru106	5.54E-14	4.66E-12	4.65E-12	4.64E-12	4.64E-12	4.65E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 245
0 fraction of total absorption rate

power= .00mw, burnup= 25470.mwd, flux= 2.96E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sb126	1.85E-14	1.93E-14	1.93E-14	1.94E-14	1.94E-14	1.87E-14
cd109	7.36E-19	2.61E-17	2.66E-17	2.72E-17	2.76E-17	6.82E-19
te127m	3.00E-19	1.09E-12	1.09E-12	1.09E-12	1.09E-12	1.64E-19

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 246
power= 4.890E-04mw, burnup=2.5470E+04mwd, flux= 2.96E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge ******* d	******* d	******* d	******* d	******* d	******* d
h 1	1.49E-03	1.50E-03	1.50E-03	1.51E-03	1.52E-03	1.52E-03
h 2	4.46E-06	4.48E-06	4.50E-06	4.52E-06	4.54E-06	4.54E-06
h 3	5.19E-12	7.49E-12	7.50E-12	7.51E-12	7.52E-12	5.14E-12
h 4	.00E+00	3.79E-36	3.80E-36	3.80E-36	3.81E-36	.00E+00
he 3	1.85E-08	1.86E-08	1.86E-08	1.86E-08	1.87E-08	1.87E-08
he 4	2.47E-04	2.49E-04	2.50E-04	2.51E-04	2.52E-04	2.52E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	2.97E-05	2.99E-05	3.00E-05	3.01E-05	3.03E-05	3.03E-05
ne 21	1.34E-08	1.35E-08	1.36E-08	1.37E-08	1.38E-08	1.38E-08
ne 22	1.96E-07	1.97E-07	1.98E-07	1.98E-07	1.99E-07	1.99E-07
ne 23	8.87E-31	8.86E-16	8.86E-16	8.87E-16	8.87E-16	8.87E-31
na 22	9.29E-13	5.25E-12	5.26E-12	5.26E-12	5.26E-12	8.69E-13
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.23E-24	3.23E-09	3.23E-09	3.23E-09	3.23E-09	3.23E-24
na 24m	5.31E-31	5.30E-16	5.30E-16	5.31E-16	5.31E-16	5.31E-31
na 25	4.83E-39	4.87E-24	4.91E-24	4.96E-24	5.00E-24	5.00E-39
mg 24	1.92E-01	1.93E-01	1.93E-01	1.94E-01	1.95E-01	1.95E-01
mg 25	1.38E-06	1.39E-06	1.41E-06	1.42E-06	1.43E-06	1.43E-06
mg 26	4.45E-06	4.47E-06	4.49E-06	4.51E-06	4.53E-06	4.53E-06
mg 27	2.65E-28	2.64E-13	2.64E-13	2.64E-13	2.65E-13	2.65E-28
mg 28	.00E+00	6.71E-26	6.72E-26	6.72E-26	6.73E-26	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.39E-26	2.39E-11	2.39E-11	2.39E-11	2.39E-11	2.40E-26
al 29	3.94E-37	3.97E-22	4.01E-22	4.04E-22	4.08E-22	4.08E-37
al 30	.00E+00	1.28E-31	1.30E-31	1.32E-31	1.34E-31	.00E+00
si 28	5.58E-01	5.61E-01	5.63E-01	5.65E-01	5.68E-01	5.68E-01
si 29	1.26E-05	1.27E-05	1.28E-05	1.29E-05	1.30E-05	1.30E-05
si 30	3.03E-10	3.07E-10	3.11E-10	3.15E-10	3.20E-10	3.20E-10
si 31	2.71E-38	2.74E-23	2.78E-23	2.82E-23	2.86E-23	2.86E-38
si 32	5.76E-30	5.98E-30	6.08E-30	6.17E-30	6.26E-30	6.09E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.96E+07	2.96E+07	2.96E+07	2.96E+07	2.96E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 247
power= 4.890E-04mw, burnup=2.5470E+04mwd, flux= 2.96E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge ******* d	******* d	******* d	******* d	******* d	******* d
he 4	5.82E+01	5.88E+01	5.94E+01	6.00E+01	6.06E+01	6.06E+01
pb206	4.14E-01	4.22E-01	4.30E-01	4.37E-01	4.45E-01	4.45E-01
pb207	2.43E-02	2.47E-02	2.51E-02	2.55E-02	2.59E-02	2.59E-02
pb208	8.51E-04	8.59E-04	8.66E-04	8.74E-04	8.82E-04	8.82E-04
pb209	1.40E-09	1.42E-09	1.43E-09	1.44E-09	1.46E-09	1.46E-09
pb210	3.94E-04	3.97E-04	4.00E-04	4.03E-04	4.06E-04	4.06E-04
pb211	6.15E-11	6.16E-11	6.19E-11	6.21E-11	6.24E-11	6.25E-11
pb212	2.04E-11	2.13E-11	2.14E-11	2.15E-11	2.16E-11	2.07E-11
pb214	9.00E-10	9.07E-10	9.14E-10	9.21E-10	9.27E-10	9.28E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

bi209	7.76E-02	7.92E-02	8.09E-02	8.26E-02	8.42E-02	8.43E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.42E-07	2.44E-07	2.46E-07	2.48E-07	2.50E-07	2.50E-07
bi211	3.65E-12	3.65E-12	3.67E-12	3.68E-12	3.70E-12	3.71E-12
bi212	1.93E-12	2.02E-12	2.03E-12	2.04E-12	2.05E-12	1.97E-12
bi213	3.28E-10	3.31E-10	3.34E-10	3.37E-10	3.41E-10	3.41E-10
bi214	6.68E-10	6.73E-10	6.79E-10	6.84E-10	6.89E-10	6.89E-10
po210	6.70E-06	6.74E-06	6.80E-06	6.85E-06	6.90E-06	6.90E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	4.03E-17	4.04E-17	4.05E-17	4.07E-17	4.09E-17	4.09E-17
po212	1.02E-22	1.06E-22	1.07E-22	1.07E-22	1.08E-22	1.03E-22
po213	4.93E-19	4.98E-19	5.02E-19	5.07E-19	5.12E-19	5.12E-19
po214	9.19E-17	9.26E-17	9.34E-17	9.41E-17	9.47E-17	9.48E-17
po215	5.05E-17	5.07E-17	5.09E-17	5.11E-17	5.13E-17	5.14E-17
po216	7.72E-17	8.06E-17	8.10E-17	8.14E-17	8.17E-17	7.84E-17
po218	1.04E-10	1.05E-10	1.06E-10	1.07E-10	1.07E-10	1.07E-10
rn218	3.50E-44	3.77E-29	3.79E-29	3.81E-29	3.83E-29	3.64E-44
rn219	1.12E-13	1.13E-13	1.13E-13	1.14E-13	1.14E-13	1.14E-13
rn220	2.96E-14	3.09E-14	3.11E-14	3.12E-14	3.13E-14	3.01E-14
rn222	1.85E-07	1.86E-07	1.88E-07	1.89E-07	1.91E-07	1.91E-07
ra222	3.83E-41	4.09E-26	4.11E-26	4.14E-26	4.16E-26	3.89E-41
ra223	2.80E-08	2.81E-08	2.82E-08	2.83E-08	2.85E-08	2.85E-08
ra224	1.68E-10	1.76E-10	1.77E-10	1.77E-10	1.78E-10	1.71E-10
ra225	1.53E-07	1.55E-07	1.56E-07	1.58E-07	1.59E-07	1.59E-07
ra226	2.83E-02	2.85E-02	2.87E-02	2.89E-02	2.91E-02	2.91E-02
ra228	1.46E-10	1.48E-10	1.49E-10	1.51E-10	1.52E-10	1.52E-10
ac225	1.04E-07	1.05E-07	1.06E-07	1.07E-07	1.08E-07	1.08E-07
ac227	1.95E-05	1.96E-05	1.96E-05	1.97E-05	1.98E-05	1.98E-05
ac228	1.79E-14	1.81E-14	1.82E-14	1.84E-14	1.86E-14	1.86E-14
th226	1.87E-39	2.00E-24	2.01E-24	2.02E-24	2.03E-24	1.90E-39
th227	4.53E-08	4.54E-08	4.56E-08	4.58E-08	4.59E-08	4.60E-08
th228	3.21E-08	3.36E-08	3.37E-08	3.39E-08	3.40E-08	3.26E-08
th229	2.98E-02	3.01E-02	3.04E-02	3.07E-02	3.10E-02	3.10E-02
th230	1.37E+00	1.38E+00	1.39E+00	1.40E+00	1.41E+00	1.41E+00
th231	2.71E-09	3.48E-09	3.48E-09	3.49E-09	3.49E-09	2.71E-09
th232	3.58E-01	3.62E-01	3.65E-01	3.69E-01	3.72E-01	3.72E-01
th233	4.06E-28	4.10E-13	4.14E-13	4.18E-13	4.23E-13	4.23E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	2.93E-02	2.94E-02	2.95E-02	2.96E-02	2.98E-02	2.98E-02
pa232	6.25E-26	6.27E-11	6.30E-11	6.33E-11	6.36E-11	6.36E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 248
power= 4.890E-04mw, burnup=2.5470E+04mwd, flux= 2.96E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d
pa233	1.40E-06	1.40E-06	1.40E-06	1.39E-06	1.39E-06	1.39E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.81E-36	1.94E-21	1.95E-21	1.96E-21	1.97E-21	1.84E-36
u231	6.58E-32	6.63E-17	6.69E-17	6.74E-17	6.80E-17	6.80E-32
u232	1.14E-06	1.22E-06	1.23E-06	1.23E-06	1.24E-06	1.16E-06
u233	7.12E-01	7.18E-01	7.24E-01	7.30E-01	7.35E-01	7.35E-01
u234	1.02E+01	1.02E+01	1.02E+01	1.02E+01	1.02E+01	1.02E+01
u235	6.55E+02	6.55E+02	6.54E+02	6.54E+02	6.54E+02	6.54E+02
u236	1.94E+02	1.94E+02	1.94E+02	1.95E+02	1.95E+02	1.95E+02
u237	3.34E-13	4.15E-07	4.15E-07	4.16E-07	4.16E-07	3.11E-13
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.76E-23	3.76E-08	3.76E-08	3.76E-08	3.77E-08	3.77E-23

u240	3.26E-34	3.37E-34	3.48E-34	3.60E-34	3.71E-34	3.71E-34
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	1.60E-14	1.02E-12	1.02E-12	1.02E-12	1.02E-12	1.36E-14
np236m	2.43E-28	2.43E-13	2.43E-13	2.43E-13	2.43E-13	2.43E-28
np236	2.61E-06	2.62E-06	2.62E-06	2.63E-06	2.63E-06	2.63E-06
np237	4.04E+01	4.04E+01	4.04E+01	4.03E+01	4.03E+01	4.03E+01
np238	4.64E-15	1.82E-07	1.82E-07	1.82E-07	1.82E-07	4.36E-15
np239	1.61E-13	5.43E-06	5.44E-06	5.44E-06	5.44E-06	1.57E-13
np240m	2.78E-36	2.87E-36	2.97E-36	3.07E-36	3.17E-36	3.17E-36
np240	3.26E-38	1.37E-16	1.37E-16	1.37E-16	1.37E-16	3.66E-38
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	3.37E-11	1.38E-10	1.38E-10	1.38E-10	1.38E-10	3.22E-11
pu237	3.58E-29	3.12E-14	3.11E-14	3.09E-14	3.08E-14	3.17E-29
pu238	2.62E-03	2.75E-03	2.75E-03	2.75E-03	2.75E-03	2.61E-03
pu239	2.65E+01	2.63E+01	2.62E+01	2.60E+01	2.59E+01	2.59E+01
pu240	2.98E-01	2.93E-01	2.89E-01	2.85E-01	2.81E-01	2.81E-01
pu241	1.08E-05	1.46E-05	1.44E-05	1.42E-05	1.40E-05	1.01E-05
pu242	4.83E-05	4.83E-05	4.83E-05	4.84E-05	4.84E-05	4.84E-05
pu243	1.56E-29	1.25E-14	1.25E-14	1.25E-14	1.25E-14	1.57E-29
pu244	1.62E-23	1.68E-23	1.73E-23	1.79E-23	1.85E-23	1.85E-23
pu245	.00E+00	8.55E-35	8.84E-35	9.14E-35	9.44E-35	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.52E-35	1.48E-20	1.47E-20	1.45E-20	1.43E-20	1.43E-35
am240	6.93E-33	6.79E-18	6.71E-18	6.62E-18	6.53E-18	6.52E-33
am241	4.47E-04	4.39E-04	4.33E-04	4.27E-04	4.21E-04	4.21E-04
am242m	2.51E-08	2.53E-08	2.50E-08	2.47E-08	2.44E-08	2.36E-08
am242	3.23E-13	2.01E-12	1.99E-12	1.96E-12	1.94E-12	3.04E-13
am243	1.84E-07	1.83E-07	1.82E-07	1.81E-07	1.80E-07	1.80E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.71E-31	1.70E-16	1.69E-16	1.68E-16	1.67E-16	1.67E-31
am245	2.98E-40	1.68E-35	1.73E-35	1.79E-35	1.85E-35	2.54E-40
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	1.45E-23	1.43E-23	1.41E-23	1.39E-23	.00E+00
cm242	6.53E-11	4.06E-10	4.02E-10	3.96E-10	3.91E-10	6.15E-11
cm243	1.00E-15	1.15E-15	1.13E-15	1.12E-15	1.11E-15	9.38E-16
cm244	2.09E-12	2.66E-12	2.65E-12	2.63E-12	2.62E-12	2.02E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 249
power= 4.890E-04mw, burnup=2.5470E+04mwd, flux= 2.96E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge *******	d *******	d *******	d *******	d *******	d
cm245	7.87E-15	7.67E-15	7.48E-15	7.30E-15	7.13E-15	7.13E-15
cm246	5.89E-17	5.71E-17	5.54E-17	5.37E-17	5.21E-17	5.21E-17
cm247	8.87E-20	8.92E-20	8.96E-20	9.01E-20	9.05E-20	9.05E-20
cm248	4.70E-22	4.78E-22	4.86E-22	4.94E-22	5.02E-22	5.02E-22
cm249	.00E+00	1.84E-33	1.87E-33	1.91E-33	1.94E-33	.00E+00
cm250	1.82E-37	1.84E-37	1.85E-37	1.87E-37	1.88E-37	1.88E-37
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.96E+07	2.96E+07	2.96E+07	2.96E+07	2.96E-08

0 1q array has 20 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 3q array has 1 entries.
0 4q array has 1 entries.
0 54q array has 12 entries.
1library information...

cross-section data taken from position number 28 of library on unit 33.

```
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *      data from the light element, actinide, and fission product libraries    *
          *        decay data, including gamma and total energy, are from endf/b-vi      *
          *                                                                              *
          *      neutron flux spectrum factors and cross sections were produced from     *
          *     the "presas2" case updating all nuclides on the scale "burnup" library   *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *        see information above this box (if present) for later updates         *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                 8/29/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
                        879    number of fission product nuclides
0                      7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                  page  250
          power=    .00mw, burnup=  25916.mwd, flux= 2.96E+07n/cm**2-sec
0                                    basis =
0     (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                     initial      ******* d      ******* d      ******* d      ******* d      ******* d
      productions   1.278555E+06   1.277911E+06   1.277274E+06   1.276642E+06   1.276016E+06   1.276007E+06
      absorptions   1.043883E+06   1.043584E+06   1.043289E+06   1.042996E+06   1.042707E+06   1.042701E+06
      k infinity    1.224807E+00   1.224541E+00   1.224276E+00   1.224014E+00   1.223754E+00   1.223751E+00
0                     initial      ******* d      ******* d      ******* d      ******* d      ******* d
      actinide
      absorptions   1.023805E+06   1.023469E+06   1.023136E+06   1.022807E+06   1.022481E+06   1.022475E+06
      non-actinide
      abs. fracs.   1.923376E-02   1.927501E-02   1.931602E-02   1.935685E-02   1.939768E-02   1.939726E-02
1     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products         page  251
0                              fraction of total absorption rate
```

power= .00mw, burnup= 25916.mwd, flux= 2.96E+07n/cm**2-sec

0	initial	******* d	******* d	******* d	******* d	******* d
sm149	5.43E-03	5.43E-03	5.43E-03	5.43E-03	5.43E-03	5.43E-03
nd143	2.47E-03	2.49E-03	2.50E-03	2.51E-03	2.52E-03	2.52E-03
eu151	2.03E-03	2.03E-03	2.03E-03	2.04E-03	2.04E-03	2.04E-03
rh103	1.21E-03	1.21E-03	1.22E-03	1.22E-03	1.23E-03	1.23E-03
xe131	8.04E-04	8.07E-04	8.11E-04	8.15E-04	8.18E-04	8.18E-04
cs133	6.27E-04	6.30E-04	6.33E-04	6.36E-04	6.39E-04	6.39E-04
sm147	4.59E-04	4.61E-04	4.63E-04	4.65E-04	4.67E-04	4.67E-04
tc 99	4.04E-04	4.05E-04	4.06E-04	4.07E-04	4.09E-04	4.09E-04
nd145	3.54E-04	3.56E-04	3.57E-04	3.59E-04	3.61E-04	3.61E-04
sm152	2.84E-04	2.86E-04	2.87E-04	2.89E-04	2.90E-04	2.90E-04
mo 95	2.46E-04	2.47E-04	2.48E-04	2.49E-04	2.50E-04	2.50E-04
gd155	2.24E-04	2.24E-04	2.24E-04	2.23E-04	2.23E-04	2.23E-04
sm150	1.88E-04	1.89E-04	1.90E-04	1.91E-04	1.92E-04	1.92E-04
kr 83	1.51E-04	1.52E-04	1.52E-04	1.53E-04	1.54E-04	1.54E-04
cs135	1.42E-04	1.43E-04	1.43E-04	1.44E-04	1.44E-04	1.44E-04
eu153	1.17E-04	1.17E-04	1.18E-04	1.18E-04	1.19E-04	1.19E-04
ru101	1.10E-04	1.11E-04	1.11E-04	1.12E-04	1.12E-04	1.12E-04
pr141	1.07E-04	1.07E-04	1.08E-04	1.08E-04	1.09E-04	1.09E-04
cd113	1.02E-04	1.02E-04	1.02E-04	1.02E-04	1.02E-04	1.02E-04
la139	8.72E-05	8.76E-05	8.80E-05	8.84E-05	8.88E-05	8.88E-05
gd157	5.79E-05	5.78E-05	5.77E-05	5.75E-05	5.74E-05	5.74E-05
ag109	4.60E-05	4.62E-05	4.64E-05	4.66E-05	4.69E-05	4.69E-05
pd105	4.49E-05	4.51E-05	4.54E-05	4.56E-05	4.58E-05	4.58E-05
ba137	4.23E-05	4.25E-05	4.27E-05	4.29E-05	4.31E-05	4.31E-05
zr 93	3.38E-05	3.39E-05	3.41E-05	3.42E-05	3.44E-05	3.44E-05
i129	2.87E-05	2.88E-05	2.89E-05	2.91E-05	2.92E-05	2.92E-05
nd144	2.72E-05	2.73E-05	2.75E-05	2.76E-05	2.77E-05	2.77E-05
gd152	2.51E-05	2.52E-05	2.54E-05	2.56E-05	2.58E-05	2.58E-05
mo 97	1.98E-05	1.99E-05	2.00E-05	2.01E-05	2.02E-05	2.02E-05
pd108	1.10E-05	1.11E-05	1.11E-05	1.12E-05	1.12E-05	1.12E-05
ru 99	8.97E-06	9.10E-06	9.24E-06	9.37E-06	9.50E-06	9.51E-06
zr 91	9.08E-06	9.13E-06	9.17E-06	9.21E-06	9.25E-06	9.25E-06
y 89	8.69E-06	8.73E-06	8.77E-06	8.81E-06	8.85E-06	8.85E-06
ru102	8.31E-06	8.35E-06	8.39E-06	8.43E-06	8.47E-06	8.47E-06
ce142	7.28E-06	7.31E-06	7.34E-06	7.38E-06	7.41E-06	7.41E-06
nd148	6.99E-06	7.03E-06	7.06E-06	7.09E-06	7.13E-06	7.13E-06
sm151	6.61E-06	6.97E-06	6.97E-06	6.98E-06	6.98E-06	6.61E-06
nd146	5.92E-06	5.94E-06	5.97E-06	6.00E-06	6.03E-06	6.03E-06
pd107	5.56E-06	5.58E-06	5.61E-06	5.64E-06	5.67E-06	5.67E-06
in115	5.18E-06	5.20E-06	5.22E-06	5.25E-06	5.27E-06	5.27E-06
ba138	5.03E-06	5.06E-06	5.08E-06	5.10E-06	5.13E-06	5.13E-06
ce140	4.71E-06	4.73E-06	4.76E-06	4.78E-06	4.80E-06	4.80E-06
xe132	4.33E-06	4.35E-06	4.37E-06	4.39E-06	4.41E-06	4.41E-06
mo 98	2.87E-06	2.89E-06	2.90E-06	2.91E-06	2.93E-06	2.93E-06
mo100	2.81E-06	2.82E-06	2.84E-06	2.85E-06	2.86E-06	2.86E-06
xe134	2.78E-06	2.80E-06	2.81E-06	2.82E-06	2.84E-06	2.84E-06
zr 92	2.20E-06	2.21E-06	2.22E-06	2.23E-06	2.24E-06	2.24E-06
i127	2.10E-06	2.11E-06	2.12E-06	2.13E-06	2.14E-06	2.14E-06
ru104	1.92E-06	1.93E-06	1.94E-06	1.95E-06	1.96E-06	1.96E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 252

0 fraction of total absorption rate

power= .00mw, burnup= 25916.mwd, flux= 2.96E+07n/cm**2-sec

0	initial	******* d	******* d	******* d	******* d	******* d
zr 96	1.71E-06	1.72E-06	1.73E-06	1.74E-06	1.75E-06	1.75E-06
nd150	1.59E-06	1.59E-06	1.60E-06	1.61E-06	1.61E-06	1.61E-06
xe136	1.51E-06	1.52E-06	1.52E-06	1.53E-06	1.54E-06	1.54E-06

gd154	1.30E-06	1.31E-06	1.33E-06	1.34E-06	1.35E-06	1.35E-06
cd111	1.25E-06	1.25E-06	1.26E-06	1.27E-06	1.27E-06	1.27E-06
br 81	1.11E-06	1.12E-06	1.12E-06	1.13E-06	1.13E-06	1.13E-06
rb 85	1.06E-06	1.07E-06	1.07E-06	1.08E-06	1.08E-06	1.08E-06
ba135	9.33E-07	9.48E-07	9.62E-07	9.77E-07	9.92E-07	9.92E-07
zr 94	9.28E-07	9.32E-07	9.37E-07	9.41E-07	9.45E-07	9.45E-07
zr 90	8.57E-07	8.61E-07	8.64E-07	8.68E-07	8.72E-07	8.72E-07
sm154	7.53E-07	7.56E-07	7.60E-07	7.63E-07	7.67E-07	7.67E-07
te130	6.98E-07	7.01E-07	7.04E-07	7.08E-07	7.11E-07	7.11E-07
rb 87	6.12E-07	6.15E-07	6.17E-07	6.20E-07	6.23E-07	6.23E-07
pd106	4.64E-07	4.66E-07	4.68E-07	4.71E-07	4.73E-07	4.73E-07
se 77	4.50E-07	4.52E-07	4.54E-07	4.56E-07	4.58E-07	4.58E-07
gd156	4.44E-07	4.47E-07	4.49E-07	4.51E-07	4.54E-07	4.54E-07
ru100	3.44E-07	3.47E-07	3.50E-07	3.53E-07	3.56E-07	3.56E-07
kr 84	2.92E-07	2.93E-07	2.94E-07	2.96E-07	2.97E-07	2.97E-07
dy161	2.75E-07	2.76E-07	2.77E-07	2.79E-07	2.80E-07	2.80E-07
nd142	2.56E-07	2.58E-07	2.61E-07	2.63E-07	2.66E-07	2.66E-07
ba134	2.44E-07	2.46E-07	2.48E-07	2.50E-07	2.52E-07	2.53E-07
sb121	2.39E-07	2.41E-07	2.42E-07	2.43E-07	2.44E-07	2.44E-07
sm148	2.21E-07	2.23E-07	2.25E-07	2.27E-07	2.29E-07	2.29E-07
se 79	2.15E-07	2.16E-07	2.17E-07	2.18E-07	2.18E-07	2.18E-07
sb123	1.93E-07	1.94E-07	1.95E-07	1.96E-07	1.97E-07	1.97E-07
pd104	1.67E-07	1.68E-07	1.70E-07	1.71E-07	1.73E-07	1.73E-07
kr 86	1.63E-07	1.63E-07	1.64E-07	1.65E-07	1.66E-07	1.66E-07
te128	1.58E-07	1.58E-07	1.59E-07	1.60E-07	1.61E-07	1.61E-07
nb 93	1.48E-07	1.50E-07	1.53E-07	1.55E-07	1.57E-07	1.57E-07
tb159	1.18E-07	1.19E-07	1.20E-07	1.20E-07	1.21E-07	1.21E-07
se 80	1.08E-07	1.08E-07	1.09E-07	1.09E-07	1.10E-07	1.10E-07
te125	1.08E-07	1.08E-07	1.09E-07	1.09E-07	1.10E-07	1.10E-07
gd158	9.35E-08	9.39E-08	9.44E-08	9.49E-08	9.53E-08	9.53E-08
cd112	8.39E-08	8.43E-08	8.47E-08	8.51E-08	8.55E-08	8.55E-08
ag107	7.52E-08	7.65E-08	7.78E-08	7.90E-08	8.03E-08	8.03E-08
br 79	7.30E-08	7.41E-08	7.52E-08	7.63E-08	7.74E-08	7.75E-08
dy162	6.49E-08	6.53E-08	6.57E-08	6.60E-08	6.64E-08	6.64E-08
cd110	6.34E-08	6.41E-08	6.47E-08	6.54E-08	6.61E-08	6.61E-08
dy164	6.10E-08	6.13E-08	6.15E-08	6.18E-08	6.20E-08	6.20E-08
sn117	5.88E-08	5.91E-08	5.94E-08	5.97E-08	6.00E-08	6.00E-08
mo 96	5.52E-08	5.57E-08	5.62E-08	5.67E-08	5.72E-08	5.72E-08
li 6	5.49E-08	5.51E-08	5.54E-08	5.56E-08	5.58E-08	5.58E-08
cd114	5.01E-08	5.03E-08	5.06E-08	5.08E-08	5.11E-08	5.11E-08
xe129	4.51E-08	4.58E-08	4.66E-08	4.73E-08	4.80E-08	4.80E-08
eu152	4.65E-08	6.63E-08	6.65E-08	6.66E-08	6.68E-08	4.64E-08
sn119	4.47E-08	4.49E-08	4.51E-08	4.53E-08	4.56E-08	4.56E-08
pd110	4.16E-08	4.18E-08	4.20E-08	4.22E-08	4.24E-08	4.24E-08
sn115	4.09E-08	4.11E-08	4.13E-08	4.15E-08	4.17E-08	4.17E-08
sr 88	2.98E-08	3.00E-08	3.01E-08	3.02E-08	3.04E-08	3.04E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 253
0 fraction of total absorption rate
power= .00mw, burnup= 25916.mwd, flux= 2.96E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

xe130	2.70E-08	2.72E-08	2.74E-08	2.77E-08	2.79E-08	2.79E-08
te126	2.39E-08	2.43E-08	2.46E-08	2.50E-08	2.53E-08	2.53E-08
ba136	2.23E-08	2.25E-08	2.26E-08	2.28E-08	2.30E-08	2.30E-08
se 82	2.05E-08	2.06E-08	2.07E-08	2.08E-08	2.09E-08	2.09E-08
dy163	1.62E-08	1.63E-08	1.64E-08	1.65E-08	1.66E-08	1.66E-08
kr 82	1.61E-08	1.62E-08	1.63E-08	1.64E-08	1.65E-08	1.65E-08
sn126	1.63E-08	1.63E-08	1.64E-08	1.64E-08	1.64E-08	1.64E-08
se 78	1.61E-08	1.62E-08	1.63E-08	1.63E-08	1.64E-08	1.64E-08
sn124	1.41E-08	1.42E-08	1.43E-08	1.43E-08	1.44E-08	1.44E-08

as 75	9.45E-09	9.50E-09	9.54E-09	9.59E-09	9.63E-09	9.63E-09
in113	8.14E-09	8.18E-09	8.22E-09	8.26E-09	8.30E-09	8.30E-09
eu155	8.12E-09	2.21E-08	2.21E-08	2.20E-08	2.20E-08	7.80E-09
sn118	5.69E-09	5.72E-09	5.74E-09	5.77E-09	5.80E-09	5.80E-09
pm147	5.62E-09	3.31E-08	3.31E-08	3.31E-08	3.31E-08	5.26E-09
sn122	4.92E-09	4.94E-09	4.97E-09	4.99E-09	5.01E-09	5.01E-09
cd116	4.78E-09	4.81E-09	4.83E-09	4.85E-09	4.87E-09	4.87E-09
sn120	3.61E-09	3.63E-09	3.65E-09	3.67E-09	3.68E-09	3.68E-09
eu154	3.52E-09	6.10E-09	6.13E-09	6.17E-09	6.20E-09	3.52E-09
ge 73	2.72E-09	2.74E-09	2.75E-09	2.76E-09	2.77E-09	2.77E-09
dy160	1.69E-09	1.71E-09	1.72E-09	1.74E-09	1.76E-09	1.76E-09
sr 90	1.72E-09	2.03E-09	2.03E-09	2.03E-09	2.03E-09	1.71E-09
ho165	1.64E-09	1.66E-09	1.67E-09	1.68E-09	1.69E-09	1.69E-09
gd160	1.33E-09	1.33E-09	1.34E-09	1.35E-09	1.35E-09	1.35E-09
xe128	9.81E-10	9.90E-10	9.99E-10	1.01E-09	1.02E-09	1.02E-09
ge 76	9.20E-10	9.24E-10	9.29E-10	9.33E-10	9.37E-10	9.37E-10
sr 86	4.56E-10	4.60E-10	4.64E-10	4.68E-10	4.72E-10	4.72E-10
cs137	3.95E-10	4.62E-10	4.62E-10	4.62E-10	4.63E-10	3.93E-10
sn116	3.69E-10	3.73E-10	3.76E-10	3.80E-10	3.83E-10	3.83E-10
te124	3.18E-10	3.20E-10	3.22E-10	3.24E-10	3.27E-10	3.27E-10
nb 94	1.68E-10	1.70E-10	1.71E-10	1.73E-10	1.75E-10	1.75E-10
te122	1.56E-10	1.57E-10	1.59E-10	1.60E-10	1.62E-10	1.62E-10
sr 87	1.53E-10	1.54E-10	1.55E-10	1.56E-10	1.57E-10	1.57E-10
se 76	1.26E-10	1.27E-10	1.28E-10	1.29E-10	1.30E-10	1.30E-10
kr 80	7.53E-11	7.66E-11	7.79E-11	7.92E-11	8.06E-11	8.06E-11
er166	7.65E-11	7.69E-11	7.74E-11	7.78E-11	7.83E-11	7.83E-11
cs134	5.98E-11	5.83E-10	5.85E-10	5.88E-10	5.91E-10	5.60E-11
ge 74	5.45E-11	5.47E-11	5.50E-11	5.52E-11	5.55E-11	5.55E-11
kr 85	4.41E-11	6.83E-11	6.84E-11	6.84E-11	6.84E-11	4.35E-11
ge 72	4.04E-11	4.06E-11	4.08E-11	4.10E-11	4.12E-11	4.12E-11
er167	9.93E-12	1.00E-11	1.01E-11	1.03E-11	1.04E-11	1.04E-11
te123	8.20E-12	8.31E-12	8.42E-12	8.53E-12	8.65E-12	8.65E-12
cd108	5.65E-12	5.76E-12	5.87E-12	5.98E-12	6.10E-12	6.10E-12
y 90	1.64E-12	1.93E-12	1.94E-12	1.94E-12	1.94E-12	1.63E-12
sb125	3.85E-13	2.13E-12	2.13E-12	2.13E-12	2.13E-12	3.60E-13
ce144	1.79E-13	7.23E-11	7.24E-11	7.24E-11	7.24E-11	1.43E-13
be 9	1.15E-13	1.15E-13	1.16E-13	1.16E-13	1.17E-13	1.17E-13
sn114	9.90E-14	9.99E-14	1.01E-13	1.02E-13	1.03E-13	1.03E-13
li 7	4.77E-14	4.79E-14	4.81E-14	4.84E-14	4.86E-14	4.86E-14
ru106	4.64E-14	4.63E-12	4.62E-12	4.61E-12	4.61E-12	3.88E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 254

0 fraction of total absorption rate

power= .00mw, burnup= 25916.mwd, flux= 2.96E+07n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

sb126	1.87E-14	1.94E-14	1.95E-14	1.95E-14	1.95E-14	1.88E-14
cd109	6.81E-19	2.82E-17	2.87E-17	2.93E-17	2.99E-17	6.55E-19
te127m	1.64E-19	1.08E-12	1.08E-12	1.08E-12	1.08E-12	8.19E-20

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 255

power= 4.890E-04mw, burnup=2.5916E+04mwd, flux= 2.96E+07n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
h 1	1.52E-03	1.52E-03	1.53E-03	1.54E-03	1.54E-03	1.54E-03
h 2	4.54E-06	4.56E-06	4.58E-06	4.60E-06	4.62E-06	4.62E-06
h 3	5.14E-12	7.52E-12	7.53E-12	7.54E-12	7.55E-12	5.09E-12
h 4	.00E+00	3.81E-36	3.82E-36	3.83E-36	3.83E-36	.00E+00
he 3	1.87E-08	1.87E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08
he 4	2.52E-04	2.53E-04	2.54E-04	2.55E-04	2.56E-04	2.56E-04

he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	3.03E-05	3.04E-05	3.05E-05	3.07E-05	3.08E-05	3.08E-05
ne 21	1.38E-08	1.39E-08	1.41E-08	1.42E-08	1.43E-08	1.43E-08
ne 22	1.99E-07	2.00E-07	2.01E-07	2.02E-07	2.03E-07	2.03E-07
ne 23	8.87E-31	8.86E-16	8.87E-16	8.87E-16	8.87E-16	8.87E-31
na 22	8.69E-13	5.26E-12	5.26E-12	5.26E-12	5.26E-12	8.13E-13
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.23E-24	3.23E-09	3.23E-09	3.23E-09	3.23E-09	3.23E-24
na 24m	5.31E-31	5.31E-16	5.31E-16	5.31E-16	5.31E-16	5.31E-31
na 25	5.00E-39	5.04E-24	5.09E-24	5.13E-24	5.18E-24	5.18E-39
mg 24	1.95E-01	1.96E-01	1.97E-01	1.98E-01	1.98E-01	1.98E-01
mg 25	1.43E-06	1.44E-06	1.46E-06	1.47E-06	1.48E-06	1.48E-06
mg 26	4.53E-06	4.55E-06	4.57E-06	4.59E-06	4.61E-06	4.61E-06
mg 27	2.65E-28	2.64E-13	2.64E-13	2.65E-13	2.65E-13	2.65E-28
mg 28	.00E+00	6.73E-26	6.73E-26	6.74E-26	6.74E-26	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.40E-26	2.39E-11	2.39E-11	2.40E-11	2.40E-11	2.40E-26
al 29	4.08E-37	4.11E-22	4.15E-22	4.19E-22	4.23E-22	4.23E-37
al 30	.00E+00	1.35E-31	1.37E-31	1.39E-31	1.41E-31	.00E+00
si 28	5.68E-01	5.70E-01	5.73E-01	5.75E-01	5.78E-01	5.78E-01
si 29	1.30E-05	1.32E-05	1.33E-05	1.34E-05	1.35E-05	1.35E-05
si 30	3.20E-10	3.24E-10	3.28E-10	3.32E-10	3.37E-10	3.37E-10
si 31	2.86E-38	2.90E-23	2.94E-23	2.98E-23	3.02E-23	3.02E-38
si 32	6.09E-30	6.33E-30	6.44E-30	6.53E-30	6.62E-30	6.43E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.96E+07	2.96E+07	2.97E+07	2.97E+07	2.97E-08

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 256
power= 4.890E-04mw, burnup=2.5916E+04mwd, flux= 2.96E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
he 4	6.06E+01	6.12E+01	6.18E+01	6.24E+01	6.30E+01	6.30E+01
pb206	4.45E-01	4.53E-01	4.61E-01	4.70E-01	4.78E-01	4.78E-01
pb207	2.59E-02	2.63E-02	2.67E-02	2.71E-02	2.75E-02	2.75E-02
pb208	8.82E-04	8.90E-04	8.97E-04	9.05E-04	9.13E-04	9.13E-04
pb209	1.46E-09	1.47E-09	1.49E-09	1.50E-09	1.51E-09	1.51E-09
pb210	4.06E-04	4.09E-04	4.12E-04	4.15E-04	4.18E-04	4.18E-04
pb211	6.25E-11	6.26E-11	6.29E-11	6.31E-11	6.34E-11	6.35E-11
pb212	2.07E-11	2.17E-11	2.18E-11	2.19E-11	2.20E-11	2.10E-11
pb214	9.28E-10	9.34E-10	9.41E-10	9.48E-10	9.54E-10	9.54E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	8.43E-02	8.60E-02	8.77E-02	8.94E-02	9.12E-02	9.12E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.50E-07	2.52E-07	2.53E-07	2.55E-07	2.57E-07	2.57E-07
bi211	3.71E-12	3.71E-12	3.73E-12	3.74E-12	3.76E-12	3.76E-12
bi212	1.97E-12	2.06E-12	2.07E-12	2.08E-12	2.08E-12	2.00E-12
bi213	3.41E-10	3.44E-10	3.47E-10	3.51E-10	3.54E-10	3.54E-10
bi214	6.89E-10	6.94E-10	6.99E-10	7.04E-10	7.09E-10	7.09E-10
po210	6.90E-06	6.95E-06	7.00E-06	7.05E-06	7.10E-06	7.10E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	4.09E-17	4.10E-17	4.12E-17	4.14E-17	4.15E-17	4.16E-17
po212	1.03E-22	1.08E-22	1.09E-22	1.09E-22	1.10E-22	1.05E-22
po213	5.12E-19	5.17E-19	5.22E-19	5.27E-19	5.32E-19	5.32E-19
po214	9.48E-17	9.54E-17	9.61E-17	9.68E-17	9.75E-17	9.75E-17
po215	5.14E-17	5.15E-17	5.17E-17	5.19E-17	5.21E-17	5.22E-17
po216	7.84E-17	8.21E-17	8.25E-17	8.28E-17	8.32E-17	7.96E-17
po218	1.07E-10	1.08E-10	1.09E-10	1.10E-10	1.10E-10	1.10E-10
rn218	3.64E-44	3.84E-29	3.86E-29	3.88E-29	3.90E-29	3.64E-44
rn219	1.14E-13	1.15E-13	1.15E-13	1.15E-13	1.16E-13	1.16E-13

rn220	3.01E-14	3.15E-14	3.16E-14	3.18E-14	3.19E-14	3.05E-14
rn222	1.91E-07	1.92E-07	1.93E-07	1.95E-07	1.96E-07	1.96E-07
ra222	3.89E-41	4.17E-26	4.19E-26	4.21E-26	4.23E-26	3.95E-41
ra223	2.85E-08	2.86E-08	2.87E-08	2.88E-08	2.89E-08	2.90E-08
ra224	1.71E-10	1.79E-10	1.80E-10	1.81E-10	1.81E-10	1.74E-10
ra225	1.59E-07	1.61E-07	1.62E-07	1.64E-07	1.65E-07	1.65E-07
ra226	2.91E-02	2.93E-02	2.96E-02	2.98E-02	3.00E-02	3.00E-02
ra228	1.52E-10	1.54E-10	1.55E-10	1.57E-10	1.58E-10	1.58E-10
ac225	1.08E-07	1.09E-07	1.10E-07	1.11E-07	1.12E-07	1.12E-07
ac227	1.98E-05	1.99E-05	1.99E-05	2.00E-05	2.01E-05	2.01E-05
ac228	1.86E-14	1.88E-14	1.90E-14	1.91E-14	1.93E-14	1.93E-14
th226	1.90E-39	2.03E-24	2.04E-24	2.05E-24	2.06E-24	1.93E-39
th227	4.60E-08	4.61E-08	4.63E-08	4.65E-08	4.67E-08	4.67E-08
th228	3.26E-08	3.42E-08	3.43E-08	3.45E-08	3.46E-08	3.31E-08
th229	3.10E-02	3.13E-02	3.16E-02	3.19E-02	3.22E-02	3.22E-02
th230	1.41E+00	1.42E+00	1.43E+00	1.44E+00	1.45E+00	1.45E+00
th231	2.71E-09	3.50E-09	3.50E-09	3.51E-09	3.51E-09	2.71E-09
th232	3.72E-01	3.76E-01	3.80E-01	3.83E-01	3.87E-01	3.87E-01
th233	4.23E-28	4.27E-13	4.31E-13	4.35E-13	4.40E-13	4.40E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	2.98E-02	2.99E-02	3.00E-02	3.01E-02	3.02E-02	3.02E-02
pa232	6.36E-26	6.39E-11	6.41E-11	6.44E-11	6.47E-11	6.47E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 257
power= 4.890E-04mw, burnup=2.5916E+04mwd, flux= 2.96E+07n/cm**2-sec

0

nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.39E-06	1.39E-06	1.39E-06	1.39E-06	1.39E-06	1.39E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.84E-36	1.97E-21	1.98E-21	1.99E-21	2.00E-21	1.87E-36
u231	6.80E-32	6.84E-17	6.90E-17	6.95E-17	7.01E-17	7.01E-32
u232	1.16E-06	1.25E-06	1.25E-06	1.26E-06	1.26E-06	1.18E-06
u233	7.35E-01	7.41E-01	7.47E-01	7.52E-01	7.58E-01	7.58E-01
u234	1.02E+01	1.02E+01	1.02E+01	1.02E+01	1.02E+01	1.02E+01
u235	6.54E+02	6.54E+02	6.54E+02	6.54E+02	6.54E+02	6.54E+02
u236	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02
u237	3.11E-13	4.16E-07	4.16E-07	4.17E-07	4.17E-07	2.92E-13
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.77E-23	3.76E-08	3.77E-08	3.77E-08	3.77E-08	3.77E-23
u240	3.71E-34	3.83E-34	3.95E-34	4.08E-34	4.20E-34	4.20E-34
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	1.36E-14	1.02E-12	1.02E-12	1.02E-12	1.02E-12	1.16E-14
np236m	2.43E-28	2.43E-13	2.43E-13	2.43E-13	2.43E-13	2.43E-28
np236	2.63E-06	2.64E-06	2.64E-06	2.64E-06	2.65E-06	2.65E-06
np237	4.03E+01	4.03E+01	4.03E+01	4.03E+01	4.03E+01	4.03E+01
np238	4.36E-15	1.82E-07	1.82E-07	1.82E-07	1.82E-07	4.14E-15
np239	1.57E-13	5.44E-06	5.44E-06	5.44E-06	5.45E-06	1.54E-13
np240m	3.17E-36	3.27E-36	3.37E-36	3.48E-36	3.58E-36	3.59E-36
np240	3.66E-38	1.37E-16	1.37E-16	1.37E-16	1.37E-16	4.08E-38
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	3.22E-11	1.38E-10	1.38E-10	1.38E-10	1.38E-10	3.06E-11
pu237	3.17E-29	3.06E-14	3.05E-14	3.03E-14	3.02E-14	3.03E-29
pu238	2.61E-03	2.75E-03	2.75E-03	2.75E-03	2.76E-03	2.61E-03
pu239	2.59E+01	2.57E+01	2.56E+01	2.54E+01	2.53E+01	2.53E+01
pu240	2.81E-01	2.77E-01	2.73E-01	2.70E-01	2.67E-01	2.66E-01
pu241	1.01E-05	1.38E-05	1.36E-05	1.35E-05	1.33E-05	9.48E-06
pu242	4.84E-05	4.84E-05	4.84E-05	4.84E-05	4.85E-05	4.85E-05

```
      pu243   1.57E-29  1.25E-14  1.25E-14  1.25E-14  1.25E-14  1.58E-29
      pu244   1.85E-23  1.91E-23  1.97E-23  2.03E-23  2.09E-23  2.09E-23
      pu245    .00E+00  9.75E-35  1.01E-34  1.04E-34  1.07E-34   .00E+00
      pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am239   1.43E-35  1.40E-20  1.39E-20  1.37E-20  1.36E-20  1.35E-35
      am240   6.52E-33  6.41E-18  6.34E-18  6.27E-18  6.20E-18  6.19E-33
      am241   4.21E-04  4.14E-04  4.09E-04  4.05E-04  4.00E-04  3.99E-04
      am242m  2.36E-08  2.39E-08  2.37E-08  2.34E-08  2.32E-08  2.24E-08
      am242   3.04E-13  1.90E-12  1.88E-12  1.86E-12  1.84E-12  2.89E-13
      am243   1.80E-07  1.79E-07  1.78E-07  1.77E-07  1.76E-07  1.76E-07
      am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      am244   1.67E-31  1.66E-16  1.65E-16  1.64E-16  1.64E-16  1.63E-31
      am245   2.54E-40  1.91E-35  1.97E-35  2.03E-35  2.10E-35  2.24E-40
      am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
      cm241    .00E+00  1.37E-23  1.35E-23  1.34E-23  1.32E-23   .00E+00
      cm242   6.15E-11  3.84E-10  3.80E-10  3.76E-10  3.72E-10  5.83E-11
      cm243   9.38E-16  1.09E-15  1.07E-15  1.06E-15  1.05E-15  8.87E-16
      cm244   2.02E-12  2.60E-12  2.59E-12  2.58E-12  2.57E-12  1.96E-12
1
      sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides         page  258
        power= 4.890E-04mw, burnup=2.5916E+04mwd, flux= 2.96E+07n/cm**2-sec
0                                       nuclide concentrations, gram atoms
                                        basis = single reactor assembly
             charge ******* d ******* d ******* d ******* d ******* d
      cm245   7.13E-15  6.96E-15  6.80E-15  6.66E-15  6.51E-15  6.51E-15
      cm246   5.21E-17  5.06E-17  4.91E-17  4.77E-17  4.64E-17  4.63E-17
      cm247   9.05E-20  9.09E-20  9.12E-20  9.16E-20  9.20E-20  9.20E-20
      cm248   5.02E-22  5.11E-22  5.19E-22  5.27E-22  5.35E-22  5.35E-22
      cm249    .00E+00  1.97E-33  2.00E-33  2.03E-33  2.07E-33   .00E+00
      cm250   1.88E-37  1.90E-37  1.91E-37  1.93E-37  1.95E-37  1.95E-37
      cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
    totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0     flux              2.96E+07  2.96E+07  2.97E+07  2.97E+07  2.97E-08
0         1q array has      20 entries.
0         3q array has       1 entries.
0         3q array has       1 entries.
0         3q array has       1 entries.
0         4q array has       1 entries.
0        54q array has      12 entries.
1library information...

          cross-section data taken from position number 29 of library on unit 33.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
```

```
         *        made from modified card-image origen-s libraries of scale 4.2        *
         *     data from the light element, actinide, and fission product libraries    *
         *       decay data, including gamma and total energy, are from endf/b-vi      *
         *                                                                             *
         *     neutron flux spectrum factors and cross sections were produced from     *
         *    the "presas2" case updating all nuclides on the scale "burnup" library   *
         *                                                                             *
         *                 fission product yields are from endf/b-v                    *
         *                                                                             *
         *             photon libraries use an 18-energy-group structure               *
         *            the photon data are from the master photon data base,            *
         *             produced to include bremsstrahlung from uo2 matrix              *
         *                                                                             *
         *       see information above this box (if present) for later updates         *
         *                                                                             *
         ******************************************************************************
         *                                                                             *
0        ******************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft33f001
0                8/29/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page  259
        power=    .00mw, burnup=  26363.mwd, flux= 2.97E+07n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.276652E+06   1.276031E+06   1.275415E+06   1.274805E+06   1.274199E+06   1.274190E+06
     absorptions   1.042930E+06   1.042643E+06   1.042360E+06   1.042079E+06   1.041801E+06   1.041795E+06
     k infinity    1.224102E+00   1.223842E+00   1.223584E+00   1.223328E+00   1.223074E+00   1.223072E+00
0                   initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   1.022700E+06   1.022376E+06   1.022056E+06   1.021739E+06   1.021425E+06   1.021419E+06
     non-actinide
     abs. fracs.   1.939762E-02   1.943815E-02   1.947886E-02   1.951891E-02   1.955897E-02   1.955867E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products        page  260
0                                 fraction of total absorption rate
        power=    .00mw, burnup=  26363.mwd, flux= 2.97E+07n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.43E-03  5.43E-03  5.43E-03  5.43E-03  5.43E-03  5.43E-03
     nd143     2.52E-03  2.53E-03  2.54E-03  2.55E-03  2.56E-03  2.56E-03
     eu151     2.04E-03  2.05E-03  2.05E-03  2.05E-03  2.06E-03  2.06E-03
     rh103     1.23E-03  1.23E-03  1.24E-03  1.24E-03  1.25E-03  1.25E-03
     xe131     8.18E-04  8.22E-04  8.25E-04  8.29E-04  8.33E-04  8.33E-04
     cs133     6.38E-04  6.41E-04  6.44E-04  6.47E-04  6.50E-04  6.50E-04
     sm147     4.67E-04  4.69E-04  4.71E-04  4.73E-04  4.75E-04  4.75E-04
     tc 99     4.09E-04  4.10E-04  4.11E-04  4.12E-04  4.14E-04  4.14E-04
     nd145     3.61E-04  3.62E-04  3.64E-04  3.66E-04  3.67E-04  3.67E-04
     sm152     2.90E-04  2.92E-04  2.93E-04  2.95E-04  2.96E-04  2.96E-04
     mo 95     2.50E-04  2.51E-04  2.52E-04  2.53E-04  2.55E-04  2.55E-04
     gd155     2.23E-04  2.23E-04  2.22E-04  2.22E-04  2.22E-04  2.22E-04
     sm150     1.92E-04  1.93E-04  1.94E-04  1.95E-04  1.96E-04  1.96E-04
     kr 83     1.54E-04  1.55E-04  1.55E-04  1.56E-04  1.57E-04  1.57E-04
     cs135     1.44E-04  1.45E-04  1.46E-04  1.46E-04  1.47E-04  1.47E-04
```

eu153	1.19E-04	1.20E-04	1.20E-04	1.21E-04	1.21E-04	1.21E-04
ru101	1.12E-04	1.13E-04	1.13E-04	1.14E-04	1.14E-04	1.14E-04
pr141	1.09E-04	1.09E-04	1.10E-04	1.10E-04	1.11E-04	1.11E-04
cd113	1.02E-04	1.02E-04	1.01E-04	1.01E-04	1.01E-04	1.01E-04
la139	8.89E-05	8.93E-05	8.97E-05	9.01E-05	9.05E-05	9.05E-05
gd157	5.74E-05	5.73E-05	5.72E-05	5.71E-05	5.69E-05	5.69E-05
ag109	4.69E-05	4.71E-05	4.73E-05	4.75E-05	4.77E-05	4.77E-05
pd105	4.58E-05	4.60E-05	4.62E-05	4.64E-05	4.66E-05	4.66E-05
ba137	4.31E-05	4.33E-05	4.35E-05	4.37E-05	4.39E-05	4.39E-05
zr 93	3.44E-05	3.45E-05	3.47E-05	3.48E-05	3.50E-05	3.50E-05
i129	2.92E-05	2.94E-05	2.95E-05	2.96E-05	2.98E-05	2.98E-05
nd144	2.77E-05	2.79E-05	2.80E-05	2.81E-05	2.83E-05	2.83E-05
gd152	2.58E-05	2.60E-05	2.62E-05	2.64E-05	2.66E-05	2.66E-05
mo 97	2.02E-05	2.03E-05	2.04E-05	2.04E-05	2.05E-05	2.05E-05
pd108	1.12E-05	1.13E-05	1.14E-05	1.14E-05	1.15E-05	1.15E-05
ru 99	9.50E-06	9.64E-06	9.77E-06	9.91E-06	1.00E-05	1.00E-05
zr 91	9.25E-06	9.30E-06	9.34E-06	9.38E-06	9.42E-06	9.42E-06
y 89	8.86E-06	8.90E-06	8.94E-06	8.98E-06	9.02E-06	9.02E-06
ru102	8.47E-06	8.51E-06	8.55E-06	8.59E-06	8.63E-06	8.63E-06
ce142	7.42E-06	7.45E-06	7.48E-06	7.52E-06	7.55E-06	7.55E-06
nd148	7.13E-06	7.16E-06	7.19E-06	7.22E-06	7.26E-06	7.26E-06
sm151	6.62E-06	6.98E-06	6.99E-06	6.99E-06	6.99E-06	6.61E-06
nd146	6.03E-06	6.06E-06	6.09E-06	6.11E-06	6.14E-06	6.14E-06
pd107	5.67E-06	5.69E-06	5.72E-06	5.75E-06	5.77E-06	5.77E-06
in115	5.27E-06	5.29E-06	5.32E-06	5.34E-06	5.36E-06	5.36E-06
ba138	5.13E-06	5.15E-06	5.17E-06	5.20E-06	5.22E-06	5.22E-06
ce140	4.80E-06	4.82E-06	4.85E-06	4.87E-06	4.89E-06	4.89E-06
xe132	4.41E-06	4.43E-06	4.45E-06	4.47E-06	4.49E-06	4.49E-06
mo 98	2.93E-06	2.94E-06	2.95E-06	2.97E-06	2.98E-06	2.98E-06
mo100	2.86E-06	2.88E-06	2.89E-06	2.90E-06	2.92E-06	2.92E-06
xe134	2.84E-06	2.85E-06	2.86E-06	2.87E-06	2.89E-06	2.89E-06
zr 92	2.24E-06	2.25E-06	2.26E-06	2.27E-06	2.28E-06	2.28E-06
i127	2.14E-06	2.15E-06	2.16E-06	2.17E-06	2.18E-06	2.18E-06
ru104	1.96E-06	1.97E-06	1.97E-06	1.98E-06	1.99E-06	1.99E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 261
0 fraction of total absorption rate
power= .00mw, burnup= 26363.mwd, flux= 2.97E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	1.74E-06	1.75E-06	1.76E-06	1.77E-06	1.78E-06	1.78E-06
nd150	1.61E-06	1.62E-06	1.63E-06	1.64E-06	1.64E-06	1.64E-06
xe136	1.54E-06	1.54E-06	1.55E-06	1.56E-06	1.57E-06	1.57E-06
gd154	1.35E-06	1.37E-06	1.38E-06	1.39E-06	1.40E-06	1.40E-06
cd111	1.27E-06	1.28E-06	1.28E-06	1.29E-06	1.30E-06	1.30E-06
br 81	1.13E-06	1.14E-06	1.14E-06	1.15E-06	1.15E-06	1.15E-06
rb 85	1.08E-06	1.09E-06	1.09E-06	1.10E-06	1.10E-06	1.10E-06
ba135	9.92E-07	1.01E-06	1.02E-06	1.04E-06	1.05E-06	1.05E-06
zr 94	9.45E-07	9.49E-07	9.54E-07	9.58E-07	9.62E-07	9.62E-07
zr 90	8.73E-07	8.77E-07	8.81E-07	8.85E-07	8.89E-07	8.89E-07
sm154	7.67E-07	7.71E-07	7.74E-07	7.78E-07	7.81E-07	7.81E-07
te130	7.11E-07	7.14E-07	7.18E-07	7.21E-07	7.24E-07	7.24E-07
rb 87	6.23E-07	6.26E-07	6.29E-07	6.32E-07	6.34E-07	6.34E-07
pd106	4.73E-07	4.75E-07	4.77E-07	4.79E-07	4.82E-07	4.82E-07
se 77	4.59E-07	4.61E-07	4.63E-07	4.65E-07	4.67E-07	4.67E-07
gd156	4.53E-07	4.56E-07	4.58E-07	4.60E-07	4.63E-07	4.63E-07
ru100	3.56E-07	3.59E-07	3.62E-07	3.65E-07	3.68E-07	3.68E-07
kr 84	2.97E-07	2.98E-07	3.00E-07	3.01E-07	3.03E-07	3.03E-07
dy161	2.80E-07	2.81E-07	2.83E-07	2.84E-07	2.85E-07	2.85E-07
nd142	2.66E-07	2.68E-07	2.70E-07	2.73E-07	2.75E-07	2.75E-07
ba134	2.53E-07	2.55E-07	2.57E-07	2.59E-07	2.62E-07	2.62E-07

sb121	2.44E-07	2.45E-07	2.46E-07	2.47E-07	2.48E-07	2.48E-07
sm148	2.29E-07	2.32E-07	2.34E-07	2.36E-07	2.38E-07	2.38E-07
se 79	2.19E-07	2.19E-07	2.20E-07	2.21E-07	2.22E-07	2.22E-07
sb123	1.97E-07	1.98E-07	1.99E-07	2.00E-07	2.01E-07	2.01E-07
pd104	1.73E-07	1.74E-07	1.76E-07	1.78E-07	1.79E-07	1.79E-07
kr 86	1.66E-07	1.66E-07	1.67E-07	1.68E-07	1.69E-07	1.69E-07
nb 93	1.57E-07	1.60E-07	1.62E-07	1.64E-07	1.67E-07	1.67E-07
te128	1.61E-07	1.61E-07	1.62E-07	1.63E-07	1.64E-07	1.64E-07
tb159	1.21E-07	1.21E-07	1.22E-07	1.22E-07	1.23E-07	1.23E-07
se 80	1.10E-07	1.10E-07	1.11E-07	1.11E-07	1.12E-07	1.12E-07
te125	1.10E-07	1.10E-07	1.11E-07	1.11E-07	1.12E-07	1.12E-07
gd158	9.53E-08	9.58E-08	9.63E-08	9.67E-08	9.72E-08	9.72E-08
cd112	8.56E-08	8.60E-08	8.64E-08	8.68E-08	8.72E-08	8.72E-08
ag107	8.04E-08	8.16E-08	8.29E-08	8.42E-08	8.56E-08	8.56E-08
br 79	7.75E-08	7.86E-08	7.97E-08	8.08E-08	8.20E-08	8.20E-08
cd110	6.61E-08	6.68E-08	6.75E-08	6.82E-08	6.89E-08	6.89E-08
dy162	6.64E-08	6.68E-08	6.71E-08	6.75E-08	6.79E-08	6.79E-08
dy164	6.20E-08	6.23E-08	6.25E-08	6.28E-08	6.30E-08	6.30E-08
sn117	6.00E-08	6.02E-08	6.05E-08	6.08E-08	6.11E-08	6.11E-08
mo 96	5.72E-08	5.77E-08	5.83E-08	5.88E-08	5.93E-08	5.93E-08
li 6	5.58E-08	5.61E-08	5.63E-08	5.65E-08	5.67E-08	5.67E-08
cd114	5.10E-08	5.13E-08	5.15E-08	5.18E-08	5.20E-08	5.20E-08
xe129	4.80E-08	4.87E-08	4.95E-08	5.02E-08	5.09E-08	5.09E-08
sn119	4.56E-08	4.58E-08	4.60E-08	4.62E-08	4.64E-08	4.64E-08
eu152	4.64E-08	6.69E-08	6.71E-08	6.72E-08	6.74E-08	4.62E-08
pd110	4.24E-08	4.26E-08	4.28E-08	4.30E-08	4.32E-08	4.32E-08
sn115	4.17E-08	4.19E-08	4.21E-08	4.23E-08	4.25E-08	4.25E-08
sr 88	3.04E-08	3.05E-08	3.07E-08	3.08E-08	3.09E-08	3.09E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 262
0 fraction of total absorption rate
power= .00mw, burnup= 26363.mwd, flux= 2.97E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

xe130	2.79E-08	2.82E-08	2.84E-08	2.86E-08	2.89E-08	2.89E-08
te126	2.53E-08	2.57E-08	2.60E-08	2.63E-08	2.67E-08	2.67E-08
ba136	2.30E-08	2.31E-08	2.33E-08	2.35E-08	2.36E-08	2.36E-08
se 82	2.09E-08	2.10E-08	2.11E-08	2.12E-08	2.13E-08	2.13E-08
kr 82	1.65E-08	1.66E-08	1.67E-08	1.68E-08	1.69E-08	1.69E-08
dy163	1.66E-08	1.66E-08	1.67E-08	1.68E-08	1.69E-08	1.69E-08
se 78	1.64E-08	1.65E-08	1.66E-08	1.66E-08	1.67E-08	1.67E-08
sn126	1.64E-08	1.65E-08	1.65E-08	1.65E-08	1.66E-08	1.66E-08
sn124	1.44E-08	1.45E-08	1.45E-08	1.46E-08	1.47E-08	1.47E-08
as 75	9.63E-09	9.68E-09	9.72E-09	9.76E-09	9.81E-09	9.81E-09
in113	8.30E-09	8.34E-09	8.37E-09	8.41E-09	8.45E-09	8.45E-09
eu155	7.80E-09	2.20E-08	2.20E-08	2.20E-08	2.20E-08	7.50E-09
sn118	5.79E-09	5.82E-09	5.85E-09	5.87E-09	5.90E-09	5.90E-09
sn122	5.02E-09	5.04E-09	5.06E-09	5.08E-09	5.11E-09	5.11E-09
cd116	4.87E-09	4.90E-09	4.92E-09	4.94E-09	4.96E-09	4.96E-09
pm147	5.26E-09	3.31E-08	3.32E-08	3.32E-08	3.32E-08	4.93E-09
sn120	3.68E-09	3.70E-09	3.72E-09	3.73E-09	3.75E-09	3.75E-09
eu154	3.52E-09	6.23E-09	6.27E-09	6.30E-09	6.34E-09	3.53E-09
ge 73	2.77E-09	2.79E-09	2.80E-09	2.81E-09	2.83E-09	2.83E-09
dy160	1.76E-09	1.77E-09	1.79E-09	1.81E-09	1.82E-09	1.82E-09
ho165	1.69E-09	1.70E-09	1.71E-09	1.73E-09	1.74E-09	1.74E-09
sr 90	1.71E-09	2.04E-09	2.04E-09	2.04E-09	2.04E-09	1.70E-09
gd160	1.35E-09	1.36E-09	1.37E-09	1.37E-09	1.38E-09	1.38E-09
xe128	1.02E-09	1.03E-09	1.04E-09	1.05E-09	1.06E-09	1.06E-09
ge 76	9.37E-10	9.42E-10	9.46E-10	9.50E-10	9.55E-10	9.55E-10
sr 86	4.72E-10	4.76E-10	4.80E-10	4.85E-10	4.89E-10	4.89E-10
sn116	3.83E-10	3.86E-10	3.90E-10	3.93E-10	3.97E-10	3.97E-10

cs137	3.93E-10	4.63E-10	4.63E-10	4.63E-10	4.63E-10	3.91E-10
te124	3.27E-10	3.29E-10	3.32E-10	3.34E-10	3.36E-10	3.36E-10
nb 94	1.75E-10	1.77E-10	1.78E-10	1.80E-10	1.82E-10	1.82E-10
te122	1.62E-10	1.63E-10	1.65E-10	1.66E-10	1.68E-10	1.68E-10
sr 87	1.57E-10	1.58E-10	1.59E-10	1.61E-10	1.62E-10	1.62E-10
se 76	1.31E-10	1.32E-10	1.33E-10	1.34E-10	1.35E-10	1.35E-10
kr 80	8.06E-11	8.20E-11	8.34E-11	8.48E-11	8.62E-11	8.62E-11
er166	7.83E-11	7.87E-11	7.91E-11	7.96E-11	8.00E-11	8.00E-11
ge 74	5.55E-11	5.58E-11	5.60E-11	5.63E-11	5.65E-11	5.65E-11
cs134	5.60E-11	5.94E-10	5.97E-10	6.00E-10	6.03E-10	5.25E-11
kr 85	4.35E-11	6.85E-11	6.85E-11	6.86E-11	6.86E-11	4.29E-11
ge 72	4.12E-11	4.14E-11	4.16E-11	4.18E-11	4.20E-11	4.20E-11
er167	1.04E-11	1.05E-11	1.06E-11	1.07E-11	1.08E-11	1.08E-11
te123	8.65E-12	8.76E-12	8.87E-12	8.99E-12	9.10E-12	9.10E-12
cd108	6.10E-12	6.22E-12	6.34E-12	6.46E-12	6.58E-12	6.58E-12
y 90	1.63E-12	1.94E-12	1.94E-12	1.94E-12	1.94E-12	1.62E-12
sb125	3.60E-13	2.13E-12	2.13E-12	2.13E-12	2.13E-12	3.37E-13
be 9	1.17E-13	1.17E-13	1.18E-13	1.18E-13	1.19E-13	1.19E-13
ce144	1.43E-13	7.25E-11	7.25E-11	7.25E-11	7.25E-11	1.15E-13
sn114	1.03E-13	1.04E-13	1.05E-13	1.06E-13	1.07E-13	1.07E-13
li 7	4.86E-14	4.88E-14	4.90E-14	4.93E-14	4.95E-14	4.95E-14
ru106	3.88E-14	4.60E-12	4.59E-12	4.59E-12	4.58E-12	3.26E-14

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 263
0 fraction of total absorption rate
power= .00mw, burnup= 26363.mwd, flux= 2.97E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sb126	1.88E-14	1.96E-14	1.96E-14	1.96E-14	1.97E-14	1.89E-14
cd109	6.54E-19	3.04E-17	3.10E-17	3.16E-17	3.22E-17	6.00E-19
te127m	8.17E-20	1.08E-12	1.08E-12	1.08E-12	1.08E-12	5.46E-20

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 264
power= 4.890E-04mw, burnup=2.6363E+04mwd, flux= 2.97E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d	
h 1	1.54E-03	1.55E-03	1.56E-03	1.56E-03	1.57E-03	1.57E-03
h 2	4.62E-06	4.64E-06	4.66E-06	4.68E-06	4.70E-06	4.70E-06
h 3	5.09E-12	7.56E-12	7.57E-12	7.58E-12	7.59E-12	5.04E-12
h 4	.00E+00	3.84E-36	3.84E-36	3.85E-36	3.86E-36	.00E+00
he 3	1.88E-08	1.89E-08	1.89E-08	1.89E-08	1.90E-08	1.90E-08
he 4	2.56E-04	2.57E-04	2.59E-04	2.60E-04	2.61E-04	2.61E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	3.08E-05	3.09E-05	3.11E-05	3.12E-05	3.13E-05	3.13E-05
ne 21	1.43E-08	1.44E-08	1.46E-08	1.47E-08	1.48E-08	1.48E-08
ne 22	2.03E-07	2.04E-07	2.05E-07	2.06E-07	2.06E-07	2.06E-07
ne 23	8.87E-31	8.86E-16	8.87E-16	8.87E-16	8.88E-16	8.88E-31
na 22	8.13E-13	5.26E-12	5.26E-12	5.26E-12	5.26E-12	7.61E-13
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.23E-24	3.23E-09	3.23E-09	3.23E-09	3.24E-09	3.24E-24
na 24m	5.31E-31	5.31E-16	5.31E-16	5.31E-16	5.32E-16	5.32E-31
na 25	5.18E-39	5.22E-24	5.26E-24	5.31E-24	5.36E-24	5.36E-39
mg 24	1.98E-01	1.99E-01	2.00E-01	2.01E-01	2.02E-01	2.02E-01
mg 25	1.48E-06	1.49E-06	1.51E-06	1.52E-06	1.53E-06	1.53E-06
mg 26	4.61E-06	4.63E-06	4.65E-06	4.67E-06	4.69E-06	4.69E-06
mg 27	2.65E-28	2.64E-13	2.65E-13	2.65E-13	2.65E-13	2.65E-28
mg 28	.00E+00	6.74E-26	6.75E-26	6.75E-26	6.76E-26	.00E+00
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.40E-26	2.40E-11	2.40E-11	2.40E-11	2.40E-11	2.40E-26
al 29	4.23E-37	4.26E-22	4.30E-22	4.34E-22	4.38E-22	4.38E-37

	al 30	.00E+00	1.43E-31	1.45E-31	1.46E-31	1.48E-31	.00E+00
	si 28	5.78E-01	5.80E-01	5.83E-01	5.85E-01	5.87E-01	5.87E-01
	si 29	1.35E-05	1.36E-05	1.37E-05	1.38E-05	1.40E-05	1.40E-05
	si 30	3.37E-10	3.41E-10	3.46E-10	3.50E-10	3.55E-10	3.55E-10
	si 31	3.02E-38	3.06E-23	3.10E-23	3.14E-23	3.18E-23	3.18E-38
	si 32	6.43E-30	6.70E-30	6.81E-30	6.90E-30	7.00E-30	6.79E-30
	totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0	flux		2.97E+07	2.97E+07	2.97E+07	2.97E+07	2.97E-08
1							

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 265

power= 4.890E-04mw, burnup=2.6363E+04mwd, flux= 2.97E+07n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	6.30E+01	6.36E+01	6.42E+01	6.47E+01	6.53E+01	6.53E+01
pb206	4.78E-01	4.86E-01	4.94E-01	5.02E-01	5.11E-01	5.11E-01
pb207	2.75E-02	2.79E-02	2.83E-02	2.87E-02	2.91E-02	2.91E-02
pb208	9.13E-04	9.21E-04	9.29E-04	9.37E-04	9.45E-04	9.45E-04
pb209	1.51E-09	1.53E-09	1.54E-09	1.56E-09	1.57E-09	1.57E-09
pb210	4.18E-04	4.20E-04	4.23E-04	4.26E-04	4.29E-04	4.29E-04
pb211	6.35E-11	6.36E-11	6.39E-11	6.41E-11	6.43E-11	6.44E-11
pb212	2.10E-11	2.21E-11	2.22E-11	2.22E-11	2.23E-11	2.13E-11
pb214	9.54E-10	9.61E-10	9.68E-10	9.74E-10	9.81E-10	9.81E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	9.12E-02	9.30E-02	9.48E-02	9.66E-02	9.84E-02	9.85E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.57E-07	2.59E-07	2.61E-07	2.62E-07	2.64E-07	2.64E-07
bi211	3.76E-12	3.77E-12	3.79E-12	3.80E-12	3.81E-12	3.82E-12
bi212	2.00E-12	2.09E-12	2.10E-12	2.11E-12	2.12E-12	2.02E-12
bi213	3.54E-10	3.57E-10	3.60E-10	3.63E-10	3.67E-10	3.67E-10
bi214	7.09E-10	7.14E-10	7.18E-10	7.23E-10	7.28E-10	7.28E-10
po210	7.10E-06	7.15E-06	7.19E-06	7.24E-06	7.29E-06	7.29E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	4.16E-17	4.17E-17	4.18E-17	4.20E-17	4.21E-17	4.22E-17
po212	1.05E-22	1.10E-22	1.10E-22	1.11E-22	1.11E-22	1.06E-22
po213	5.32E-19	5.37E-19	5.41E-19	5.46E-19	5.51E-19	5.51E-19
po214	9.75E-17	9.82E-17	9.88E-17	9.95E-17	1.00E-16	1.00E-16
po215	5.22E-17	5.23E-17	5.25E-17	5.27E-17	5.29E-17	5.30E-17
po216	7.96E-17	8.35E-17	8.39E-17	8.42E-17	8.46E-17	8.08E-17
po218	1.10E-10	1.11E-10	1.12E-10	1.13E-10	1.13E-10	1.13E-10
rn218	3.64E-44	3.91E-29	3.93E-29	3.95E-29	3.96E-29	3.64E-44
rn219	1.16E-13	1.16E-13	1.17E-13	1.17E-13	1.18E-13	1.18E-13
rn220	3.05E-14	3.20E-14	3.22E-14	3.23E-14	3.24E-14	3.10E-14
rn222	1.96E-07	1.97E-07	1.99E-07	2.00E-07	2.02E-07	2.02E-07
ra222	3.95E-41	4.24E-26	4.26E-26	4.28E-26	4.30E-26	4.01E-41
ra223	2.90E-08	2.90E-08	2.91E-08	2.92E-08	2.93E-08	2.94E-08
ra224	1.74E-10	1.82E-10	1.83E-10	1.84E-10	1.84E-10	1.76E-10
ra225	1.65E-07	1.67E-07	1.68E-07	1.70E-07	1.71E-07	1.71E-07
ra226	3.00E-02	3.02E-02	3.04E-02	3.06E-02	3.08E-02	3.08E-02
ra228	1.58E-10	1.60E-10	1.61E-10	1.63E-10	1.64E-10	1.64E-10
ac225	1.12E-07	1.13E-07	1.14E-07	1.15E-07	1.16E-07	1.16E-07
ac227	2.01E-05	2.02E-05	2.03E-05	2.03E-05	2.04E-05	2.04E-05
ac228	1.93E-14	1.95E-14	1.97E-14	1.99E-14	2.00E-14	2.00E-14
th226	1.93E-39	2.07E-24	2.08E-24	2.09E-24	2.10E-24	1.96E-39
th227	4.67E-08	4.68E-08	4.70E-08	4.72E-08	4.74E-08	4.74E-08
th228	3.31E-08	3.48E-08	3.49E-08	3.51E-08	3.52E-08	3.36E-08
th229	3.22E-02	3.25E-02	3.28E-02	3.30E-02	3.33E-02	3.33E-02
th230	1.45E+00	1.46E+00	1.47E+00	1.48E+00	1.49E+00	1.49E+00
th231	2.71E-09	3.52E-09	3.52E-09	3.53E-09	3.53E-09	2.70E-09
th232	3.87E-01	3.90E-01	3.94E-01	3.98E-01	4.01E-01	4.01E-01

th233	4.40E-28	4.44E-13	4.48E-13	4.52E-13	4.57E-13	4.57E-28
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	3.02E-02	3.03E-02	3.05E-02	3.06E-02	3.07E-02	3.07E-02
pa232	6.47E-26	6.50E-11	6.52E-11	6.55E-11	6.58E-11	6.58E-26

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 266
power= 4.890E-04mw, burnup=2.6363E+04mwd, flux= 2.97E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d	******* d
pa233	1.39E-06	1.39E-06	1.39E-06	1.39E-06	1.39E-06	1.39E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.87E-36	2.01E-21	2.02E-21	2.03E-21	2.04E-21	1.90E-36
u231	7.01E-32	7.05E-17	7.11E-17	7.16E-17	7.22E-17	7.22E-32
u232	1.18E-06	1.27E-06	1.27E-06	1.28E-06	1.28E-06	1.19E-06
u233	7.58E-01	7.63E-01	7.69E-01	7.74E-01	7.80E-01	7.80E-01
u234	1.02E+01	1.02E+01	1.02E+01	1.02E+01	1.02E+01	1.02E+01
u235	6.54E+02	6.54E+02	6.54E+02	6.54E+02	6.54E+02	6.54E+02
u236	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02
u237	2.92E-13	4.17E-07	4.17E-07	4.18E-07	4.18E-07	2.76E-13
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.77E-23	3.77E-08	3.77E-08	3.77E-08	3.77E-08	3.77E-23
u240	4.20E-34	4.33E-34	4.46E-34	4.59E-34	4.72E-34	4.72E-34
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	1.16E-14	1.02E-12	1.02E-12	1.02E-12	1.02E-12	9.88E-15
np236m	2.43E-28	2.43E-13	2.43E-13	2.43E-13	2.43E-13	2.43E-28
np236	2.65E-06	2.65E-06	2.66E-06	2.66E-06	2.67E-06	2.67E-06
np237	4.03E+01	4.03E+01	4.03E+01	4.03E+01	4.02E+01	4.02E+01
np238	4.14E-15	1.82E-07	1.82E-07	1.82E-07	1.82E-07	3.95E-15
np239	1.54E-13	5.45E-06	5.45E-06	5.45E-06	5.45E-06	1.52E-13
np240m	3.59E-36	3.69E-36	3.80E-36	3.92E-36	4.03E-36	4.03E-36
np240	4.08E-38	1.37E-16	1.37E-16	1.38E-16	1.38E-16	4.53E-38
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	3.06E-11	1.38E-10	1.38E-10	1.38E-10	1.38E-10	2.92E-11
pu237	3.03E-29	3.00E-14	2.99E-14	2.98E-14	2.97E-14	2.95E-29
pu238	2.61E-03	2.75E-03	2.76E-03	2.76E-03	2.76E-03	2.60E-03
pu239	2.53E+01	2.52E+01	2.50E+01	2.49E+01	2.48E+01	2.48E+01
pu240	2.66E-01	2.63E-01	2.60E-01	2.57E-01	2.55E-01	2.55E-01
pu241	9.48E-06	1.31E-05	1.30E-05	1.29E-05	1.27E-05	8.96E-06
pu242	4.85E-05	4.85E-05	4.85E-05	4.85E-05	4.85E-05	4.85E-05
pu243	1.58E-29	1.25E-14	1.25E-14	1.25E-14	1.26E-14	1.59E-29
pu244	2.09E-23	2.16E-23	2.22E-23	2.28E-23	2.35E-23	2.35E-23
pu245	.00E+00	1.10E-34	1.14E-34	1.17E-34	1.21E-34	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.35E-35	1.33E-20	1.32E-20	1.31E-20	1.30E-20	1.29E-35
am240	6.19E-33	6.09E-18	6.04E-18	5.98E-18	5.92E-18	5.91E-33
am241	3.99E-04	3.93E-04	3.90E-04	3.86E-04	3.82E-04	3.81E-04
am242m	2.24E-08	2.27E-08	2.26E-08	2.24E-08	2.21E-08	2.14E-08
am242	2.89E-13	1.81E-12	1.79E-12	1.78E-12	1.76E-12	2.76E-13
am243	1.76E-07	1.75E-07	1.75E-07	1.74E-07	1.73E-07	1.73E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.63E-31	1.63E-16	1.62E-16	1.62E-16	1.61E-16	1.61E-31
am245	2.24E-40	2.16E-35	2.23E-35	2.29E-35	2.36E-35	1.94E-40
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	1.30E-23	1.29E-23	1.28E-23	1.27E-23	.00E+00
cm242	5.83E-11	3.65E-10	3.62E-10	3.59E-10	3.55E-10	5.57E-11
cm243	8.87E-16	1.03E-15	1.03E-15	1.02E-15	1.01E-15	8.44E-16
cm244	1.96E-12	2.56E-12	2.55E-12	2.54E-12	2.53E-12	1.92E-12

```
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page  267
       power= 4.890E-04mw, burnup=2.6363E+04mwd, flux= 2.97E+07n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
             charge ******* d ******* d ******* d ******* d ******* d
     cm245   6.51E-15  6.37E-15  6.24E-15  6.12E-15  6.00E-15  6.00E-15
     cm246   4.63E-17  4.51E-17  4.39E-17  4.27E-17  4.16E-17  4.15E-17
     cm247   9.20E-20  9.23E-20  9.27E-20  9.30E-20  9.33E-20  9.33E-20
     cm248   5.35E-22  5.44E-22  5.52E-22  5.60E-22  5.69E-22  5.69E-22
     cm249    .00E+00  2.10E-33  2.13E-33  2.16E-33  2.20E-33   .00E+00
     cm250   1.95E-37  1.97E-37  1.99E-37  2.01E-37  2.03E-37  2.03E-37
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              2.97E+07  2.97E+07  2.97E+07  2.97E+07  2.97E-08
0        1q array has      20 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        3q array has       1 entries.
0        4q array has       1 entries.
0       54q array has      12 entries.
1library information...

          cross-section data taken from position number  1 of library on unit 15.

          pass
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *           prelim lwr origen-s binary working library--id = 1143              *
          *         made from modified card-image origen-s libraries of scale 4.2        *
          *       data from the light element, actinide, and fission product libraries   *
          *         decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                              *
          *       neutron flux spectrum factors and cross sections were produced from    *
          *      the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *         see information above this box (if present) for later updates        *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
```

```
0        ******************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  ft15f001
0                8/29/1996    date library was produced
0                     1697    total number of nuclides in library
                       689    number of light-element nuclides
                       129    number of actinide nuclides
                       879    number of fission product nuclides
0                     7993    number of nonzero off-diagonal matrix elements
0        ******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page  268
        power=    .00mw, burnup=  26809.mwd, flux= 2.97E+07n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial      ******* d      ******* d      ******* d      ******* d
     productions   1.274810E+06   1.274209E+06   1.273613E+06   1.273022E+06   1.272436E+06
     absorptions   1.042014E+06   1.041739E+06   1.041467E+06   1.041197E+06   1.040930E+06
     k infinity    1.223409E+00   1.223155E+00   1.222903E+00   1.222653E+00   1.222404E+00
0                   initial      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   1.021634E+06   1.021322E+06   1.021013E+06   1.020707E+06   1.020404E+06
     non-actinide
     abs. fracs.   1.955879E-02   1.959932E-02   1.963931E-02   1.967925E-02   1.971906E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              fission products        page  269
0                                 fraction of total absorption rate
        power=    .00mw, burnup=  26809.mwd, flux= 2.97E+07n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d

     sm149     5.43E-03  5.43E-03  5.43E-03  5.42E-03  5.42E-03
     nd143     2.56E-03  2.58E-03  2.59E-03  2.60E-03  2.61E-03
     eu151     2.06E-03  2.06E-03  2.06E-03  2.07E-03  2.07E-03
     rh103     1.25E-03  1.25E-03  1.26E-03  1.26E-03  1.27E-03
     xe131     8.32E-04  8.36E-04  8.40E-04  8.43E-04  8.47E-04
     cs133     6.50E-04  6.53E-04  6.56E-04  6.59E-04  6.61E-04
     sm147     4.75E-04  4.77E-04  4.79E-04  4.81E-04  4.83E-04
     tc 99     4.13E-04  4.15E-04  4.16E-04  4.17E-04  4.18E-04
     nd145     3.67E-04  3.69E-04  3.70E-04  3.72E-04  3.74E-04
     sm152     2.96E-04  2.97E-04  2.99E-04  3.00E-04  3.02E-04
     mo 95     2.55E-04  2.56E-04  2.57E-04  2.58E-04  2.59E-04
     gd155     2.22E-04  2.22E-04  2.21E-04  2.21E-04  2.21E-04
     sm150     1.96E-04  1.96E-04  1.97E-04  1.98E-04  1.99E-04
     kr 83     1.57E-04  1.57E-04  1.58E-04  1.59E-04  1.59E-04
     cs135     1.47E-04  1.48E-04  1.48E-04  1.49E-04  1.50E-04
     eu153     1.21E-04  1.22E-04  1.23E-04  1.23E-04  1.24E-04
     ru101     1.14E-04  1.15E-04  1.15E-04  1.16E-04  1.16E-04
     pr141     1.11E-04  1.11E-04  1.12E-04  1.12E-04  1.13E-04
     cd113     1.01E-04  1.01E-04  1.01E-04  1.01E-04  1.01E-04
     la139     9.05E-05  9.09E-05  9.13E-05  9.17E-05  9.21E-05
     gd157     5.70E-05  5.68E-05  5.67E-05  5.66E-05  5.65E-05
     ag109     4.77E-05  4.80E-05  4.82E-05  4.84E-05  4.86E-05
     pd105     4.66E-05  4.68E-05  4.71E-05  4.73E-05  4.75E-05
     ba137     4.39E-05  4.41E-05  4.43E-05  4.45E-05  4.47E-05
     zr 93     3.49E-05  3.51E-05  3.52E-05  3.54E-05  3.55E-05
      i129     2.98E-05  2.99E-05  3.00E-05  3.02E-05  3.03E-05
     nd144     2.83E-05  2.84E-05  2.85E-05  2.87E-05  2.88E-05
     gd152     2.66E-05  2.68E-05  2.69E-05  2.71E-05  2.73E-05
     mo 97     2.05E-05  2.06E-05  2.07E-05  2.08E-05  2.09E-05
     pd108     1.15E-05  1.15E-05  1.16E-05  1.16E-05  1.17E-05
     ru 99     1.00E-05  1.02E-05  1.03E-05  1.05E-05  1.06E-05
     zr 91     9.43E-06  9.47E-06  9.51E-06  9.55E-06  9.59E-06
```

y 89	9.02E-06	9.06E-06	9.10E-06	9.14E-06	9.18E-06
ru102	8.63E-06	8.67E-06	8.71E-06	8.75E-06	8.79E-06
ce142	7.55E-06	7.59E-06	7.62E-06	7.66E-06	7.69E-06
nd148	7.26E-06	7.29E-06	7.32E-06	7.36E-06	7.39E-06
sm151	6.62E-06	7.00E-06	7.00E-06	7.01E-06	7.01E-06
nd146	6.14E-06	6.17E-06	6.20E-06	6.23E-06	6.26E-06
pd107	5.78E-06	5.80E-06	5.83E-06	5.86E-06	5.88E-06
in115	5.36E-06	5.39E-06	5.41E-06	5.43E-06	5.46E-06
ba138	5.22E-06	5.25E-06	5.27E-06	5.29E-06	5.32E-06
ce140	4.89E-06	4.91E-06	4.94E-06	4.96E-06	4.98E-06
xe132	4.49E-06	4.51E-06	4.53E-06	4.55E-06	4.57E-06
mo 98	2.98E-06	2.99E-06	3.00E-06	3.02E-06	3.03E-06
mo100	2.92E-06	2.93E-06	2.94E-06	2.96E-06	2.97E-06
xe134	2.89E-06	2.90E-06	2.91E-06	2.93E-06	2.94E-06
zr 92	2.28E-06	2.29E-06	2.30E-06	2.32E-06	2.33E-06
i127	2.18E-06	2.19E-06	2.20E-06	2.21E-06	2.22E-06
ru104	1.99E-06	2.00E-06	2.01E-06	2.02E-06	2.03E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 270
0 fraction of total absorption rate
power= .00mw, burnup= 26809.mwd, flux= 2.97E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d

zr 96	1.78E-06	1.78E-06	1.79E-06	1.80E-06	1.81E-06
nd150	1.64E-06	1.65E-06	1.66E-06	1.67E-06	1.67E-06
xe136	1.57E-06	1.57E-06	1.58E-06	1.59E-06	1.59E-06
gd154	1.40E-06	1.42E-06	1.43E-06	1.44E-06	1.46E-06
cd111	1.30E-06	1.30E-06	1.31E-06	1.31E-06	1.32E-06
br 81	1.15E-06	1.16E-06	1.16E-06	1.17E-06	1.17E-06
rb 85	1.10E-06	1.11E-06	1.11E-06	1.12E-06	1.12E-06
ba135	1.05E-06	1.07E-06	1.08E-06	1.10E-06	1.11E-06
zr 94	9.62E-07	9.66E-07	9.71E-07	9.75E-07	9.79E-07
zr 90	8.89E-07	8.93E-07	8.97E-07	9.01E-07	9.05E-07
sm154	7.82E-07	7.85E-07	7.89E-07	7.92E-07	7.96E-07
te130	7.25E-07	7.28E-07	7.31E-07	7.34E-07	7.38E-07
rb 87	6.34E-07	6.37E-07	6.40E-07	6.43E-07	6.46E-07
pd106	4.82E-07	4.84E-07	4.86E-07	4.88E-07	4.90E-07
se 77	4.67E-07	4.69E-07	4.71E-07	4.73E-07	4.75E-07
gd156	4.62E-07	4.65E-07	4.67E-07	4.69E-07	4.72E-07
ru100	3.68E-07	3.71E-07	3.74E-07	3.77E-07	3.80E-07
kr 84	3.03E-07	3.04E-07	3.05E-07	3.07E-07	3.08E-07
dy161	2.85E-07	2.87E-07	2.88E-07	2.89E-07	2.90E-07
xe135	2.86E-22	2.86E-07	2.86E-07	2.86E-07	2.86E-07
nd142	2.75E-07	2.78E-07	2.80E-07	2.83E-07	2.85E-07
ba134	2.62E-07	2.64E-07	2.66E-07	2.69E-07	2.71E-07
sb121	2.48E-07	2.49E-07	2.51E-07	2.52E-07	2.53E-07
sm148	2.38E-07	2.40E-07	2.42E-07	2.44E-07	2.46E-07
se 79	2.22E-07	2.23E-07	2.23E-07	2.24E-07	2.25E-07
sb123	2.01E-07	2.02E-07	2.02E-07	2.03E-07	2.04E-07
pd104	1.79E-07	1.81E-07	1.82E-07	1.84E-07	1.85E-07
nb 93	1.67E-07	1.69E-07	1.72E-07	1.74E-07	1.76E-07
kr 86	1.69E-07	1.70E-07	1.70E-07	1.71E-07	1.72E-07
te128	1.64E-07	1.64E-07	1.65E-07	1.66E-07	1.67E-07
tb159	1.23E-07	1.24E-07	1.24E-07	1.25E-07	1.25E-07
se 80	1.12E-07	1.12E-07	1.13E-07	1.13E-07	1.14E-07
te125	1.12E-07	1.12E-07	1.13E-07	1.13E-07	1.14E-07
gd158	9.72E-08	9.76E-08	9.81E-08	9.86E-08	9.90E-08
ag107	8.56E-08	8.69E-08	8.82E-08	8.96E-08	9.09E-08
cd112	8.72E-08	8.76E-08	8.80E-08	8.84E-08	8.88E-08
br 79	8.20E-08	8.31E-08	8.43E-08	8.54E-08	8.66E-08
cd110	6.89E-08	6.96E-08	7.03E-08	7.10E-08	7.17E-08

dy162	6.79E-08	6.82E-08	6.86E-08	6.89E-08	6.93E-08
eu152	4.62E-08	6.76E-08	6.77E-08	6.78E-08	6.80E-08
dy164	6.30E-08	6.33E-08	6.35E-08	6.37E-08	6.40E-08
sn117	6.11E-08	6.14E-08	6.16E-08	6.19E-08	6.22E-08
mo 96	5.93E-08	5.98E-08	6.03E-08	6.08E-08	6.14E-08
li 6	5.67E-08	5.70E-08	5.72E-08	5.74E-08	5.76E-08
xe129	5.10E-08	5.17E-08	5.24E-08	5.32E-08	5.39E-08
cd114	5.20E-08	5.23E-08	5.25E-08	5.28E-08	5.30E-08
sn119	4.64E-08	4.66E-08	4.69E-08	4.71E-08	4.73E-08
pd110	4.32E-08	4.34E-08	4.36E-08	4.38E-08	4.40E-08
sn115	4.25E-08	4.27E-08	4.29E-08	4.30E-08	4.32E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 271
0 fraction of total absorption rate
power= .00mw, burnup= 26809.mwd, flux= 2.97E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d

pm147	4.93E-09	3.32E-08	3.32E-08	3.32E-08	3.32E-08
sr 88	3.09E-08	3.11E-08	3.12E-08	3.14E-08	3.15E-08
xe130	2.89E-08	2.91E-08	2.94E-08	2.96E-08	2.99E-08
te126	2.67E-08	2.70E-08	2.74E-08	2.77E-08	2.81E-08
ba136	2.36E-08	2.38E-08	2.40E-08	2.41E-08	2.43E-08
eu155	7.50E-09	2.20E-08	2.19E-08	2.19E-08	2.19E-08
se 82	2.13E-08	2.14E-08	2.15E-08	2.16E-08	2.17E-08
kr 82	1.69E-08	1.70E-08	1.71E-08	1.72E-08	1.73E-08
dy163	1.69E-08	1.70E-08	1.71E-08	1.72E-08	1.73E-08
se 78	1.67E-08	1.68E-08	1.69E-08	1.69E-08	1.70E-08
sn126	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.67E-08
sn124	1.46E-08	1.47E-08	1.48E-08	1.48E-08	1.49E-08
as 75	9.81E-09	9.85E-09	9.90E-09	9.94E-09	9.98E-09
in113	8.45E-09	8.49E-09	8.53E-09	8.57E-09	8.61E-09
eu154	3.53E-09	6.37E-09	6.40E-09	6.44E-09	6.47E-09
sn118	5.90E-09	5.93E-09	5.95E-09	5.98E-09	6.01E-09
sn122	5.11E-09	5.13E-09	5.16E-09	5.18E-09	5.20E-09
cd116	4.96E-09	4.98E-09	5.01E-09	5.03E-09	5.05E-09
sn120	3.75E-09	3.77E-09	3.79E-09	3.80E-09	3.82E-09
ge 73	2.83E-09	2.84E-09	2.85E-09	2.87E-09	2.88E-09
sr 90	1.70E-09	2.04E-09	2.04E-09	2.04E-09	2.04E-09
dy160	1.82E-09	1.84E-09	1.86E-09	1.88E-09	1.89E-09
ho165	1.74E-09	1.75E-09	1.76E-09	1.77E-09	1.79E-09
gd160	1.38E-09	1.39E-09	1.39E-09	1.40E-09	1.41E-09
rh105	1.28E-24	1.28E-09	1.28E-09	1.28E-09	1.28E-09
xe128	1.06E-09	1.07E-09	1.08E-09	1.08E-09	1.09E-09
ge 76	9.55E-10	9.59E-10	9.63E-10	9.67E-10	9.72E-10
cs134	5.25E-11	6.06E-10	6.09E-10	6.11E-10	6.14E-10
sr 86	4.89E-10	4.93E-10	4.97E-10	5.01E-10	5.06E-10
cs137	3.91E-10	4.63E-10	4.63E-10	4.63E-10	4.63E-10
sn116	3.97E-10	4.00E-10	4.04E-10	4.07E-10	4.11E-10
te124	3.36E-10	3.39E-10	3.41E-10	3.44E-10	3.46E-10
pr143	3.24E-25	3.24E-10	3.24E-10	3.24E-10	3.24E-10
xe133	2.50E-25	2.50E-10	2.50E-10	2.50E-10	2.50E-10
ce141	1.97E-25	1.97E-10	1.97E-10	1.97E-10	1.97E-10
nb 94	1.82E-10	1.84E-10	1.86E-10	1.88E-10	1.90E-10
te122	1.68E-10	1.69E-10	1.71E-10	1.72E-10	1.74E-10
sr 87	1.62E-10	1.63E-10	1.64E-10	1.65E-10	1.66E-10
se 76	1.35E-10	1.36E-10	1.37E-10	1.38E-10	1.39E-10
pm149	1.22E-25	1.22E-10	1.22E-10	1.22E-10	1.22E-10
nd147	1.13E-25	1.13E-10	1.13E-10	1.13E-10	1.13E-10
kr 80	8.62E-11	8.77E-11	8.92E-11	9.07E-11	9.22E-11
er166	8.00E-11	8.05E-11	8.09E-11	8.13E-11	8.18E-11
ce144	1.15E-13	7.26E-11	7.26E-11	7.26E-11	7.26E-11

kr 85	4.29E-11	6.86E-11	6.87E-11	6.87E-11	6.87E-11
ge 74	5.66E-11	5.68E-11	5.71E-11	5.73E-11	5.76E-11
ru103	4.72E-26	4.72E-11	4.72E-11	4.72E-11	4.72E-11
ge 72	4.20E-11	4.22E-11	4.24E-11	4.26E-11	4.28E-11
zr 95	6.72E-24	1.98E-11	1.98E-11	1.98E-11	1.98E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 272
0 fraction of total absorption rate
power= .00mw, burnup= 26809.mwd, flux= 2.97E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d

nb 95	1.38E-23	1.85E-11	1.85E-11	1.85E-11	1.85E-11
y 91	4.10E-25	1.72E-11	1.72E-11	1.72E-11	1.72E-11
pm151	1.43E-26	1.43E-11	1.43E-11	1.43E-11	1.43E-11
er167	1.08E-11	1.09E-11	1.10E-11	1.11E-11	1.13E-11
te123	9.10E-12	9.22E-12	9.34E-12	9.46E-12	9.58E-12
cd108	6.59E-12	6.71E-12	6.84E-12	6.97E-12	7.10E-12
sm153	6.70E-27	6.70E-12	6.71E-12	6.72E-12	6.73E-12
eu156	6.00E-27	5.99E-12	5.99E-12	5.98E-12	5.97E-12
ba140	5.79E-27	5.79E-12	5.79E-12	5.79E-12	5.79E-12
ru106	3.26E-14	4.57E-12	4.57E-12	4.56E-12	4.56E-12
sr 89	4.25E-27	3.66E-12	3.66E-12	3.66E-12	3.67E-12
kr 87	2.75E-27	2.75E-12	2.75E-12	2.75E-12	2.75E-12
ce143	2.12E-27	2.12E-12	2.12E-12	2.12E-12	2.13E-12
sb125	3.37E-13	2.12E-12	2.12E-12	2.12E-12	2.12E-12
y 90	1.62E-12	1.94E-12	1.94E-12	1.95E-12	1.95E-12
la140	1.86E-27	1.86E-12	1.86E-12	1.86E-12	1.86E-12
mo 99	1.61E-27	1.61E-12	1.61E-12	1.61E-12	1.61E-12
te127m	5.33E-20	1.08E-12	1.08E-12	1.08E-12	1.08E-12
i131	8.47E-28	8.47E-13	8.47E-13	8.47E-13	8.47E-13
te129m	2.35E-28	2.35E-13	2.35E-13	2.35E-13	2.35E-13
pm148m	8.86E-29	2.11E-13	2.11E-13	2.11E-13	2.11E-13
be 9	1.19E-13	1.19E-13	1.20E-13	1.21E-13	1.21E-13
sn114	1.07E-13	1.08E-13	1.09E-13	1.10E-13	1.11E-13
ag111	6.85E-29	6.83E-14	6.82E-14	6.81E-14	6.80E-14
eu157	5.73E-29	5.72E-14	5.72E-14	5.71E-14	5.70E-14
cs136	5.04E-29	5.05E-14	5.07E-14	5.08E-14	5.10E-14
li 7	4.95E-14	4.97E-14	5.00E-14	5.02E-14	5.04E-14
tb160	3.33E-25	3.67E-14	3.69E-14	3.71E-14	3.72E-14
cd115m	3.33E-29	3.32E-14	3.32E-14	3.32E-14	3.32E-14
sb126	1.89E-14	1.97E-14	1.97E-14	1.98E-14	1.98E-14
pr142	1.56E-29	1.57E-14	1.58E-14	1.58E-14	1.59E-14
pm148	1.81E-30	6.40E-15	6.40E-15	6.40E-15	6.40E-15
ru105	4.47E-30	4.47E-15	4.47E-15	4.46E-15	4.46E-15
sn125	3.93E-30	3.93E-15	3.93E-15	3.93E-15	3.93E-15
i130	2.66E-30	2.67E-15	2.68E-15	2.69E-15	2.70E-15
rb 88	1.54E-30	1.54E-15	1.55E-15	1.55E-15	1.55E-15
sn123	8.46E-22	1.28E-15	1.28E-15	1.28E-15	1.28E-15
sb124	7.03E-29	1.26E-15	1.27E-15	1.27E-15	1.28E-15
i135	1.26E-30	1.26E-15	1.26E-15	1.26E-15	1.26E-15
te132	1.19E-30	1.19E-15	1.19E-15	1.20E-15	1.20E-15
rb 86	8.94E-31	8.98E-16	9.02E-16	9.06E-16	9.10E-16
te134	7.12E-31	7.12E-16	7.12E-16	7.12E-16	7.13E-16
dy165	3.69E-31	3.69E-16	3.70E-16	3.70E-16	3.70E-16
in117m	3.18E-31	3.18E-16	3.18E-16	3.17E-16	3.17E-16
cs134m	1.14E-31	1.15E-16	1.15E-16	1.16E-16	1.16E-16
in117	9.49E-32	9.48E-17	9.48E-17	9.47E-17	9.47E-17
cd109	6.06E-19	3.28E-17	3.34E-17	3.40E-17	3.47E-17
cd118	1.69E-32	1.69E-17	1.69E-17	1.69E-17	1.68E-17
ge 75	1.08E-32	1.08E-17	1.08E-17	1.08E-17	1.08E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 273

0 fraction of total absorption rate
power= .00mw, burnup= 26809.mwd, flux= 2.97E+07n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d

ag110	2.70E-24	7.90E-18	7.94E-18	7.98E-18	8.02E-18
in119m	4.14E-33	4.14E-18	4.14E-18	4.14E-18	4.14E-18
in119	3.27E-34	3.36E-19	3.36E-19	3.36E-19	3.36E-19
in120	.00E+00	5.34E-23	5.34E-23	5.34E-23	5.34E-23
in120m	.00E+00	8.05E-24	8.04E-24	8.03E-24	8.02E-24

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 274
power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d
h 1	1.57E-03	1.58E-03	1.58E-03	1.59E-03	1.60E-03
h 2	4.70E-06	4.72E-06	4.74E-06	4.76E-06	4.78E-06
h 3	5.04E-12	7.59E-12	7.60E-12	7.61E-12	7.62E-12
h 4	.00E+00	3.86E-36	3.87E-36	3.87E-36	3.88E-36
he 3	1.90E-08	1.90E-08	1.90E-08	1.91E-08	1.91E-08
he 4	2.61E-04	2.62E-04	2.63E-04	2.64E-04	2.65E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	3.13E-05	3.15E-05	3.16E-05	3.17E-05	3.19E-05
ne 21	1.48E-08	1.49E-08	1.50E-08	1.52E-08	1.53E-08
ne 22	2.06E-07	2.07E-07	2.08E-07	2.09E-07	2.10E-07
ne 23	8.88E-31	8.87E-16	8.87E-16	8.87E-16	8.88E-16
na 22	7.61E-13	5.26E-12	5.26E-12	5.26E-12	5.26E-12
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.24E-24	3.23E-09	3.24E-09	3.24E-09	3.24E-09
na 24m	5.32E-31	5.31E-16	5.32E-16	5.32E-16	5.32E-16
na 25	5.36E-39	5.40E-24	5.45E-24	5.49E-24	5.54E-24
mg 24	2.02E-01	2.03E-01	2.04E-01	2.04E-01	2.05E-01
mg 25	1.53E-06	1.54E-06	1.56E-06	1.57E-06	1.58E-06
mg 26	4.69E-06	4.71E-06	4.73E-06	4.75E-06	4.77E-06
mg 27	2.65E-28	2.65E-13	2.65E-13	2.65E-13	2.65E-13
mg 28	.00E+00	6.76E-26	6.76E-26	6.77E-26	6.77E-26
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.40E-26	2.40E-11	2.40E-11	2.40E-11	2.40E-11
al 29	4.38E-37	4.41E-22	4.45E-22	4.49E-22	4.53E-22
al 30	.00E+00	1.50E-31	1.52E-31	1.54E-31	1.56E-31
si 28	5.87E-01	5.90E-01	5.92E-01	5.95E-01	5.97E-01
si 29	1.40E-05	1.41E-05	1.42E-05	1.43E-05	1.44E-05
si 30	3.55E-10	3.59E-10	3.64E-10	3.68E-10	3.73E-10
si 31	3.18E-38	3.23E-23	3.27E-23	3.31E-23	3.35E-23
si 32	6.79E-30	7.08E-30	7.19E-30	7.29E-30	7.39E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.97E+07	2.97E+07	2.97E+07	2.97E+07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 275
power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d
he 4	6.53E+01	6.59E+01	6.65E+01	6.70E+01	6.76E+01
pb206	5.11E-01	5.19E-01	5.28E-01	5.36E-01	5.45E-01
pb207	2.91E-02	2.95E-02	2.99E-02	3.03E-02	3.08E-02
pb208	9.45E-04	9.53E-04	9.61E-04	9.69E-04	9.77E-04
pb209	1.57E-09	1.58E-09	1.60E-09	1.61E-09	1.62E-09
pb210	4.29E-04	4.32E-04	4.35E-04	4.37E-04	4.40E-04
pb211	6.44E-11	6.46E-11	6.48E-11	6.50E-11	6.53E-11

pb212	2.13E-11	2.24E-11	2.25E-11	2.26E-11	2.27E-11
pb214	9.81E-10	9.87E-10	9.93E-10	1.00E-09	1.01E-09
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	9.85E-02	1.00E-01	1.02E-01	1.04E-01	1.06E-01
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.64E-07	2.66E-07	2.68E-07	2.69E-07	2.71E-07
bi211	3.82E-12	3.83E-12	3.84E-12	3.85E-12	3.87E-12
bi212	2.02E-12	2.13E-12	2.14E-12	2.14E-12	2.15E-12
bi213	3.67E-10	3.70E-10	3.73E-10	3.76E-10	3.79E-10
bi214	7.28E-10	7.33E-10	7.38E-10	7.42E-10	7.47E-10
po210	7.29E-06	7.34E-06	7.39E-06	7.43E-06	7.48E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	4.22E-17	4.23E-17	4.24E-17	4.26E-17	4.27E-17
po212	1.06E-22	1.12E-22	1.12E-22	1.13E-22	1.13E-22
po213	5.51E-19	5.56E-19	5.61E-19	5.65E-19	5.70E-19
po214	1.00E-16	1.01E-16	1.01E-16	1.02E-16	1.03E-16
po215	5.30E-17	5.31E-17	5.32E-17	5.34E-17	5.36E-17
po216	8.08E-17	8.49E-17	8.53E-17	8.56E-17	8.59E-17
po218	1.13E-10	1.14E-10	1.15E-10	1.16E-10	1.16E-10
rn218	3.64E-44	3.98E-29	3.99E-29	4.01E-29	4.03E-29
rn219	1.18E-13	1.18E-13	1.18E-13	1.19E-13	1.19E-13
rn220	3.10E-14	3.26E-14	3.27E-14	3.28E-14	3.30E-14
rn222	2.02E-07	2.03E-07	2.04E-07	2.05E-07	2.07E-07
ra222	4.01E-41	4.32E-26	4.34E-26	4.36E-26	4.38E-26
ra223	2.94E-08	2.94E-08	2.96E-08	2.97E-08	2.98E-08
ra224	1.76E-10	1.85E-10	1.86E-10	1.87E-10	1.87E-10
ra225	1.71E-07	1.73E-07	1.74E-07	1.76E-07	1.77E-07
ra226	3.08E-02	3.10E-02	3.12E-02	3.14E-02	3.16E-02
ra228	1.64E-10	1.66E-10	1.67E-10	1.69E-10	1.70E-10
ac225	1.16E-07	1.17E-07	1.18E-07	1.19E-07	1.20E-07
ac227	2.04E-05	2.05E-05	2.06E-05	2.06E-05	2.07E-05
ac228	2.00E-14	2.02E-14	2.04E-14	2.06E-14	2.08E-14
th226	1.96E-39	2.11E-24	2.12E-24	2.13E-24	2.13E-24
th227	4.74E-08	4.75E-08	4.77E-08	4.79E-08	4.80E-08
th228	3.36E-08	3.54E-08	3.55E-08	3.56E-08	3.58E-08
th229	3.33E-02	3.36E-02	3.39E-02	3.42E-02	3.45E-02
th230	1.49E+00	1.50E+00	1.50E+00	1.51E+00	1.52E+00
th231	2.70E-09	3.54E-09	3.54E-09	3.55E-09	3.55E-09
th232	4.01E-01	4.05E-01	4.08E-01	4.12E-01	4.16E-01
th233	4.57E-28	4.61E-13	4.65E-13	4.70E-13	4.74E-13
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	3.07E-02	3.08E-02	3.09E-02	3.10E-02	3.11E-02
pa232	6.58E-26	6.61E-11	6.63E-11	6.66E-11	6.68E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 276
power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d
pa233	1.39E-06	1.39E-06	1.39E-06	1.39E-06	1.39E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.07E-12	8.07E-12	8.07E-12	8.07E-12	8.07E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.90E-36	2.04E-21	2.05E-21	2.06E-21	2.07E-21
u231	7.22E-32	7.26E-17	7.32E-17	7.37E-17	7.42E-17
u232	1.19E-06	1.29E-06	1.29E-06	1.30E-06	1.30E-06
u233	7.80E-01	7.85E-01	7.91E-01	7.96E-01	8.02E-01
u234	1.02E+01	1.02E+01	1.02E+01	1.02E+01	1.02E+01
u235	6.54E+02	6.54E+02	6.54E+02	6.53E+02	6.53E+02
u236	1.95E+02	1.95E+02	1.96E+02	1.96E+02	1.96E+02

u237	2.76E-13	4.18E-07	4.18E-07	4.19E-07	4.19E-07
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.77E-23	3.77E-08	3.77E-08	3.77E-08	3.78E-08
u240	4.72E-34	4.86E-34	4.99E-34	5.13E-34	5.27E-34
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	9.88E-15	1.02E-12	1.02E-12	1.02E-12	1.02E-12
np236m	2.43E-28	2.42E-13	2.42E-13	2.42E-13	2.43E-13
np236	2.67E-06	2.67E-06	2.67E-06	2.68E-06	2.68E-06
np237	4.02E+01	4.02E+01	4.02E+01	4.02E+01	4.02E+01
np238	3.95E-15	1.82E-07	1.82E-07	1.82E-07	1.82E-07
np239	1.52E-13	5.45E-06	5.45E-06	5.46E-06	5.46E-06
np240m	4.03E-36	4.14E-36	4.26E-36	4.38E-36	4.50E-36
np240	4.53E-38	1.38E-16	1.38E-16	1.38E-16	1.38E-16
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	2.92E-11	1.37E-10	1.38E-10	1.38E-10	1.38E-10
pu237	2.95E-29	2.95E-14	2.94E-14	2.93E-14	2.92E-14
pu238	2.60E-03	2.75E-03	2.76E-03	2.76E-03	2.76E-03
pu239	2.48E+01	2.47E+01	2.45E+01	2.44E+01	2.43E+01
pu240	2.55E-01	2.52E-01	2.49E-01	2.47E-01	2.45E-01
pu241	8.96E-06	1.26E-05	1.25E-05	1.23E-05	1.22E-05
pu242	4.85E-05	4.85E-05	4.85E-05	4.86E-05	4.86E-05
pu243	1.59E-29	1.26E-14	1.26E-14	1.26E-14	1.26E-14
pu244	2.35E-23	2.42E-23	2.49E-23	2.56E-23	2.63E-23
pu245	.00E+00	1.24E-34	1.28E-34	1.31E-34	1.35E-34
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.29E-35	1.27E-20	1.27E-20	1.25E-20	1.24E-20
am240	5.91E-33	5.83E-18	5.79E-18	5.74E-18	5.69E-18
am241	3.81E-04	3.76E-04	3.73E-04	3.70E-04	3.67E-04
am242m	2.14E-08	2.17E-08	2.16E-08	2.15E-08	2.13E-08
am242	2.76E-13	1.73E-12	1.72E-12	1.71E-12	1.69E-12
am243	1.73E-07	1.73E-07	1.72E-07	1.72E-07	1.71E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.61E-31	1.60E-16	1.60E-16	1.60E-16	1.59E-16
am245	1.94E-40	2.43E-35	2.50E-35	2.57E-35	2.64E-35
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	1.25E-23	1.24E-23	1.23E-23	1.22E-23
cm242	5.57E-11	3.50E-10	3.47E-10	3.45E-10	3.42E-10
cm243	8.44E-16	9.91E-16	9.85E-16	9.77E-16	9.69E-16
cm244	1.92E-12	2.52E-12	2.51E-12	2.51E-12	2.50E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 277
power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d
cm245	6.00E-15	5.89E-15	5.78E-15	5.68E-15	5.58E-15
cm246	4.15E-17	4.05E-17	3.95E-17	3.85E-17	3.76E-17
cm247	9.33E-20	9.36E-20	9.39E-20	9.42E-20	9.45E-20
cm248	5.69E-22	5.77E-22	5.86E-22	5.94E-22	6.02E-22
cm249	.00E+00	2.23E-33	2.26E-33	2.30E-33	2.33E-33
cm250	2.03E-37	2.05E-37	2.07E-37	2.09E-37	2.11E-37
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.97E+07	2.97E+07	2.97E+07	2.97E+07

0 .results on logical unit no. 71, position 1, for time step 4, subcase31. (run position 1, case position 1)
title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 278
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec

0 nuclide concentrations, grams

basis =single reactor assembly

	initial******* d	******* d	******* d	******* d	******* d	******* d	******* d
h 1	1.60E-03	1.60E-03	1.60E-03	1.60E-03	1.60E-03	1.60E-03	1.60E-03
h 2	9.57E-06	9.57E-06	9.57E-06	9.57E-06	9.57E-06	9.57E-06	9.57E-06
he 4	1.06E-03	1.06E-03	1.06E-03	1.06E-03	1.06E-03	1.06E-03	1.06E-03
ne 20	6.37E-04	6.37E-04	6.37E-04	6.37E-04	6.37E-04	6.37E-04	6.37E-04
ne 22	4.62E-06	4.62E-06	4.62E-06	4.62E-06	4.62E-06	4.62E-06	4.62E-06
na 23	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05
mg 24	4.92E+00	4.92E+00	4.92E+00	4.92E+00	4.92E+00	4.92E+00	4.92E+00
mg 25	3.96E-05	3.96E-05	3.96E-05	3.96E-05	3.96E-05	3.96E-05	3.96E-05
mg 26	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04
al 27	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06
si 28	1.67E+01	1.67E+01	1.67E+01	1.67E+01	1.67E+01	1.67E+01	1.67E+01
si 29	4.19E-04	4.19E-04	4.19E-04	4.19E-04	4.19E-04	4.19E-04	4.19E-04
total	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 279
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec
0 element radioactivity, curies
basis =single reactor assembly

	initial******* d	******* d	******* d	******* d	******* d	******* d	******* d
totals	3.01E+00	3.86E-15	2.33E-15	1.41E-15	8.51E-16	5.14E-16	3.10E-16

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 280
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec
0 element thermal power, watts
basis =single reactor assembly

	initial******* d	******* d	******* d	******* d	******* d	******* d	******* d
totals	5.62E-02	1.13E-18	6.84E-19	4.13E-19	2.49E-19	1.51E-19	9.10E-20

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 281
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial******* d	******* d	******* d	******* d	******* d	******* d	******* d
total	3.90E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 282
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	initial******* d	******* d	******* d	******* d	******* d	******* d	******* d
he 4	6.76E+01	7.11E+01	7.43E+01	7.72E+01	7.98E+01	8.23E+01	8.45E+01
pb206	5.45E-01	6.03E-01	6.64E-01	7.27E-01	7.92E-01	8.59E-01	9.28E-01
pb207	3.08E-02	3.35E-02	3.62E-02	3.90E-02	4.17E-02	4.44E-02	4.72E-02
pb208	9.77E-04	9.79E-04	9.79E-04	9.79E-04	9.79E-04	9.79E-04	9.79E-04
pb210	4.40E-04	4.58E-04	4.75E-04	4.92E-04	5.07E-04	5.21E-04	5.35E-04
bi209	1.06E-01	1.19E-01	1.33E-01	1.47E-01	1.62E-01	1.78E-01	1.94E-01
po210	7.48E-06	7.79E-06	8.08E-06	8.35E-06	8.61E-06	8.86E-06	9.09E-06
ra226	3.16E-02	3.29E-02	3.41E-02	3.53E-02	3.64E-02	3.74E-02	3.84E-02
ac227	2.07E-05	2.07E-05	2.06E-05	2.06E-05	2.06E-05	2.06E-05	2.06E-05
th229	3.45E-02	3.64E-02	3.83E-02	4.02E-02	4.21E-02	4.40E-02	4.58E-02
th230	1.52E+00	1.58E+00	1.64E+00	1.69E+00	1.74E+00	1.79E+00	1.83E+00
th232	4.16E-01	4.40E-01	4.64E-01	4.88E-01	5.12E-01	5.36E-01	5.61E-01
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	3.11E-02	3.11E-02	3.10E-02	3.10E-02	3.10E-02	3.10E-02	3.10E-02
pa233	1.39E-06	1.39E-06	1.38E-06	1.38E-06	1.38E-06	1.38E-06	1.38E-06
u233	8.02E-01	8.41E-01	8.80E-01	9.17E-01	9.54E-01	9.91E-01	1.03E+00
u234	1.02E+01	1.01E+01	9.99E+00	9.90E+00	9.81E+00	9.72E+00	9.63E+00
u235	6.53E+02	6.56E+02	6.58E+02	6.61E+02	6.63E+02	6.64E+02	6.66E+02

u236	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
np236	2.68E-06	2.62E-06	2.55E-06	2.49E-06	2.43E-06	2.37E-06	2.31E-06
np237	4.02E+01	4.01E+01	4.01E+01	4.00E+01	4.00E+01	3.99E+01	3.99E+01
pu239	2.43E+01	2.16E+01	1.91E+01	1.70E+01	1.50E+01	1.33E+01	1.18E+01
pu240	2.45E-01	1.58E-01	1.02E-01	6.54E-02	4.21E-02	2.71E-02	1.75E-02
pu242	4.86E-05	4.82E-05	4.78E-05	4.75E-05	4.71E-05	4.67E-05	4.64E-05
total	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 283
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec
0 element concentrations, gram atoms
basis = single reactor assembly

	initial	******* d	******* d	******* d	******* d	******* d	******* d
he	6.76E+01	7.11E+01	7.43E+01	7.72E+01	7.98E+01	8.23E+01	8.45E+01
pb	5.77E-01	6.38E-01	7.02E-01	7.68E-01	8.35E-01	9.05E-01	9.76E-01
bi	1.06E-01	1.19E-01	1.33E-01	1.47E-01	1.62E-01	1.78E-01	1.94E-01
po	7.48E-06	7.79E-06	8.08E-06	8.35E-06	8.61E-06	8.86E-06	9.09E-06
ra	3.16E-02	3.29E-02	3.41E-02	3.53E-02	3.64E-02	3.74E-02	3.84E-02
ac	2.08E-05	2.08E-05	2.08E-05	2.08E-05	2.07E-05	2.08E-05	2.08E-05
th	1.97E+00	2.06E+00	2.14E+00	2.22E+00	2.30E+00	2.37E+00	2.44E+00
pa	3.11E-02	3.11E-02	3.10E-02	3.10E-02	3.10E-02	3.10E-02	3.10E-02
u	3.71E+04	3.71E+04	3.71E+04	3.71E+04	3.71E+04	3.71E+04	3.71E+04
np	4.02E+01	4.01E+01	4.01E+01	4.00E+01	4.00E+01	3.99E+01	3.99E+01
pu	2.45E+01	2.17E+01	1.92E+01	1.70E+01	1.51E+01	1.34E+01	1.19E+01
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 284
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	******* d	******* d	******* d	******* d	******* d	******* d
he 4	2.70E+02	2.84E+02	2.97E+02	3.09E+02	3.19E+02	3.29E+02	3.38E+02
pb206	1.12E+02	1.24E+02	1.37E+02	1.50E+02	1.63E+02	1.77E+02	1.91E+02
pb207	6.37E+00	6.93E+00	7.50E+00	8.07E+00	8.63E+00	9.20E+00	9.76E+00
pb208	2.03E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01
pb210	9.24E-02	9.62E-02	9.98E-02	1.03E-01	1.06E-01	1.09E-01	1.12E-01
bi209	2.21E+01	2.48E+01	2.77E+01	3.07E+01	3.39E+01	3.72E+01	4.06E+01
bi210	5.69E-05	5.92E-05	6.14E-05	6.35E-05	6.55E-05	6.74E-05	6.91E-05
po210	1.57E-03	1.64E-03	1.70E-03	1.75E-03	1.81E-03	1.86E-03	1.91E-03
rn222	4.59E-05	4.78E-05	4.96E-05	5.13E-05	5.29E-05	5.44E-05	5.58E-05
ra223	6.64E-06	6.62E-06	6.62E-06	6.61E-06	6.61E-06	6.60E-06	6.60E-06
ra225	3.99E-05	4.21E-05	4.43E-05	4.65E-05	4.87E-05	5.09E-05	5.30E-05
ra226	7.14E+00	7.43E+00	7.71E+00	7.97E+00	8.22E+00	8.46E+00	8.68E+00
ac225	2.70E-05	2.85E-05	3.00E-05	3.14E-05	3.29E-05	3.44E-05	3.58E-05
ac227	4.70E-03	4.69E-03	4.68E-03	4.68E-03	4.68E-03	4.68E-03	4.68E-03
th227	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05
th229	7.90E+00	8.34E+00	8.77E+00	9.21E+00	9.64E+00	1.01E+01	1.05E+01
th230	3.50E+02	3.64E+02	3.77E+02	3.89E+02	4.01E+02	4.12E+02	4.22E+02
th231	8.21E-07	6.27E-07	6.29E-07	6.31E-07	6.33E-07	6.35E-07	6.36E-07
th232	9.64E+01	1.02E+02	1.08E+02	1.13E+02	1.19E+02	1.24E+02	1.30E+02
th234	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04
pa231	7.19E+00	7.18E+00	7.17E+00	7.16E+00	7.16E+00	7.16E+00	7.16E+00
pa233	3.24E-04	3.23E-04	3.23E-04	3.22E-04	3.22E-04	3.21E-04	3.21E-04
u233	1.87E+02	1.96E+02	2.05E+02	2.14E+02	2.22E+02	2.31E+02	2.39E+02
u234	2.38E+03	2.36E+03	2.34E+03	2.32E+03	2.30E+03	2.27E+03	2.25E+03
u235	1.54E+05	1.54E+05	1.55E+05	1.55E+05	1.56E+05	1.56E+05	1.56E+05
u236	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04
u238	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06
np236	6.33E-04	6.17E-04	6.02E-04	5.87E-04	5.73E-04	5.58E-04	5.45E-04

np237	9.53E+03	9.51E+03	9.50E+03	9.49E+03	9.48E+03	9.46E+03	9.45E+03
pu239	5.81E+03	5.15E+03	4.57E+03	4.05E+03	3.60E+03	3.19E+03	2.83E+03
pu240	5.87E+01	3.78E+01	2.44E+01	1.57E+01	1.01E+01	6.51E+00	4.19E+00
pu242	1.18E-02	1.17E-02	1.16E-02	1.15E-02	1.14E-02	1.13E-02	1.12E-02
am243	4.16E-05	2.81E-05	1.90E-05	1.28E-05	8.68E-06	5.86E-06	3.96E-06
total	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 285
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec
0 element concentrations, grams
basis =single reactor assembly

	initial	******* d	******* d	******* d	******* d	******* d	******* d
he	2.70E+02	2.84E+02	2.97E+02	3.09E+02	3.19E+02	3.29E+02	3.38E+02
pb	1.19E+02	1.32E+02	1.45E+02	1.58E+02	1.72E+02	1.86E+02	2.01E+02
bi	2.21E+01	2.48E+01	2.77E+01	3.07E+01	3.39E+01	3.72E+01	4.06E+01
po	1.57E-03	1.64E-03	1.70E-03	1.75E-03	1.81E-03	1.86E-03	1.91E-03
rn	4.59E-05	4.78E-05	4.96E-05	5.13E-05	5.29E-05	5.44E-05	5.58E-05
ra	7.14E+00	7.43E+00	7.71E+00	7.97E+00	8.22E+00	8.46E+00	8.68E+00
ac	4.73E-03	4.72E-03	4.71E-03	4.71E-03	4.71E-03	4.71E-03	4.71E-03
th	4.55E+02	4.74E+02	4.93E+02	5.12E+02	5.29E+02	5.46E+02	5.62E+02
pa	7.19E+00	7.18E+00	7.17E+00	7.16E+00	7.16E+00	7.16E+00	7.16E+00
u	8.84E+06	8.84E+06	8.84E+06	8.84E+06	8.84E+06	8.84E+06	8.84E+06
np	9.53E+03	9.51E+03	9.50E+03	9.49E+03	9.48E+03	9.46E+03	9.45E+03
pu	5.87E+03	5.19E+03	4.59E+03	4.07E+03	3.61E+03	3.20E+03	2.83E+03
am	8.84E-02	1.43E-04	1.91E-05	1.28E-05	8.68E-06	5.86E-06	3.96E-06
totals	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 286
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec
0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	******* d	******* d	******* d	******* d	******* d	******* d
tl206	9.32E-06	9.70E-06	1.01E-05	1.04E-05	1.07E-05	1.10E-05	1.13E-05
tl207	3.39E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.37E-01	3.37E-01
tl208	2.40E-03	4.28E-06	4.50E-06	4.71E-06	4.93E-06	5.14E-06	5.36E-06
tl209	3.29E-02	3.47E-02	3.65E-02	3.83E-02	4.01E-02	4.19E-02	4.37E-02
pb209	1.56E+00	1.65E+00	1.74E+00	1.83E+00	1.91E+00	2.00E+00	2.08E+00
pb210	7.06E+00	7.35E+00	7.62E+00	7.88E+00	8.13E+00	8.36E+00	8.58E+00
pb211	3.40E-01	3.39E-01	3.39E-01	3.39E-01	3.38E-01	3.38E-01	3.38E-01
pb212	6.69E-03	1.19E-05	1.25E-05	1.31E-05	1.37E-05	1.43E-05	1.49E-05
pb214	7.06E+00	7.35E+00	7.63E+00	7.89E+00	8.13E+00	8.36E+00	8.58E+00
bi210	7.06E+00	7.35E+00	7.62E+00	7.88E+00	8.13E+00	8.36E+00	8.58E+00
bi211	3.40E-01	3.39E-01	3.39E-01	3.39E-01	3.38E-01	3.38E-01	3.38E-01
bi212	6.69E-03	1.19E-05	1.25E-05	1.31E-05	1.37E-05	1.43E-05	1.49E-05
bi213	1.56E+00	1.65E+00	1.74E+00	1.83E+00	1.91E+00	2.00E+00	2.08E+00
bi214	7.06E+00	7.35E+00	7.63E+00	7.89E+00	8.13E+00	8.36E+00	8.58E+00
po210	7.06E+00	7.35E+00	7.62E+00	7.88E+00	8.13E+00	8.36E+00	8.58E+00
po211	9.35E-04	9.33E-04	9.32E-04	9.31E-04	9.31E-04	9.31E-04	9.31E-04
po212	4.29E-03	7.64E-06	8.02E-06	8.40E-06	8.78E-06	9.17E-06	9.55E-06
po213	1.53E+00	1.62E+00	1.70E+00	1.79E+00	1.87E+00	1.95E+00	2.04E+00
po214	7.06E+00	7.35E+00	7.62E+00	7.88E+00	8.13E+00	8.36E+00	8.58E+00
po215	3.40E-01	3.39E-01	3.39E-01	3.39E-01	3.38E-01	3.38E-01	3.38E-01
po216	6.69E-03	1.19E-05	1.25E-05	1.31E-05	1.37E-05	1.43E-05	1.49E-05
po218	7.06E+00	7.35E+00	7.63E+00	7.89E+00	8.13E+00	8.36E+00	8.58E+00
at217	1.57E+00	1.65E+00	1.74E+00	1.83E+00	1.91E+00	2.00E+00	2.08E+00
rn219	3.40E-01	3.39E-01	3.39E-01	3.39E-01	3.38E-01	3.38E-01	3.38E-01
rn220	6.69E-03	1.19E-05	1.25E-05	1.31E-05	1.37E-05	1.43E-05	1.49E-05
rn222	7.06E+00	7.35E+00	7.63E+00	7.89E+00	8.13E+00	8.36E+00	8.58E+00
fr221	1.57E+00	1.65E+00	1.74E+00	1.83E+00	1.91E+00	2.00E+00	2.08E+00
fr223	4.69E-03	4.68E-03	4.68E-03	4.67E-03	4.67E-03	4.67E-03	4.67E-03

ra223	3.40E-01	3.39E-01	3.39E-01	3.39E-01	3.38E-01	3.38E-01	3.38E-01
ra224	6.69E-03	1.19E-05	1.25E-05	1.31E-05	1.37E-05	1.43E-05	1.49E-05
ra225	1.57E+00	1.65E+00	1.74E+00	1.83E+00	1.91E+00	2.00E+00	2.08E+00
ra226	7.06E+00	7.35E+00	7.63E+00	7.89E+00	8.13E+00	8.36E+00	8.58E+00
ra228	1.06E-05	1.12E-05	1.18E-05	1.24E-05	1.30E-05	1.37E-05	1.43E-05
ac225	1.57E+00	1.65E+00	1.74E+00	1.83E+00	1.91E+00	2.00E+00	2.08E+00
ac227	3.40E-01	3.39E-01	3.39E-01	3.39E-01	3.38E-01	3.38E-01	3.38E-01
ac228	1.06E-05	1.12E-05	1.18E-05	1.24E-05	1.30E-05	1.37E-05	1.43E-05
th227	3.35E-01	3.35E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01
th228	6.69E-03	1.19E-05	1.25E-05	1.31E-05	1.37E-05	1.43E-05	1.49E-05
th229	1.57E+00	1.65E+00	1.74E+00	1.83E+00	1.91E+00	2.00E+00	2.08E+00
th230	7.23E+00	7.51E+00	7.78E+00	8.03E+00	8.26E+00	8.49E+00	8.70E+00
th231	4.37E-01	3.33E-01	3.35E-01	3.36E-01	3.37E-01	3.38E-01	3.38E-01
th232	1.06E-05	1.12E-05	1.18E-05	1.24E-05	1.30E-05	1.37E-05	1.43E-05
th234	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
pa231	3.40E-01	3.39E-01	3.39E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01
pa233	6.72E+00	6.71E+00	6.70E+00	6.69E+00	6.68E+00	6.67E+00	6.66E+00
pa234m	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
pa234	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03
u232	6.68E-03	7.24E-07	7.06E-07	6.89E-07	6.72E-07	6.55E-07	6.39E-07
u233	1.80E+00	1.89E+00	1.98E+00	2.06E+00	2.14E+00	2.23E+00	2.31E+00
u234	1.48E+01	1.47E+01	1.45E+01	1.44E+01	1.43E+01	1.41E+01	1.40E+01
u235	3.32E-01	3.33E-01	3.35E-01	3.36E-01	3.37E-01	3.38E-01	3.38E-01
u236	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 287
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec
0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	******* d	******* d	******* d	******* d	******* d	******* d
u238	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
np236	8.34E-06	8.14E-06	7.94E-06	7.74E-06	7.55E-06	7.36E-06	7.18E-06
np237	6.72E+00	6.71E+00	6.70E+00	6.69E+00	6.68E+00	6.67E+00	6.66E+00
np239	3.03E+02	5.61E-06	3.79E-06	2.56E-06	1.73E-06	1.17E-06	7.91E-07
pu236	1.70E-05	7.24E-07	7.06E-07	6.89E-07	6.72E-07	6.55E-07	6.39E-07
pu239	3.60E+02	3.20E+02	2.84E+02	2.52E+02	2.23E+02	1.98E+02	1.76E+02
pu240	1.33E+01	8.59E+00	5.53E+00	3.56E+00	2.29E+00	1.48E+00	9.51E-01
pu242	4.65E-05	4.61E-05	4.58E-05	4.54E-05	4.51E-05	4.47E-05	4.44E-05
am243	8.31E-06	5.61E-06	3.79E-06	2.56E-06	1.73E-06	1.17E-06	7.91E-07
total	1.14E+03	4.61E+02	4.25E+02	3.94E+02	3.67E+02	3.44E+02	3.24E+02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 288
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec
0 element thermal power, watts
basis =single reactor assembly

	initial	******* d	******* d	******* d	******* d	******* d	******* d
tl	1.60E-03	1.58E-03	1.60E-03	1.63E-03	1.66E-03	1.69E-03	1.72E-03
pb	2.73E-02	2.84E-02	2.95E-02	3.05E-02	3.14E-02	3.23E-02	3.32E-02
bi	1.27E-01	1.32E-01	1.36E-01	1.41E-01	1.45E-01	1.48E-01	1.52E-01
po	9.03E-01	9.40E-01	9.76E-01	1.01E+00	1.04E+00	1.07E+00	1.10E+00
at	6.68E-02	7.05E-02	7.42E-02	7.79E-02	8.16E-02	8.52E-02	8.87E-02
rn	2.48E-01	2.58E-01	2.67E-01	2.75E-01	2.84E-01	2.91E-01	2.98E-01
fr	6.04E-02	6.38E-02	6.71E-02	7.05E-02	7.38E-02	7.71E-02	8.03E-02
ra	2.17E-01	2.26E-01	2.34E-01	2.41E-01	2.48E-01	2.55E-01	2.61E-01
ac	5.48E-02	5.78E-02	6.09E-02	6.39E-02	6.69E-02	6.99E-02	7.28E-02
th	2.66E-01	2.77E-01	2.87E-01	2.97E-01	3.06E-01	3.15E-01	3.23E-01
pa	4.17E-02	4.17E-02	4.16E-02	4.16E-02	4.16E-02	4.15E-02	4.15E-02
u	1.48E+00	6.41E-01	6.40E-01	6.39E-01	6.37E-01	6.36E-01	6.34E-01
np	1.01E+00	1.91E-01	1.91E-01	1.91E-01	1.91E-01	1.90E-01	1.90E-01
pu	1.20E+01	1.02E+01	8.99E+00	7.93E+00	7.01E+00	6.20E+00	5.49E+00

am	1.01E-02	1.34E-05	1.39E-07	8.25E-08	5.58E-08	3.77E-08	2.55E-08
totals	1.65E+01	1.31E+01	1.20E+01	1.10E+01	1.02E+01	9.42E+00	8.77E+00

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 289
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	d	d	d	d	d	d
tl207	4.42E-06	4.41E-06	4.41E-06	4.40E-06	4.40E-06	4.40E-06	4.40E-06
tl208	4.79E-05	8.53E-08	8.96E-08	9.39E-08	9.82E-08	1.02E-07	1.07E-07
tl209	4.13E-04	4.36E-04	4.59E-04	4.82E-04	5.05E-04	5.27E-04	5.49E-04
pb210	2.11E-04	2.20E-04	2.28E-04	2.36E-04	2.43E-04	2.50E-04	2.56E-04
pb211	1.36E-04	1.36E-04	1.36E-04	1.36E-04	1.36E-04	1.36E-04	1.36E-04
pb212	5.75E-06	1.02E-08	1.08E-08	1.13E-08	1.18E-08	1.23E-08	1.28E-08
pb214	1.05E-02	1.09E-02	1.13E-02	1.17E-02	1.21E-02	1.24E-02	1.27E-02
bi210	1.30E-08	1.35E-08	1.40E-08	1.45E-08	1.49E-08	1.54E-08	1.58E-08
bi211	9.43E-05	9.42E-05	9.40E-05	9.40E-05	9.39E-05	9.39E-05	9.39E-05
bi212	4.17E-06	7.43E-09	7.81E-09	8.18E-09	8.55E-09	8.92E-09	9.30E-09
bi213	1.17E-03	1.24E-03	1.30E-03	1.37E-03	1.43E-03	1.49E-03	1.56E-03
bi214	6.31E-02	6.57E-02	6.81E-02	7.05E-02	7.27E-02	7.47E-02	7.67E-02
po210	3.56E-07	3.70E-07	3.84E-07	3.97E-07	4.10E-07	4.21E-07	4.32E-07
po211	4.27E-08	4.26E-08	4.26E-08	4.25E-08	4.25E-08	4.25E-08	4.25E-08
po214	3.47E-06	3.62E-06	3.75E-06	3.88E-06	4.00E-06	4.11E-06	4.22E-06
po215	3.54E-07	3.53E-07	3.53E-07	3.52E-07	3.52E-07	3.52E-07	3.52E-07
rn219	1.13E-04	1.13E-04	1.13E-04	1.12E-04	1.12E-04	1.12E-04	1.12E-04
rn222	1.63E-05	1.70E-05	1.76E-05	1.82E-05	1.88E-05	1.93E-05	1.98E-05
fr221	2.75E-04	2.90E-04	3.05E-04	3.20E-04	3.35E-04	3.50E-04	3.65E-04
fr223	1.60E-06	1.59E-06	1.59E-06	1.59E-06	1.59E-06	1.59E-06	1.59E-06
ra223	2.71E-04	2.70E-04	2.70E-04	2.70E-04	2.70E-04	2.70E-04	2.70E-04
ra225	1.34E-04	1.41E-04	1.48E-04	1.56E-04	1.63E-04	1.70E-04	1.77E-04
ra226	3.02E-04	3.15E-04	3.26E-04	3.38E-04	3.48E-04	3.58E-04	3.67E-04
ac225	1.56E-04	1.65E-04	1.73E-04	1.82E-04	1.90E-04	1.99E-04	2.07E-04
ac227	3.89E-07	3.88E-07	3.88E-07	3.87E-07	3.87E-07	3.87E-07	3.87E-07
ac228	5.52E-08	5.84E-08	6.16E-08	6.48E-08	6.80E-08	7.12E-08	7.44E-08
th227	2.21E-04	2.20E-04	2.20E-04	2.20E-04	2.20E-04	2.20E-04	2.20E-04
th229	8.78E-04	9.26E-04	9.75E-04	1.02E-03	1.07E-03	1.12E-03	1.17E-03
th230	7.20E-05	7.48E-05	7.75E-05	8.00E-05	8.23E-05	8.46E-05	8.66E-05
th231	8.02E-05	6.13E-05	6.15E-05	6.17E-05	6.19E-05	6.20E-05	6.22E-05
th234	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04
pa231	8.06E-05	8.04E-05	8.03E-05	8.03E-05	8.02E-05	8.02E-05	8.02E-05
pa233	8.91E-03	8.89E-03	8.88E-03	8.86E-03	8.85E-03	8.84E-03	8.83E-03
pa234m	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04
pa234	4.38E-05	4.38E-05	4.38E-05	4.38E-05	4.38E-05	4.38E-05	4.38E-05
u233	1.32E-05	1.39E-05	1.45E-05	1.51E-05	1.58E-05	1.64E-05	1.69E-05
u234	1.41E-04	1.40E-04	1.39E-04	1.38E-04	1.36E-04	1.35E-04	1.34E-04
u235	3.27E-04	3.28E-04	3.30E-04	3.31E-04	3.32E-04	3.33E-04	3.33E-04
u236	3.01E-05	3.01E-05	3.01E-05	3.01E-05	3.01E-05	3.01E-05	3.01E-05
u238	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05
np236	7.27E-09	7.09E-09	6.92E-09	6.75E-09	6.58E-09	6.42E-09	6.26E-09
np237	1.40E-03	1.40E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03
pu239	1.73E-03	1.54E-03	1.36E-03	1.21E-03	1.07E-03	9.51E-04	8.44E-04
pu240	1.30E-04	8.40E-05	5.41E-05	3.48E-05	2.24E-05	1.44E-05	9.30E-06
total	5.63E-01	9.42E-02	9.71E-02	9.98E-02	1.02E-01	1.05E-01	1.07E-01

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 290
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	d	d	d	d	d	d
li 6	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04

li 7	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06
be 9	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05
be 10	1.06E-04	1.06E-04	1.06E-04	1.05E-04	1.05E-04	1.05E-04	1.05E-04
zn 70	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06
ga 71	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05
ge 72	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03
ge 73	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02
ge 74	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03
as 75	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01
ge 76	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01
se 76	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04
se 77	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01
se 78	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00
se 79	3.80E+00	3.77E+00	3.74E+00	3.71E+00	3.67E+00	3.64E+00	3.61E+00
br 79	3.81E-01	4.14E-01	4.47E-01	4.80E-01	5.12E-01	5.44E-01	5.76E-01
se 80	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01
kr 80	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04
br 81	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01
kr 81	8.03E-07	7.92E-07	7.82E-07	7.71E-07	7.61E-07	7.50E-07	7.40E-07
se 82	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01
kr 82	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02
kr 83	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01
kr 84	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02
rb 85	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02
kr 86	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02
sr 86	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02
rb 87	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02
sr 87	6.56E-04	6.71E-04	6.87E-04	7.02E-04	7.17E-04	7.32E-04	7.48E-04
sr 88	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02
y 89	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02
zr 90	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02
zr 91	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02
zr 92	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02
zr 93	4.49E+02	4.48E+02	4.47E+02	4.46E+02	4.45E+02	4.44E+02	4.44E+02
nb 93	9.44E+00	1.03E+01	1.11E+01	1.20E+01	1.28E+01	1.37E+01	1.45E+01
nb 93m	4.73E-03	4.72E-03	4.71E-03	4.70E-03	4.70E-03	4.69E-03	4.68E-03
zr 94	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02
nb 94	5.49E-04	4.76E-04	4.13E-04	3.58E-04	3.10E-04	2.69E-04	2.34E-04
mo 95	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02
zr 96	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02
mo 96	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00
mo 97	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02
mo 98	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02
tc 98	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.00E-04	2.00E-04
tc 99	6.21E+02	6.12E+02	6.04E+02	5.96E+02	5.88E+02	5.80E+02	5.72E+02
ru 99	9.96E+01	1.08E+02	1.16E+02	1.25E+02	1.33E+02	1.41E+02	1.48E+02
mo100	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02
ru100	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00
ru101	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02
ru102	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02
rh103	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 291
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec
0
nuclide concentrations, grams
basis =single reactor assembly

	initial	******* d	******* d	******* d	******* d	******* d	******* d
ru104	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02
pd104	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01
pd105	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02

pd106	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01
pd107	4.54E+01	4.54E+01	4.54E+01	4.53E+01	4.53E+01	4.53E+01	4.53E+01
ag107	2.09E-01	2.29E-01	2.49E-01	2.69E-01	2.89E-01	3.10E-01	3.30E-01
pd108	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01
cd108	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04
ag109	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01
pd110	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00
cd110	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01
cd111	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00
cd112	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00
cd113	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01
in113	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02
cd114	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00
sn114	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
in115	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00
sn115	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02
cd116	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00
sn116	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02
sn117	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00
sn118	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00
sn119	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00
sn120	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00
sb121	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00
sn122	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00
te122	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03
sb123	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00
te123	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06
sn124	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00
te124	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03
te125	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00
sn126	6.08E+00	5.91E+00	5.74E+00	5.57E+00	5.42E+00	5.26E+00	5.11E+00
te126	2.20E+00	2.38E+00	2.55E+00	2.71E+00	2.87E+00	3.02E+00	3.17E+00
i127	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01
te128	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01
xe128	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02
i129	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02
xe129	2.49E-01	2.71E-01	2.94E-01	3.17E-01	3.39E-01	3.62E-01	3.85E-01
te130	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02
xe130	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01
xe131	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02
xe132	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02
ba132	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06
cs133	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03
xe134	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03
ba134	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01
cs135	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03
ba135	1.46E+01	1.60E+01	1.73E+01	1.86E+01	1.99E+01	2.12E+01	2.26E+01
xe136	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03
ba136	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 292
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	******* d	******* d	******* d	******* d	******* d	******* d
ba137	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03
ba138	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03
la138	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03
la139	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03
ce140	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03

pr141	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02
ce142	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02
nd142	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00
nd143	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02
nd144	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02
nd145	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02
nd146	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02
sm146	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04
sm147	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02
nd148	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02
sm148	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00
sm149	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00
nd150	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02
sm150	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02
eu151	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01
sm152	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01
gd152	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01
eu153	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01
sm154	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01
gd154	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00
gd155	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01
gd156	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01
gd157	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02
gd158	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00
tb159	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01
gd160	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01
dy160	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03
dy161	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02
dy162	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02
dy163	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02
dy164	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03
ho165	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03
er166	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04
er167	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06
er170	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07
yb171	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07
total	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 293
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec
0 nuclide radioactivity, curies
basis =single reactor assembly

	initial******* d	******* d	******* d	******* d	******* d	******* d	******* d
be 10	2.37E-06	2.36E-06	2.36E-06	2.36E-06	2.35E-06	2.35E-06	2.34E-06
se 79	5.22E-02	5.18E-02	5.13E-02	5.09E-02	5.04E-02	5.00E-02	4.95E-02
rb 87	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05
zr 93	1.13E+00	1.13E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
nb 93m	1.13E+00	1.13E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
nb 94	1.03E-04	8.92E-05	7.73E-05	6.71E-05	5.82E-05	5.05E-05	4.38E-05
tc 99	1.06E+01	1.05E+01	1.03E+01	1.02E+01	1.01E+01	9.92E+00	9.78E+00
pd107	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02
sn126	1.73E-01	1.68E-01	1.63E-01	1.58E-01	1.54E-01	1.49E-01	1.45E-01
sb126	2.51E-02	2.35E-02	2.28E-02	2.22E-02	2.15E-02	2.09E-02	2.03E-02
sb126m	1.74E-01	1.68E-01	1.63E-01	1.58E-01	1.54E-01	1.49E-01	1.45E-01
i129	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02
cs135	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.20E+00
ce142	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05
sm147	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06
total	2.54E+03	1.44E+01	1.42E+01	1.41E+01	1.39E+01	1.38E+01	1.36E+01

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 294
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec

0 element thermal power, watts
basis =single reactor assembly

	initial	d	d	d	d	d	d
se	3.90E-01	1.62E-05	1.61E-05	1.59E-05	1.58E-05	1.57E-05	1.55E-05
rb	2.97E+00	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08
zr	1.45E+00	1.27E-04	1.27E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
nb	2.64E+00	1.94E-04	1.94E-04	1.93E-04	1.93E-04	1.92E-04	1.92E-04
tc	8.85E-01	5.25E-03	5.18E-03	5.11E-03	5.04E-03	4.97E-03	4.91E-03
pd	5.94E-03	1.29E-06	1.29E-06	1.29E-06	1.28E-06	1.28E-06	1.28E-06
sn	2.29E-01	2.61E-04	2.54E-04	2.47E-04	2.40E-04	2.33E-04	2.26E-04
sb	9.16E-01	2.61E-03	2.53E-03	2.46E-03	2.39E-03	2.32E-03	2.26E-03
i	2.52E+00	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05
cs	2.21E+00	4.04E-04	4.04E-04	4.03E-04	4.03E-04	4.02E-04	4.02E-04
sm	3.66E-03	1.23E-07	1.23E-07	1.23E-07	1.23E-07	1.23E-07	1.23E-07
totals	3.15E+01	8.87E-03	8.72E-03	8.57E-03	8.42E-03	8.28E-03	8.13E-03

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 295
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec

0 nuclide gamma power, watts
basis =single reactor assembly

	initial	d	d	d	d	d	d
nb 93m	1.26E-05	1.25E-05	1.25E-05	1.25E-05	1.25E-05	1.25E-05	1.24E-05
nb 94	9.58E-07	8.31E-07	7.21E-07	6.25E-07	5.42E-07	4.70E-07	4.08E-07
tc 99	3.90E-08	3.85E-08	3.80E-08	3.75E-08	3.70E-08	3.64E-08	3.60E-08
sn126	1.34E-04	1.30E-04	1.26E-04	1.22E-04	1.19E-04	1.16E-04	1.12E-04
sb126	4.09E-04	3.83E-04	3.72E-04	3.62E-04	3.51E-04	3.41E-04	3.32E-04
sb126m	1.60E-03	1.54E-03	1.50E-03	1.46E-03	1.42E-03	1.38E-03	1.34E-03
i129	3.18E-06	3.18E-06	3.18E-06	3.17E-06	3.17E-06	3.17E-06	3.17E-06
total	1.56E+01	2.07E-03	2.01E-03	1.96E-03	1.90E-03	1.85E-03	1.80E-03

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 296
decay, following reactor irradiation identified by: power= 9.787E-04mw, burnup=2.6809E+04mwd, flux= 6.14E+07n/cm**2-sec

0 element gamma power, watts
basis =single reactor assembly

	initial	d	d	d	d	d	d
nb	1.12E+00	1.34E-05	1.32E-05	1.31E-05	1.30E-05	1.29E-05	1.28E-05
tc	4.43E-01	3.99E-08	3.94E-08	3.89E-08	3.84E-08	3.79E-08	3.74E-08
sn	1.50E-01	1.30E-04	1.26E-04	1.22E-04	1.19E-04	1.16E-04	1.12E-04
sb	6.30E-01	1.93E-03	1.87E-03	1.82E-03	1.77E-03	1.72E-03	1.67E-03
i	1.65E+00	3.18E-06	3.18E-06	3.17E-06	3.17E-06	3.17E-06	3.17E-06
totals	1.56E+01	2.07E-03	2.01E-03	1.96E-03	1.90E-03	1.85E-03	1.80E-03

1 page 297
photon spectrum as a function of time for light elements, cladding and structural materials

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 26809.mwd, flux= 6.14E+07 n**2-sec
0 spectrum of photon release rates, photons/sec
basis = single reactor assembly
0

emean	time after discharge						
(mev)	initial	d	d	d	d	d	d
1.00E-02	6.07E+10	3.25E-06	1.96E-06	1.18E-06	7.15E-07	4.32E-07	2.61E-07
3.00E-02	1.99E+10	6.32E-07	3.82E-07	2.30E-07	1.39E-07	8.41E-08	5.08E-08
5.50E-02	1.39E+10	2.12E-07	1.28E-07	7.73E-08	4.67E-08	2.82E-08	1.70E-08
8.50E-02	8.13E+09	3.81E-08	2.30E-08	1.39E-08	8.39E-09	5.07E-09	3.06E-09
1.20E-01	5.78E+09	4.45E-09	2.69E-09	1.62E-09	9.81E-10	5.92E-10	3.58E-10
1.70E-01	6.05E+09	7.20E-11	4.35E-11	2.63E-11	1.59E-11	9.59E-12	5.79E-12
3.00E-01	6.93E+09	2.44E-24	2.44E-24	2.44E-24	2.43E-24	2.43E-24	2.42E-24

	6.50E-01	3.42E+09	2.06E-26	2.06E-26	2.05E-26	2.05E-26	2.04E-26	2.04E-26
	1.13E+00	5.89E+08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	1.58E+00	1.07E+11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	2.00E+00	2.11E+07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	2.40E+00	4.28E+06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	2.80E+00	2.52E+10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	3.25E+00	1.70E+03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	3.75E+00	1.64E+07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	4.25E+00	2.15E+05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	4.75E+00	4.28E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	5.50E+00	7.01E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0	total	2.57E+11	4.13E-06	2.50E-06	1.51E-06	9.11E-07	5.50E-07	3.32E-07
0	mev/sec	2.48E+11	6.68E-08	4.04E-08	2.44E-08	1.47E-08	8.90E-09	5.38E-09

0 spectrum of energy release rates, mev/watt-sec
basis = single reactor assembly

0

emean	time after discharge						
(mev)	initial******* d	******* d	******* d	******* d	******* d	******* d	******* d
1.00E-02	6.20E+05	3.32E-11	2.00E-11	1.21E-11	7.31E-12	4.42E-12	2.67E-12
3.00E-02	6.11E+05	1.94E-11	1.17E-11	7.06E-12	4.27E-12	2.58E-12	1.56E-12
5.50E-02	7.82E+05	1.19E-11	7.19E-12	4.34E-12	2.62E-12	1.59E-12	9.57E-13
8.50E-02	7.06E+05	3.31E-12	2.00E-12	1.21E-12	7.29E-13	4.40E-13	2.66E-13
1.20E-01	7.08E+05	5.46E-13	3.30E-13	1.99E-13	1.20E-13	7.26E-14	4.39E-14
1.70E-01	1.05E+06	1.25E-14	7.56E-15	4.57E-15	2.76E-15	1.67E-15	1.01E-15
3.00E-01	2.12E+06	7.49E-28	7.48E-28	7.47E-28	7.45E-28	7.44E-28	7.42E-28
6.50E-01	2.27E+06	1.37E-29	1.37E-29	1.36E-29	1.36E-29	1.36E-29	1.36E-29
1.13E+00	6.77E+05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
1.58E+00	1.72E+08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
2.00E+00	4.32E+04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
2.40E+00	1.05E+04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
2.80E+00	7.20E+07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
3.25E+00	5.65E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
3.75E+00	6.28E+04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.25E+00	9.32E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.75E+00	2.08E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
5.50E+00	3.94E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0 total	2.53E+08	6.83E-11	4.13E-11	2.49E-11	1.51E-11	9.09E-12	5.49E-12
0 gamma watts	3.97E-02	1.07E-20	6.47E-21	3.91E-21	2.36E-21	1.43E-21	8.62E-22

1 page 298

photon spectrum as a function of time for fission products

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 26809.mwd, flux= 6.14E+07 n**2-sec

0 spectrum of photon release rates, photons/sec
basis = single reactor assembly

0

emean	time after discharge						
(mev)	initial******* d	******* d	******* d	******* d	******* d	******* d	******* d
1.00E-02	3.16E+13	2.94E+10	2.90E+10	2.87E+10	2.84E+10	2.81E+10	2.78E+10
3.00E-02	1.38E+13	7.89E+09	7.75E+09	7.62E+09	7.49E+09	7.36E+09	7.24E+09
5.50E-02	7.37E+12	3.33E+09	3.27E+09	3.21E+09	3.15E+09	3.10E+09	3.04E+09
8.50E-02	5.08E+12	3.93E+09	3.83E+09	3.73E+09	3.63E+09	3.54E+09	3.45E+09
1.20E-01	4.17E+12	4.54E+08	4.46E+08	4.37E+08	4.29E+08	4.21E+08	4.13E+08
1.70E-01	6.65E+12	2.56E+08	2.51E+08	2.45E+08	2.39E+08	2.34E+08	2.29E+08
3.00E-01	1.35E+13	4.43E+09	4.31E+09	4.18E+09	4.06E+09	3.95E+09	3.84E+09
6.50E-01	2.81E+13	1.61E+10	1.56E+10	1.52E+10	1.47E+10	1.43E+10	1.39E+10
1.13E+00	9.45E+12	3.06E+08	2.97E+08	2.89E+08	2.81E+08	2.73E+08	2.65E+08
1.58E+00	4.88E+12	2.25E+07	2.18E+07	2.12E+07	2.06E+07	2.00E+07	1.94E+07
2.00E+00	1.48E+12	6.06E+00	5.88E+00	5.72E+00	5.55E+00	5.40E+00	5.24E+00
2.40E+00	1.27E+12	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04

	2.80E+00	5.08E+11	2.84E-04	2.84E-04	2.84E-04	2.84E-04	2.84E-04	2.84E-04
	3.25E+00	2.94E+11	1.45E-04	1.45E-04	1.45E-04	1.45E-04	1.45E-04	1.45E-04
	3.75E+00	1.49E+11	7.28E-05	7.28E-05	7.28E-05	7.28E-05	7.28E-05	7.28E-05
	4.25E+00	1.63E+11	3.65E-05	3.65E-05	3.65E-05	3.65E-05	3.65E-05	3.65E-05
	4.75E+00	4.77E+10	1.83E-05	1.83E-05	1.83E-05	1.83E-05	1.83E-05	1.83E-05
	5.50E+00	3.56E+10	1.36E-05	1.36E-05	1.36E-05	1.36E-05	1.36E-05	1.36E-05
0	total	1.28E+14	6.60E+10	6.48E+10	6.36E+10	6.24E+10	6.13E+10	6.02E+10
0	mev/sec	5.38E+13	1.33E+10	1.29E+10	1.26E+10	1.22E+10	1.19E+10	1.16E+10

0 spectrum of energy release rates, mev/watt-sec
basis = single reactor assembly

0

emean	time after discharge						
(mev)	initial******* d	******* d	******* d	******* d	******* d	******* d	******* d
1.00E-02	3.23E+08	3.00E+05	2.97E+05	2.93E+05	2.90E+05	2.87E+05	2.84E+05
3.00E-02	4.24E+08	2.42E+05	2.38E+05	2.34E+05	2.30E+05	2.26E+05	2.22E+05
5.50E-02	4.14E+08	1.87E+05	1.84E+05	1.80E+05	1.77E+05	1.74E+05	1.71E+05
8.50E-02	4.41E+08	3.41E+05	3.32E+05	3.24E+05	3.16E+05	3.08E+05	3.00E+05
1.20E-01	5.11E+08	5.57E+04	5.47E+04	5.36E+04	5.26E+04	5.16E+04	5.07E+04
1.70E-01	1.16E+09	4.46E+04	4.35E+04	4.25E+04	4.16E+04	4.06E+04	3.97E+04
3.00E-01	4.12E+09	1.36E+06	1.32E+06	1.28E+06	1.25E+06	1.21E+06	1.18E+06
6.50E-01	1.86E+10	1.07E+07	1.04E+07	1.01E+07	9.78E+06	9.50E+06	9.23E+06
1.13E+00	1.09E+10	3.52E+05	3.42E+05	3.32E+05	3.23E+05	3.13E+05	3.04E+05
1.58E+00	7.86E+09	3.61E+04	3.51E+04	3.41E+04	3.31E+04	3.22E+04	3.13E+04
2.00E+00	3.02E+09	1.24E-02	1.20E-02	1.17E-02	1.14E-02	1.10E-02	1.07E-02
2.40E+00	3.11E+09	1.33E-06	1.33E-06	1.33E-06	1.33E-06	1.33E-06	1.33E-06
2.80E+00	1.45E+09	8.13E-07	8.13E-07	8.13E-07	8.13E-07	8.13E-07	8.13E-07
3.25E+00	9.76E+08	4.82E-07	4.82E-07	4.82E-07	4.82E-07	4.82E-07	4.82E-07
3.75E+00	5.70E+08	2.79E-07	2.79E-07	2.79E-07	2.79E-07	2.79E-07	2.79E-07
4.25E+00	7.08E+08	1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07
4.75E+00	2.32E+08	8.89E-08	8.89E-08	8.89E-08	8.89E-08	8.89E-08	8.89E-08
5.50E+00	2.00E+08	7.63E-08	7.63E-08	7.63E-08	7.63E-08	7.63E-08	7.63E-08
0 total	5.50E+10	1.36E+07	1.32E+07	1.28E+07	1.25E+07	1.21E+07	1.18E+07
0 gamma watts	8.63E+00	2.13E-03	2.07E-03	2.01E-03	1.96E-03	1.91E-03	1.85E-03

1 page 299

0 principal photon sources in group 1, photons/sec
mean energy = .0100 mev. nuclides exceeding 1.0E-03 of total group release rate (2.81E+10) at ******* d

nuclide	time after discharge						
	initial******* d	******* d	******* d	******* d	******* d	******* d	******* d
se 79	5.14E+07	5.09E+07	5.05E+07	5.00E+07	4.96E+07	4.92E+07	4.87E+07
zr 93	2.70E+08	2.70E+08	2.69E+08	2.69E+08	2.68E+08	2.68E+08	2.67E+08
nb 93m	7.87E+09	7.86E+09	7.84E+09	7.83E+09	7.81E+09	7.80E+09	7.78E+09
tc 99	1.76E+10	1.73E+10	1.71E+10	1.69E+10	1.66E+10	1.64E+10	1.62E+10
sn126	6.09E+08	5.91E+08	5.74E+08	5.58E+08	5.42E+08	5.27E+08	5.12E+08
sb126	1.44E+08	1.35E+08	1.31E+08	1.27E+08	1.24E+08	1.20E+08	1.17E+08
sb126m	1.89E+09	1.82E+09	1.77E+09	1.72E+09	1.67E+09	1.62E+09	1.58E+09
i129	4.21E+07	4.21E+07	4.21E+07	4.21E+07	4.21E+07	4.21E+07	4.21E+07
cs135	1.26E+09	1.26E+09	1.26E+09	1.25E+09	1.25E+09	1.25E+09	1.25E+09

0 principal photon sources in group 2, photons/sec
mean energy = .0300 mev. nuclides exceeding 1.0E-03 of total group release rate (7.36E+09) at ******* d

nuclide	time after discharge						
	initial******* d	******* d	******* d	******* d	******* d	******* d	******* d
se 79	1.06E+07	1.05E+07	1.04E+07	1.03E+07	1.02E+07	1.01E+07	1.00E+07
zr 93	2.02E+07	2.01E+07	2.01E+07	2.01E+07	2.00E+07	2.00E+07	2.00E+07
tc 99	4.25E+09	4.19E+09	4.14E+09	4.08E+09	4.02E+09	3.97E+09	3.91E+09
sn126	2.14E+09	2.08E+09	2.02E+09	1.97E+09	1.91E+09	1.86E+09	1.80E+09
sb126	5.53E+07	5.18E+07	5.03E+07	4.89E+07	4.75E+07	4.62E+07	4.49E+07
sb126m	6.75E+08	6.51E+08	6.33E+08	6.15E+08	5.97E+08	5.80E+08	5.64E+08
i129	6.17E+08	6.17E+08	6.17E+08	6.16E+08	6.16E+08	6.16E+08	6.16E+08
cs135	2.67E+08	2.66E+08	2.66E+08	2.66E+08	2.65E+08	2.65E+08	2.65E+08

0 principal photon sources in group 3, photons/sec

```
      mean energy =  .0550 mev.  nuclides exceeding  1.0E-03 of total group release rate (3.10E+09) at ******* d
    nuclide                                    time after discharge
             initial******* d ******* d ******* d ******* d ******* d ******* d
     se 79   3.83E+06  3.80E+06  3.77E+06  3.73E+06  3.70E+06  3.67E+06  3.64E+06
     tc 99   2.05E+09  2.02E+09  2.00E+09  1.97E+09  1.94E+09  1.92E+09  1.89E+09
     sn126   7.85E+08  7.63E+08  7.41E+08  7.20E+08  7.00E+08  6.80E+08  6.61E+08
     sb126   2.72E+07  2.55E+07  2.48E+07  2.41E+07  2.34E+07  2.27E+07  2.21E+07
     sb126m  4.02E+08  3.87E+08  3.76E+08  3.66E+08  3.55E+08  3.45E+08  3.35E+08
      i129   2.26E+07  2.26E+07  2.26E+07  2.26E+07  2.26E+07  2.26E+07  2.25E+07
     cs135   1.06E+08  1.06E+08  1.06E+08  1.06E+08  1.05E+08  1.05E+08  1.05E+08
0                    principal photon sources in group  4, photons/sec
      mean energy =  .0850 mev.  nuclides exceeding  1.0E-03 of total group release rate (3.54E+09) at ******* d
    nuclide                                    time after discharge
             initial******* d ******* d ******* d ******* d ******* d ******* d
     tc 99   7.29E+08  7.19E+08  7.09E+08  7.00E+08  6.90E+08  6.81E+08  6.72E+08
     sn126   3.03E+09  2.95E+09  2.86E+09  2.78E+09  2.70E+09  2.63E+09  2.55E+09
     sb126   1.43E+07  1.34E+07  1.30E+07  1.26E+07  1.23E+07  1.19E+07  1.16E+07
     sb126m  2.27E+08  2.19E+08  2.12E+08  2.06E+08  2.00E+08  1.95E+08  1.89E+08
     cs135   2.74E+07  2.73E+07  2.73E+07  2.73E+07  2.72E+07  2.72E+07  2.72E+07
1                                                                                                    page 300
0                    principal photon sources in group  5, photons/sec
      mean energy =  .1200 mev.  nuclides exceeding  1.0E-03 of total group release rate (4.21E+08) at ******* d
    nuclide                                    time after discharge
             initial******* d ******* d ******* d ******* d ******* d ******* d
     tc 99   2.85E+08  2.81E+08  2.77E+08  2.74E+08  2.70E+08  2.66E+08  2.63E+08
     sn126   8.05E+06  7.82E+06  7.59E+06  7.38E+06  7.17E+06  6.96E+06  6.77E+06
     sb126   9.16E+06  8.58E+06  8.33E+06  8.10E+06  7.87E+06  7.64E+06  7.43E+06
     sb126m  1.55E+08  1.50E+08  1.46E+08  1.42E+08  1.37E+08  1.34E+08  1.30E+08
     cs135   6.59E+06  6.59E+06  6.58E+06  6.57E+06  6.56E+06  6.55E+06  6.54E+06
0                    principal photon sources in group  6, photons/sec
      mean energy =  .1700 mev.  nuclides exceeding  1.0E-03 of total group release rate (2.34E+08) at ******* d
    nuclide                                    time after discharge
             initial******* d ******* d ******* d ******* d ******* d ******* d
     tc 99   9.51E+07  9.38E+07  9.26E+07  9.13E+07  9.01E+07  8.88E+07  8.76E+07
     sn126   3.58E+06  3.48E+06  3.38E+06  3.29E+06  3.19E+06  3.10E+06  3.01E+06
     sb126   1.07E+07  1.00E+07  9.72E+06  9.45E+06  9.18E+06  8.92E+06  8.66E+06
     sb126m  1.54E+08  1.48E+08  1.44E+08  1.40E+08  1.36E+08  1.32E+08  1.28E+08
     cs135   7.25E+05  7.24E+05  7.23E+05  7.22E+05  7.21E+05  7.20E+05  7.19E+05
0                    principal photon sources in group  7, photons/sec
      mean energy =  .3000 mev.  nuclides exceeding  1.0E-03 of total group release rate (3.95E+09) at ******* d
    nuclide                                    time after discharge
             initial******* d ******* d ******* d ******* d ******* d ******* d
     tc 99   7.02E+06  6.92E+06  6.83E+06  6.74E+06  6.64E+06  6.55E+06  6.47E+06
     sb126   6.44E+08  6.03E+08  5.86E+08  5.69E+08  5.53E+08  5.37E+08  5.22E+08
     sb126m  3.96E+09  3.82E+09  3.71E+09  3.61E+09  3.50E+09  3.40E+09  3.31E+09
0                    principal photon sources in group  8, photons/sec
      mean energy =  .6500 mev.  nuclides exceeding  1.0E-03 of total group release rate (1.43E+10) at ******* d
    nuclide                                    time after discharge
             initial******* d ******* d ******* d ******* d ******* d ******* d
     sb126   3.55E+09  3.32E+09  3.23E+09  3.14E+09  3.05E+09  2.96E+09  2.88E+09
     sb126m  1.32E+10  1.27E+10  1.24E+10  1.20E+10  1.17E+10  1.13E+10  1.10E+10
0                    principal photon sources in group  9, photons/sec
      mean energy = 1.1250 mev.  nuclides exceeding  1.0E-03 of total group release rate (2.73E+08) at ******* d
    nuclide                                    time after discharge
             initial******* d ******* d ******* d ******* d ******* d ******* d
     sb126   1.11E+08  1.04E+08  1.01E+08  9.83E+07  9.55E+07  9.28E+07  9.01E+07
     sb126m  2.09E+08  2.02E+08  1.96E+08  1.91E+08  1.85E+08  1.80E+08  1.75E+08
1                                                                                                    page 301
0                    principal photon sources in group 10, photons/sec
      mean energy = 1.5750 mev.  nuclides exceeding  1.0E-03 of total group release rate (2.00E+07) at ******* d
```

```
    nuclide                                          time after discharge
              initial******* d ******* d ******* d ******* d ******* d ******* d
     sb126   2.60E+06  2.43E+06  2.37E+06  2.30E+06  2.23E+06  2.17E+06  2.11E+06
     sb126m  2.08E+07  2.00E+07  1.94E+07  1.89E+07  1.84E+07  1.78E+07  1.73E+07
0                    principal photon sources in group 11, photons/sec
       mean energy = 2.0000 mev.  nuclides exceeding  1.0E-03 of total group release rate (5.40E+00) at ******* d
    nuclide                                          time after discharge
              initial******* d ******* d ******* d ******* d ******* d ******* d
     sb126   3.77E-02  3.53E-02  3.43E-02  3.33E-02  3.24E-02  3.15E-02  3.06E-02
     sb126m  6.24E+00  6.02E+00  5.85E+00  5.68E+00  5.52E+00  5.36E+00  5.21E+00
0                    principal photon sources in group 12, photons/sec
       mean energy = 2.4000 mev.  nuclides exceeding  1.0E-03 of total group release rate (5.41E-04) at ******* d
    nuclide                                          time after discharge
              initial******* d ******* d ******* d ******* d ******* d ******* d
     ce142   3.93E-04  3.93E-04  3.93E-04  3.93E-04  3.93E-04  3.93E-04  3.93E-04
     sm147   1.48E-04  1.48E-04  1.48E-04  1.48E-04  1.48E-04  1.48E-04  1.48E-04
0                    principal photon sources in group 13, photons/sec
       mean energy = 2.8000 mev.  nuclides exceeding  1.0E-03 of total group release rate (2.84E-04) at ******* d
    nuclide                                          time after discharge
              initial******* d ******* d ******* d ******* d ******* d ******* d
     ce142   2.06E-04  2.06E-04  2.06E-04  2.06E-04  2.06E-04  2.06E-04  2.06E-04
     sm147   7.76E-05  7.76E-05  7.76E-05  7.76E-05  7.76E-05  7.76E-05  7.76E-05
0                    principal photon sources in group 14, photons/sec
       mean energy = 3.2500 mev.  nuclides exceeding  1.0E-03 of total group release rate (1.45E-04) at ******* d
    nuclide                                          time after discharge
              initial******* d ******* d ******* d ******* d ******* d ******* d
     ce142   1.05E-04  1.05E-04  1.05E-04  1.05E-04  1.05E-04  1.05E-04  1.05E-04
     sm147   3.96E-05  3.96E-05  3.96E-05  3.96E-05  3.96E-05  3.96E-05  3.96E-05
0                    principal photon sources in group 15, photons/sec
       mean energy = 3.7500 mev.  nuclides exceeding  1.0E-03 of total group release rate (7.28E-05) at ******* d
    nuclide                                          time after discharge
              initial******* d ******* d ******* d ******* d ******* d ******* d
     ce142   5.29E-05  5.29E-05  5.29E-05  5.29E-05  5.29E-05  5.29E-05  5.29E-05
     sm147   1.99E-05  1.99E-05  1.99E-05  1.99E-05  1.99E-05  1.99E-05  1.99E-05
1                                                                                                    page 302
0                    principal photon sources in group 16, photons/sec
       mean energy = 4.2500 mev.  nuclides exceeding  1.0E-03 of total group release rate (3.65E-05) at ******* d
    nuclide                                          time after discharge
              initial******* d ******* d ******* d ******* d ******* d ******* d
     ce142   2.65E-05  2.65E-05  2.65E-05  2.65E-05  2.65E-05  2.65E-05  2.65E-05
     sm147   9.97E-06  9.97E-06  9.97E-06  9.97E-06  9.97E-06  9.97E-06  9.97E-06
0                    principal photon sources in group 17, photons/sec
       mean energy = 4.7500 mev.  nuclides exceeding  1.0E-03 of total group release rate (1.83E-05) at ******* d
    nuclide                                          time after discharge
              initial******* d ******* d ******* d ******* d ******* d ******* d
     ce142   1.33E-05  1.33E-05  1.33E-05  1.33E-05  1.33E-05  1.33E-05  1.33E-05
     sm147   5.00E-06  5.00E-06  5.00E-06  5.00E-06  5.00E-06  5.00E-06  5.00E-06
0                    principal photon sources in group 18, photons/sec
       mean energy = 5.5000 mev.  nuclides exceeding  1.0E-03 of total group release rate (1.36E-05) at ******* d
    nuclide                                          time after discharge
              initial******* d ******* d ******* d ******* d ******* d ******* d
     ce142   9.86E-06  9.86E-06  9.86E-06  9.86E-06  9.86E-06  9.86E-06  9.86E-06
     sm147   3.71E-06  3.71E-06  3.71E-06  3.71E-06  3.71E-06  3.71E-06  3.71E-06
1                                                                                                    page 303
               photon spectrum as a function of time for heavy metals and their daughters

0                          sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
                                power=    .00 mw, burnup=  26809.mwd, flux= 6.14E+07 n**2-sec
0                                    actinide photon release rates, photons/sec
                                   basis = single reactor assembly
```

0

emean (mev)	initial	time after discharge ******* d	******* d	******* d	******* d	******* d	******* d
1.00E-02	1.77E+13	1.74E+12	1.67E+12	1.61E+12	1.56E+12	1.51E+12	1.48E+12
3.00E-02	1.13E+12	1.36E+11	1.39E+11	1.43E+11	1.46E+11	1.49E+11	1.52E+11
5.50E-02	1.40E+12	9.02E+10	9.24E+10	9.46E+10	9.68E+10	9.88E+10	1.01E+11
8.50E-02	6.52E+12	2.77E+11	2.82E+11	2.87E+11	2.92E+11	2.96E+11	3.01E+11
1.20E-01	6.51E+12	5.47E+10	5.56E+10	5.65E+10	5.74E+10	5.83E+10	5.92E+10
1.70E-01	2.54E+11	5.20E+10	5.34E+10	5.47E+10	5.59E+10	5.71E+10	5.83E+10
3.00E-01	3.75E+12	3.52E+11	3.60E+11	3.68E+11	3.75E+11	3.82E+11	3.88E+11
6.50E-01	3.51E+11	1.85E+11	1.92E+11	1.99E+11	2.05E+11	2.11E+11	2.16E+11
1.13E+00	2.99E+11	8.36E+10	8.67E+10	8.96E+10	9.24E+10	9.50E+10	9.74E+10
1.58E+00	9.21E+10	9.58E+10	9.94E+10	1.03E+11	1.06E+11	1.09E+11	1.12E+11
2.00E+00	1.91E+10	1.99E+10	2.06E+10	2.13E+10	2.20E+10	2.26E+10	2.32E+10
2.40E+00	1.13E+10	1.18E+10	1.22E+10	1.26E+10	1.30E+10	1.34E+10	1.37E+10
2.80E+00	4.32E+08	3.64E+08	3.78E+08	3.90E+08	4.03E+08	4.14E+08	4.25E+08
3.25E+00	9.02E+07	9.38E+07	9.74E+07	1.01E+08	1.04E+08	1.07E+08	1.10E+08
3.75E+00	9.55E+03	8.41E+03	7.73E+03	7.28E+03	6.97E+03	6.75E+03	6.60E+03
4.25E+00	5.45E+03	4.81E+03	4.42E+03	4.16E+03	3.98E+03	3.86E+03	3.78E+03
4.75E+00	3.12E+03	2.75E+03	2.53E+03	2.38E+03	2.28E+03	2.21E+03	2.17E+03
5.50E+00	2.78E+03	2.45E+03	2.25E+03	2.12E+03	2.04E+03	1.98E+03	1.94E+03
0 total	3.81E+13	3.10E+12	3.06E+12	3.04E+12	3.02E+12	3.01E+12	3.00E+12
0 mev/sec	3.57E+12	6.06E+11	6.25E+11	6.43E+11	6.60E+11	6.76E+11	6.91E+11

0 actinide energy release rates, mev/watt-sec
basis = single reactor assembly

0

emean (mev)	initial	time after discharge ******* d	******* d	******* d	******* d	******* d	******* d
1.00E-02	1.81E+08	1.78E+07	1.70E+07	1.64E+07	1.59E+07	1.55E+07	1.51E+07
3.00E-02	3.48E+07	4.16E+06	4.27E+06	4.38E+06	4.48E+06	4.57E+06	4.67E+06
5.50E-02	7.87E+07	5.07E+06	5.20E+06	5.32E+06	5.44E+06	5.55E+06	5.66E+06
8.50E-02	5.66E+08	2.41E+07	2.45E+07	2.49E+07	2.53E+07	2.57E+07	2.61E+07
1.20E-01	7.99E+08	6.70E+06	6.82E+06	6.93E+06	7.04E+06	7.15E+06	7.26E+06
1.70E-01	4.41E+07	9.03E+06	9.27E+06	9.50E+06	9.72E+06	9.93E+06	1.01E+07
3.00E-01	1.15E+09	1.08E+08	1.10E+08	1.13E+08	1.15E+08	1.17E+08	1.19E+08
6.50E-01	2.33E+08	1.23E+08	1.28E+08	1.32E+08	1.36E+08	1.40E+08	1.44E+08
1.13E+00	3.44E+08	9.61E+07	9.96E+07	1.03E+08	1.06E+08	1.09E+08	1.12E+08
1.58E+00	1.48E+08	1.54E+08	1.60E+08	1.66E+08	1.71E+08	1.76E+08	1.80E+08
2.00E+00	3.91E+07	4.07E+07	4.22E+07	4.36E+07	4.50E+07	4.62E+07	4.74E+07
2.40E+00	2.77E+07	2.88E+07	2.99E+07	3.09E+07	3.19E+07	3.28E+07	3.37E+07
2.80E+00	1.24E+06	1.04E+06	1.08E+06	1.12E+06	1.15E+06	1.18E+06	1.22E+06
3.25E+00	2.99E+05	3.12E+05	3.23E+05	3.34E+05	3.45E+05	3.55E+05	3.64E+05
3.75E+00	3.66E+01	3.22E+01	2.96E+01	2.79E+01	2.67E+01	2.59E+01	2.53E+01
4.25E+00	2.37E+01	2.09E+01	1.92E+01	1.81E+01	1.73E+01	1.68E+01	1.64E+01
4.75E+00	1.52E+01	1.34E+01	1.23E+01	1.16E+01	1.11E+01	1.08E+01	1.05E+01
5.50E+00	1.56E+01	1.38E+01	1.27E+01	1.19E+01	1.14E+01	1.11E+01	1.09E+01
0 total	3.65E+09	6.19E+08	6.38E+08	6.57E+08	6.74E+08	6.91E+08	7.06E+08
0 gamma watts	5.72E-01	9.71E-02	1.00E-01	1.03E-01	1.06E-01	1.08E-01	1.11E-01

1 page 304

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	******* d	******* d	******* d	******* d	******* d	******* d
pb210	1.71E-05	1.78E-05	1.85E-05	1.91E-05	1.97E-05	2.02E-05	2.08E-05
bi210	4.36E-03	4.54E-03	4.71E-03	4.87E-03	5.02E-03	5.16E-03	5.30E-03
bi211	5.39E+02	5.38E+02	5.38E+02	5.37E+02	5.37E+02	5.37E+02	5.37E+02

bi212	2.93E+00	5.22E-03	5.49E-03	5.75E-03	6.01E-03	6.27E-03	6.53E-03
bi213	3.62E+01	3.82E+01	4.02E+01	4.22E+01	4.42E+01	4.62E+01	4.81E+01
bi214	1.98E+00	2.06E+00	2.14E+00	2.21E+00	2.28E+00	2.34E+00	2.40E+00
po210	5.37E+03	5.59E+03	5.80E+03	6.00E+03	6.18E+03	6.36E+03	6.53E+03
po211	2.14E+00	2.13E+00	2.13E+00	2.13E+00	2.13E+00	2.12E+00	2.12E+00
po212	1.50E+01	2.68E-02	2.81E-02	2.94E-02	3.08E-02	3.21E-02	3.35E-02
po213	4.78E+03	5.04E+03	5.31E+03	5.57E+03	5.84E+03	6.10E+03	6.35E+03
po214	1.76E+04	1.83E+04	1.90E+04	1.97E+04	2.03E+04	2.09E+04	2.14E+04
po215	7.62E+02	7.61E+02	7.60E+02	7.59E+02	7.59E+02	7.58E+02	7.58E+02
po216	1.17E+01	2.09E-02	2.19E-02	2.30E-02	2.40E-02	2.51E-02	2.61E-02
po218	8.39E+03	8.73E+03	9.06E+03	9.37E+03	9.66E+03	9.93E+03	1.02E+04
at217	3.10E+03	3.27E+03	3.44E+03	3.61E+03	3.78E+03	3.95E+03	4.12E+03
rn218	2.63E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	6.06E+02	6.05E+02	6.04E+02	6.04E+02	6.03E+02	6.03E+02	6.03E+02
rn220	9.28E+00	1.65E-02	1.74E-02	1.82E-02	1.90E-02	1.99E-02	2.07E-02
rn222	6.12E+03	6.38E+03	6.61E+03	6.84E+03	7.05E+03	7.25E+03	7.44E+03
fr221	2.26E+03	2.39E+03	2.51E+03	2.64E+03	2.76E+03	2.88E+03	3.00E+03
fr223	2.30E-04	2.29E-04	2.29E-04	2.29E-04	2.29E-04	2.29E-04	2.29E-04
ra222	2.04E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	3.51E+02	3.50E+02	3.50E+02	3.49E+02	3.49E+02	3.49E+02	3.49E+02
ra224	6.56E+00	1.17E-02	1.23E-02	1.29E-02	1.34E-02	1.40E-02	1.46E-02
ra226	3.58E+03	3.73E+03	3.87E+03	4.00E+03	4.12E+03	4.24E+03	4.35E+03
ac225	1.62E+03	1.71E+03	1.81E+03	1.90E+03	1.98E+03	2.07E+03	2.16E+03
ac227	2.59E+00	2.58E+00	2.58E+00	2.58E+00	2.57E+00	2.57E+00	2.57E+00
ac228	1.85E-10	1.96E-10	2.06E-10	2.17E-10	2.28E-10	2.38E-10	2.49E-10
th226	1.84E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	3.87E+02	3.86E+02	3.86E+02	3.86E+02	3.85E+02	3.85E+02	3.85E+02
th228	5.53E+00	9.86E-03	1.04E-02	1.08E-02	1.13E-02	1.18E-02	1.23E-02
th229	9.49E+02	1.00E+03	1.05E+03	1.11E+03	1.16E+03	1.21E+03	1.26E+03
th230	3.38E+03	3.51E+03	3.64E+03	3.75E+03	3.87E+03	3.97E+03	4.07E+03
th232	2.35E-03	2.49E-03	2.63E-03	2.77E-03	2.90E-03	3.04E-03	3.18E-03
pa231	2.06E+02	2.06E+02	2.06E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02
u230	1.45E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	1.07E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	5.15E+00	5.59E-04	5.45E-04	5.31E-04	5.18E-04	5.05E-04	4.93E-04
u233	9.52E+02	9.99E+02	1.04E+03	1.09E+03	1.13E+03	1.18E+03	1.22E+03
u234	7.45E+03	7.38E+03	7.31E+03	7.25E+03	7.18E+03	7.11E+03	7.05E+03
u235	1.23E+02	1.23E+02	1.23E+02	1.24E+02	1.24E+02	1.25E+02	1.25E+02
u236	1.17E+03	1.17E+03	1.17E+03	1.17E+03	1.17E+03	1.17E+03	1.17E+03
u238	8.30E+02	8.30E+02	8.30E+02	8.30E+02	8.30E+02	8.30E+02	8.30E+02
np235	2.86E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np237	3.20E+03	3.19E+03	3.19E+03	3.18E+03	3.18E+03	3.18E+03	3.17E+03
pu236	1.75E-02	7.47E-04	7.29E-04	7.11E-04	6.93E-04	6.76E-04	6.59E-04
pu237	2.85E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	9.75E+03	1.80E-10	1.67E-19	2.18E-28	.00E+00	.00E+00	.00E+00

1 page 305

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

initial ******* d ******* d ******* d ******* d ******* d ******* d

pu239	2.45E+05	2.18E+05	1.93E+05	1.71E+05	1.52E+05	1.35E+05	1.20E+05
pu240	9.15E+03	5.89E+03	3.79E+03	2.44E+03	1.57E+03	1.01E+03	6.52E+02
pu241	4.05E-03	2.22E-15	1.58E-15	1.13E-15	8.02E-16	5.71E-16	4.07E-16
pu242	2.60E-02	2.58E-02	2.56E-02	2.54E-02	2.52E-02	2.51E-02	2.49E-02
pu244	5.01E-23	5.90E-23	6.78E-23	7.66E-23	8.53E-23	9.39E-23	1.02E-22
am239	3.39E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

am240	5.32E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	2.61E+02	3.40E-01	4.29E-04	5.40E-07	7.34E-10	3.97E-11	2.76E-11
am242m	1.74E-04	2.22E-13	2.83E-22	3.68E-31	.00E+00	.00E+00	.00E+00
am243	6.23E-03	4.21E-03	2.84E-03	1.92E-03	1.30E-03	8.78E-04	5.93E-04
cm241	5.44E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm242	3.33E-01	6.89E-11	8.78E-20	1.11E-28	.00E+00	.00E+00	.00E+00
cm243	1.32E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	5.23E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	1.96E-10	1.39E-10	9.91E-11	7.06E-11	5.02E-11	3.58E-11	2.55E-11
cm246	2.28E-12	1.24E-12	6.74E-13	3.66E-13	1.99E-13	1.08E-13	5.86E-14
cm247	1.24E-18	1.24E-18	1.24E-18	1.24E-18	1.24E-18	1.24E-18	1.24E-18
cm248	3.72E-19	3.69E-19	3.66E-19	3.63E-19	3.60E-19	3.57E-19	3.54E-19
bk249	7.86E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	7.42E-21	1.96E-24	5.28E-28	.00E+00	.00E+00	.00E+00	.00E+00
cf250	3.48E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	2.44E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0 total	3.38E+05	3.00E+05	2.76E+05	2.55E+05	2.37E+05	2.21E+05	2.08E+05

1

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	******* d	******* d	******* d	******* d	******* d	******* d
th230	8.67E-02	9.01E-02	9.33E-02	9.64E-02	9.92E-02	1.02E-01	1.04E-01
pa231	2.58E-02	2.58E-02	2.58E-02	2.57E-02	2.57E-02	2.57E-02	2.57E-02
u232	3.17E-04	3.43E-08	3.35E-08	3.26E-08	3.18E-08	3.10E-08	3.03E-08
u234	1.60E+01	1.59E+01	1.57E+01	1.56E+01	1.54E+01	1.53E+01	1.52E+01
u235	1.50E+00	1.51E+00	1.51E+00	1.52E+00	1.52E+00	1.52E+00	1.53E+00
u236	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02
u237	1.65E-10	8.13E-29	5.79E-29	4.12E-29	2.93E-29	2.09E-29	1.49E-29
u238	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05
u239	1.15E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	1.00E-07	9.79E-08	9.55E-08	9.31E-08	9.08E-08	8.86E-08	8.64E-08
np238	2.37E-09	6.51E-26	8.29E-35	.00E+00	.00E+00	.00E+00	.00E+00
np239	2.35E-06	4.36E-14	2.95E-14	1.99E-14	1.35E-14	9.10E-15	6.15E-15
pu236	1.18E-03	5.06E-05	4.93E-05	4.81E-05	4.69E-05	4.57E-05	4.46E-05
pu238	1.80E+03	3.32E-11	3.08E-20	3.92E-29	4.94E-38	.00E+00	.00E+00
pu239	1.31E+02	1.17E+02	1.03E+02	9.17E+01	8.14E+01	7.22E+01	6.40E+01
pu240	6.08E+04	3.92E+04	2.52E+04	1.62E+04	1.05E+04	6.74E+03	4.34E+03
pu241	1.46E-04	8.00E-17	5.70E-17	4.06E-17	2.89E-17	2.06E-17	1.46E-17
pu242	2.03E+01	2.01E+01	2.00E+01	1.98E+01	1.97E+01	1.95E+01	1.94E+01
pu243	2.02E-13	5.36E-29	5.36E-29	5.36E-29	5.36E-29	5.36E-29	5.36E-29
pu244	1.20E-17	1.41E-17	1.62E-17	1.83E-17	2.04E-17	2.25E-17	2.45E-17
am241	1.00E-01	1.31E-04	1.65E-07	2.08E-10	2.83E-13	1.53E-14	1.06E-14
am242m	8.28E-04	1.05E-12	1.34E-21	1.71E-30	2.18E-39	.00E+00	.00E+00
am242	5.54E-06	1.14E-15	1.46E-24	1.91E-33	.00E+00	.00E+00	.00E+00
am243	2.87E-05	1.94E-05	1.31E-05	8.85E-06	5.98E-06	4.04E-06	2.73E-06
am244	7.08E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm242	1.66E+00	3.44E-10	4.38E-19	5.58E-28	.00E+00	.00E+00	.00E+00
cm243	2.87E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	6.82E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	5.30E-11	3.78E-11	2.69E-11	1.91E-11	1.36E-11	9.70E-12	6.90E-12
cm246	8.24E-08	4.47E-08	2.43E-08	1.32E-08	7.17E-09	3.89E-09	2.11E-09
cm248	6.09E-12	6.04E-12	5.99E-12	5.94E-12	5.89E-12	5.84E-12	5.79E-12
cm250	3.25E-25	2.75E-25	2.33E-25	1.97E-25	1.67E-25	1.42E-25	1.20E-25
bk249	4.34E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	4.51E-21	1.19E-24	3.15E-28	8.30E-32	2.19E-35	5.75E-39	.00E+00

	cf250	2.92E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0	total	1.80E+05	1.57E+05	1.43E+05	1.34E+05	1.28E+05	1.24E+05	1.22E+05
0	total	5.18E+05	4.56E+05	4.18E+05	3.88E+05	3.65E+05	3.45E+05	3.29E+05

1 page 307

alpha-n neutron source spectrum as a function of time
(using reaction spectra for uranium dioxide)

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	******* d	******* d	******* d	******* d	******* d	******* d
1	6.43E+00 - 2.00E+01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
2	3.00E+00 - 6.43E+00	6.551E+04	7.948E+04	6.965E+04	6.438E+04	5.983E+04	5.589E+04	5.246E+04
3	1.85E+00 - 3.00E+00	1.856E+05	1.578E+05	1.442E+05	1.333E+05	1.239E+05	1.157E+05	1.086E+05
4	1.40E+00 - 1.85E+00	4.984E+04	3.679E+04	3.606E+04	3.333E+04	3.098E+04	2.893E+04	2.716E+04
5	9.00E-01 - 1.40E+00	2.804E+04	1.950E+04	1.923E+04	1.778E+04	1.652E+04	1.543E+04	1.449E+04
6	4.00E-01 - 9.00E-01	8.144E+03	5.431E+03	5.460E+03	5.047E+03	4.691E+03	4.382E+03	4.113E+03
7	1.00E-01 - 4.00E-01	1.273E+03	8.592E+02	9.616E+02	8.888E+02	8.260E+02	7.716E+02	7.243E+02
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		3.384E+05	2.999E+05	2.756E+05	2.547E+05	2.367E+05	2.211E+05	2.076E+05

1 page 308

spontaneous fission neutron source spectrum as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	******* d	******* d	******* d	******* d	******* d	******* d
1	6.43E+00 - 2.00E+01	3.438E+03	2.967E+03	2.684E+03	2.514E+03	2.405E+03	2.335E+03	2.290E+03
2	3.00E+00 - 6.43E+00	3.768E+04	3.279E+04	2.988E+04	2.800E+04	2.678E+04	2.600E+04	2.550E+04
3	1.85E+00 - 3.00E+00	4.106E+04	3.558E+04	3.231E+04	3.027E+04	2.896E+04	2.811E+04	2.757E+04
4	1.40E+00 - 1.85E+00	2.327E+04	2.036E+04	1.865E+04	1.748E+04	1.672E+04	1.623E+04	1.592E+04
5	9.00E-01 - 1.40E+00	3.194E+04	2.792E+04	2.555E+04	2.393E+04	2.290E+04	2.223E+04	2.180E+04
6	4.00E-01 - 9.00E-01	3.559E+04	3.086E+04	2.803E+04	2.626E+04	2.512E+04	2.439E+04	2.391E+04
7	1.00E-01 - 4.00E-01	7.026E+03	6.065E+03	5.488E+03	5.142E+03	4.919E+03	4.775E+03	4.683E+03
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00

10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		1.800E+05	1.565E+05	1.426E+05	1.336E+05	1.278E+05	1.241E+05	1.217E+05

1

total (alpha-n plus spon. fission) neutron source spectrum as a function of time
(using reaction spectra for uranium dioxide)

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
neutron spectra, neutrons/sec/basis
basis = single reactor assembly

boundaries, mev	initial ******* d	******* d	******* d	******* d	******* d	******* d
1 6.43E+00 - 2.00E+01	3.438E+03	2.967E+03	2.684E+03	2.514E+03	2.405E+03	2.335E+03	2.290E+03
2 3.00E+00 - 6.43E+00	1.032E+05	1.123E+05	9.953E+04	9.238E+04	8.661E+04	8.189E+04	7.796E+04
3 1.85E+00 - 3.00E+00	2.266E+05	1.934E+05	1.765E+05	1.636E+05	1.529E+05	1.438E+05	1.362E+05
4 1.40E+00 - 1.85E+00	7.311E+04	5.716E+04	5.471E+04	5.081E+04	4.769E+04	4.516E+04	4.308E+04
5 9.00E-01 - 1.40E+00	5.998E+04	4.742E+04	4.478E+04	4.171E+04	3.942E+04	3.766E+04	3.628E+04
6 4.00E-01 - 9.00E-01	4.373E+04	3.629E+04	3.349E+04	3.131E+04	2.981E+04	2.877E+04	2.803E+04
7 1.00E-01 - 4.00E-01	8.299E+03	6.925E+03	6.449E+03	6.031E+03	5.745E+03	5.547E+03	5.407E+03
8 1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9 3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10 5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11 1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12 3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13 1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14 3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15 1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16 1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17 1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18 1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19 8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20 4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21 3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22 2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23 1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24 5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25 3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26 1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27 1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0	5.184E+05	4.564E+05	4.182E+05	3.883E+05	3.646E+05	3.452E+05	3.292E+05

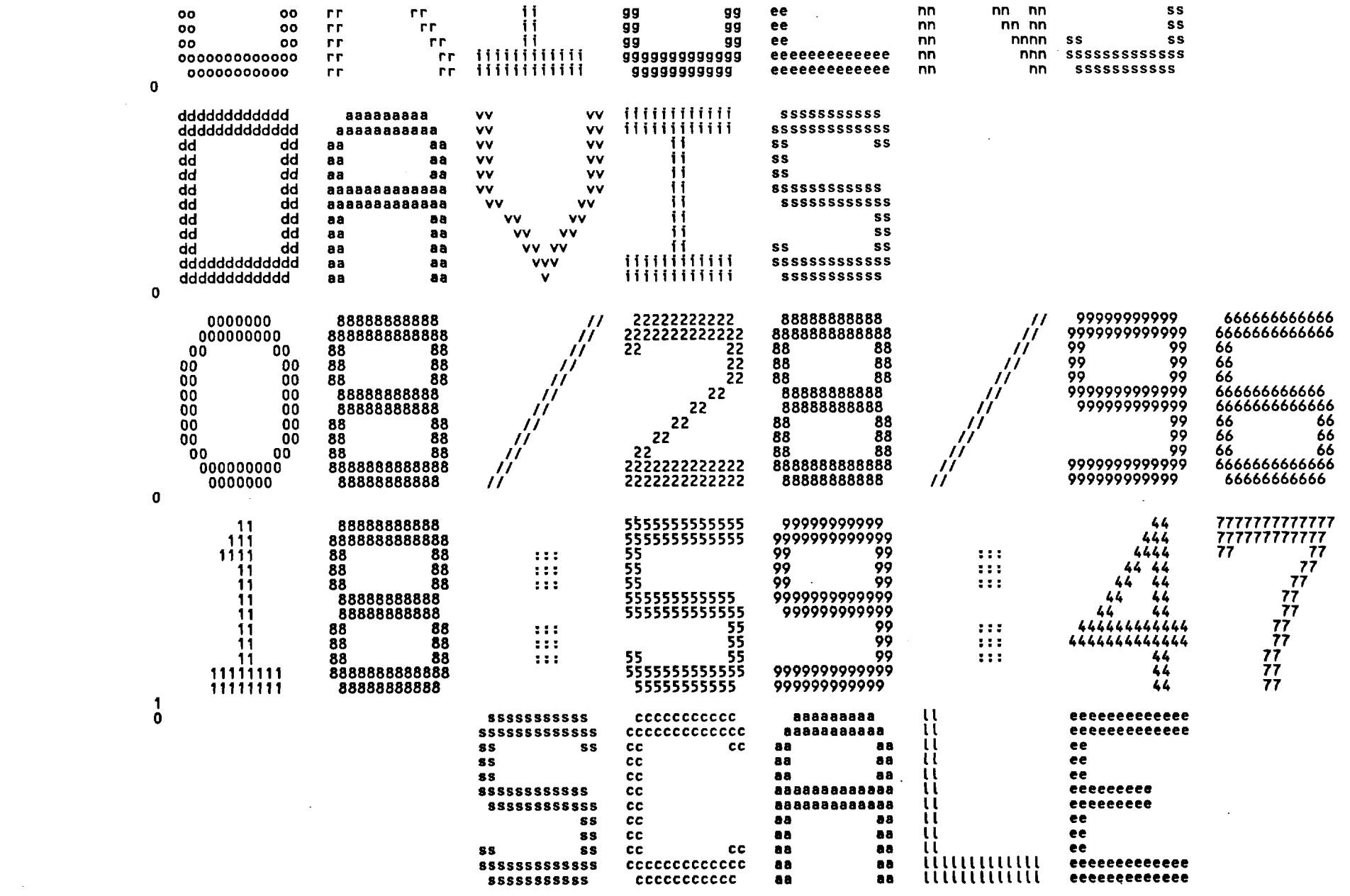
1

1 * gamma sources determined *

0case applies the following photon data base

```
                    master photon library
                    in binary mode
0    the sources include photons of nuclides for...

       light elements
       actinides
       fission products
1                       gamma source spectrum for gamma lines (sas2)
0                                        9131250.00  day time of the requested nuclides
0                            energy interval in mev       photons / second     mev / second
0
                        1.0000E-02 to       5.0000E-02        6.9808E+11        2.0942E+10
                        5.0000E-02 to       1.0000E-01        3.8584E+11        2.8938E+10
                        1.0000E-01 to       2.0000E-01        1.1289E+11        1.6934E+10
                        2.0000E-01 to       3.0000E-01        1.4488E+11        3.6220E+10
                        3.0000E-01 to       4.0000E-01        2.2971E+11        8.0400E+10
                        4.0000E-01 to       6.0000E-01        4.4709E+10        2.2354E+10
                        6.0000E-01 to       8.0000E-01        1.7332E+11        1.2132E+11
                        8.0000E-01 to       1.0000E+00        2.0805E+10        1.8725E+10
                        1.0000E+00 to       1.3300E+00        8.4120E+10        9.7999E+10
                        1.3300E+00 to       1.6600E+00        4.4072E+10        6.5888E+10
                        1.6600E+00 to       2.0000E+00        7.0645E+10        1.2928E+11
                        2.0000E+00 to       2.5000E+00        2.6955E+10        6.0650E+10
                        2.5000E+00 to       3.0000E+00        4.4295E+08        1.2181E+09
                        3.0000E+00 to       4.0000E+00        1.0172E+08        3.5601E+08
                        4.0000E+00 to       5.0000E+00        5.8590E+03        2.6366E+04
                        5.0000E+00 to       6.5000E+00        2.3016E+03        1.3234E+04
                        6.5000E+00 to       8.0000E+00        4.4274E+02        3.2099E+03
                        8.0000E+00 to       1.0000E+01        9.2729E+01        8.3456E+02
0                       totals                                2.0366E+12        7.0123E+11
0
0                       total energy from nuclides with spectrum data    =   7.0123E+11
0                       total energy from nuclides with no spectrum data =   5.7340E+01
1
0  .results on logical unit no. 71, position  2, for time step  6, subcase32. (run position 1, case position 2)
   title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
0     .terminated logical unit no. 71 with zero flag record.
1  * normal termination of execution *
```

```
1          primary module access and input record ( scale driver - 95/03/29 - 09:06:37 )
-   module origens  will be called
      0$$  a8 26 a11 71 e
      1$$ 1  1t
       DBF Fuel 8% UO2 in Tuff (47% water) 1K yr burn
      3$$ 21 0 1 e
      '   3$$ 21 0 1  a33  -88
      2t
      35$$ 0  t
      '  54$$ a8 1 e
      '   56$$ 0 7 a5 1 a13 -1 a15 3 0 4 e   5t
      56$$ 0 7 a13 -1 a15 3 0 4 e   5t
      Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel  1K yr burn
      per critical mass 10.1 MT UO2
      60**  0 1 90 365.25 730.5 1826.25  3652.5
      '  61** f1-20
      '  65$$ a4 1 2z 1 2z 1 5z 1 2z 1
      '   a25 1 2z 1 2z 1 5z 1 2z 1
      '   a46 1 2z 1 2z 1 5z 1 2z 1 e
      65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
      6t
      '   56$$ 0 -6 a10 1  e  t
      56$$ 0 10 a10 7 a14 5 a17 4 e  57** 10  e  5t
      60**  15 20 30 50 100 150 200 250 300 400
      '  61** f1-20
      '  65$$ a4 1 2z 1 2z 1 5z 1 2z 1
      '   a25 1 2z 1 2z 1 5z 1 2z 1
      '   a46 1 2z 1 2z 1 5z 1 2z 1 e
      65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
      6t
      56$$ 0 10 a10 10 a14 5 a17 4 e  57** 400  e  5t
      60**  500 1+3 2+3 4+3 6+3 8+3 1+4 1.2+4 1.4+4 1.6+4
      '    61** f1-20
      65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
      6t
      56$$ 0 10 a10 10 a14 5 a17 4 e  57** 1.6+4  e  5t
      60**  1.8+4 2.0+4 2.2+4 2.4+4 2.6+4 2.8+4 3+4 3.2+4 3.6+4 3.8+4
      '  61** f1-20
      65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
      6t
      56$$ 0 10 a10 10 a14 5 a17 4 e  57** 3.8+4  e  5t
      60**  4+4 4.5+4 5+4 5.5+4 6+4 6.5+4 7+4 1+5 2+5 2.5+5
      '    61** f1-20
      65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
      6t
      56$$ 0 3 a10 10 a14 5 a17 4 e  57** 2.5+5  e  5t
      60**  3+5 5+5 999999
      '  61** f1-20
      65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
      6t
      '   56$$ 0 -10 a10 1 e  t
      56$$ f0  t
0   module origens  is finished. completion code     0. cpu time used     7.00 (seconds).
1    ooooooooooo     rrrrrrrrrrr     iiiiiiiiiii     ggggggggggg     eeeeeeeeeeeee   nn          nn   sssssssssss
   ooooooooooooo    rrrrrrrrrrrr    iiiiiiiiiii    ggggggggggggg    eeeeeeeeeeeee   nnn         nn  ssssssssssss
   oo          oo   rr          rr        ii        gg          gg   ee              nnnn        nn  ss          ss
   oo          oo   rr          rr        ii        gg               ee              nn nn       nn  ss
   oo          oo   rr          rr        ii        gg               ee              nn  nn      nn  ss
   oo          oo   rrrrrrrrrrrr          ii        gg    ggggggg    eeeeeeeee       nn   nn     nn  ssssssssssss
   oo          oo   rrrrrrrrrrr           ii        gg    ggggggg    eeeeeeeee       nn    nn    nn   sssssssssss
```



```
*********************************************************************************
*********************************************************************************
*********************************************************************************
*****                                                                       *****
*****                  program verification information                  *****
*****                                                                       *****
*****                 code system:    scale  version:    4.3             *****
*****                                                                       *****
*********************************************************************************
*********************************************************************************
*****                                                                       *****
*****                                                                       *****
*****              program:  origen                                         *****
*****                                                                       *****
*****         creation date:  03/13/96                                      *****
*****                                                                       *****
*****              library:  /usr1/ornl/Scale/bin                           *****
*****                                                                       *****
*****                                                                       *****
*****             test code:  origens                                       *****
*****                                                                       *****
*****               version:  3.0                                           *****
*****                                                                       *****
*****               jobname:  davis                                         *****
*****                                                                       *****
*****    date of execution:  08/28/96                                       *****
*****                                                                       *****
*****    time of execution:  18:59:48                                       *****
*****                                                                       *****
*****                                                                       *****
*********************************************************************************
*********************************************************************************
*********************************************************************************
1
1          * input echo * (with break between col. 1-72 and 73-80)
0       note:  only comments are permitted after column 72.
0-------------------only this is used as input data.-------------------          comment or title end
0.............................columns 1-72.............................                ..73-80.

 0$$  a8 26 a11 71 e
 1$$ 1  1t
  DBF Fuel 8% UO2 in Tuff (47% water) 1K yr burn
 3$$ 21 0 1 e
 '   3$$ 21 0 1  a33  -88
 2t
 35$$ 0  t
 '  54$$ a8 1 e
 '   56$$ 0 7 a5 1 a13 -1 a15 3 0 4 e   5t
 56$$ 0 7 a13 -1 a15 3 0 4 e   5t
 Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel  1K yr burn
 per critical mass 10.1 MT UO2
 60**  0 1 90 365.25 730.5 1826.25  3652.5
 '  61** f1-20
 '  65$$ a4 1 2z 1 2z 1 5z 1 2z 1
 '   a25 1 2z 1 2z 1 5z 1 2z 1
```

```
'   a46 1 2z 1 2z 1 5z 1 2z 1 e
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
'   56$$ 0 -6 a10 1  e  t
56$$ 0 10 a10 7 a14 5 a17 4 e  57** 10  e  5t
60**  15 20 30 50 100 150 200 250 300 400
'  61** f1-20
'  65$$ a4 1 2z 1 2z 1 5z 1 2z 1
'   a25 1 2z 1 2z 1 5z 1 2z 1
'   a46 1 2z 1 2z 1 5z 1 2z 1 e
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
56$$ 0 10 a10 10 a14 5 a17 4 e  57** 400  e  5t
60**  500 1+3 2+3 4+3 6+3 8+3 1+4 1.2+4 1.4+4 1.6+4
'    61** f1-20
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
56$$ 0 10 a10 10 a14 5 a17 4 e  57** 1.6+4  e  5t
60**  1.8+4 2.0+4 2.2+4 2.4+4 2.6+4 2.8+4 3+4 3.2+4 3.6+4 3.8+4
'  61** f1-20
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
56$$ 0 10 a10 10 a14 5 a17 4 e  57** 3.8+4  e  5t
60**  4+4 4.5+4 5+4 5.5+4 6+4 6.5+4 7+4 1+5 2+5 2.5+5
'    61** f1-20
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
56$$ 0 3 a10 10 a14 5 a17 4 e  57** 2.5+5  e  5t
60**  3+5 5+5 999999
'  61** f1-20
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
'   56$$ 0 -10 a10 1 e  t
56$$ f0  t
0when job "fails", make sure no fido input.....................................is out here!

0    0$ array     12 entries read
0    1$ array      1 entries read
0    1t
0         dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0             short-lived split test fraction, qxn =    9.1188E-04
0             half-norm of matrix used, axn =    7.0000E+00
0             4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
   3$$ 21 0 1  a33  -88
0    3$ array     33 entries read
0    2t
1library information...

          cross-section data taken from position number  1 of library on unit 21.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
```

```
          *        made from modified card-image origen-s libraries of scale 4.2        *
          *      data from the light element, actinide, and fission product libraries   *
          *        decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                             *
          *      neutron flux spectrum factors and cross sections were produced from    *
          *     the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                             *
          *                  fission product yields are from endf/b-v                   *
          *                                                                             *
          *             photon libraries use an 18-energy-group structure               *
          *            the photon data are from the master photon data base,            *
          *             produced to include bremsstrahlung from uo2 matrix              *
          *                                                                             *
          *        see information above this box (if present) for later updates        *
          *                                                                             *
          *******************************************************************************
          *                                                                             *
0         *******************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  /usr1/ornl/Scale/data/prlimlwr
0                3/13/1996    date library was produced
0                    1697    total number of nuclides in library
                      689    number of light-element nuclides
                      129    number of actinide nuclides
                      879    number of fission product nuclides
0                    7935    number of nonzero off-diagonal matrix elements
0         *******************************************************************************
0obtaining data from position no.    1 on unit no.   71
1
     Part B 8% UO2 in Tuff (47% H2O) DBF Fuel  1K yr burn                                  actinides        page    1
0                                        nuclide concentrations, grams
                                         basis =per critical mass 10.1 MT UO2
            charge  discharge     .0 d     1.0 d    90.0 d   365.3 d   730.5 d  1826.3 d  3652.5 d
     he  4 1.14E+00  1.14E+00  1.14E+00  1.14E+00  1.14E+00  1.14E+00  1.14E+00  1.15E+00  1.15E+00
     tl206 1.30E-16  1.30E-16  1.30E-16  1.31E-16  1.31E-16  1.31E-16  1.31E-16  1.32E-16  1.33E-16
     tl207 3.99E-11  3.99E-11  3.99E-11  3.99E-11  3.99E-11  4.00E-11  4.01E-11  4.02E-11  4.04E-11
     tl208 1.54E-12  1.54E-12  1.54E-12  1.58E-12  1.55E-12  1.54E-12  1.52E-12  1.48E-12  1.41E-12
     tl209 6.69E-14  6.69E-14  6.69E-14  6.69E-14  6.69E-14  6.70E-14  6.72E-14  6.75E-14  6.82E-14
     pb206 2.89E-03  2.89E-03  2.89E-03  2.89E-03  2.89E-03  2.89E-03  2.90E-03  2.93E-03  2.97E-03
     pb207 1.48E-03  1.48E-03  1.48E-03  1.48E-03  1.48E-03  1.49E-03  1.49E-03  1.50E-03  1.51E-03
     pb208 2.56E-04  2.56E-04  2.56E-04  2.56E-04  2.56E-04  2.57E-04  2.57E-04  2.59E-04  2.61E-04
     pb209 2.83E-10  2.83E-10  2.83E-10  2.69E-10  2.83E-10  2.83E-10  2.84E-10  2.85E-10  2.88E-10
     pb210 2.81E-04  2.81E-04  2.81E-04  2.81E-04  2.81E-04  2.82E-04  2.82E-04  2.84E-04  2.87E-04
     pb211 3.09E-10  3.09E-10  3.09E-10  3.09E-10  3.09E-10  3.10E-10  3.10E-10  3.11E-10  3.12E-10
     pb212 9.15E-10  9.15E-10  9.15E-10  9.14E-10  9.17E-10  9.11E-10  9.03E-10  8.78E-10  8.37E-10
     pb214 6.96E-10  6.96E-10  6.96E-10  6.96E-10  6.96E-10  6.97E-10  6.99E-10  7.03E-10  7.09E-10
     bi208  .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     bi209 1.77E-04  1.77E-04  1.77E-04  1.77E-04  1.78E-04  1.78E-04  1.78E-04  1.80E-04  1.83E-04
     bi210m  .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     bi210 1.73E-07  1.73E-07  1.73E-07  1.73E-07  1.73E-07  1.74E-07  1.74E-07  1.75E-07  1.77E-07
     bi211 1.83E-11  1.83E-11  1.83E-11  1.83E-11  1.83E-11  1.84E-11  1.84E-11  1.84E-11  1.85E-11
     bi212 8.68E-11  8.68E-11  8.68E-11  8.86E-11  8.70E-11  8.64E-11  8.57E-11  8.33E-11  7.94E-11
     bi213 6.73E-11  6.73E-11  6.73E-11  6.73E-11  6.73E-11  6.74E-11  6.75E-11  6.79E-11  6.86E-11
     bi214 5.17E-10  5.17E-10  5.17E-10  5.17E-10  5.17E-10  5.18E-10  5.19E-10  5.22E-10  5.27E-10
     po210 4.78E-06  4.78E-06  4.78E-06  4.78E-06  4.76E-06  4.73E-06  4.74E-06  4.79E-06  4.88E-06
     po211m  .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     po211 2.02E-16  2.02E-16  2.02E-16  2.02E-16  2.02E-16  2.03E-16  2.03E-16  2.04E-16  2.05E-16
     po212 4.56E-21  4.56E-21  4.56E-21  4.66E-21  4.57E-21  4.54E-21  4.50E-21  4.38E-21  4.17E-21
     po213 1.01E-19  1.01E-19  1.01E-19  1.01E-19  1.01E-19  1.01E-19  1.02E-19  1.02E-19  1.03E-19
     po214 7.11E-17  7.11E-17  7.11E-17  7.11E-17  7.11E-17  7.12E-17  7.14E-17  7.18E-17  7.24E-17
```

po215	2.59E-16	2.59E-16	2.59E-16	2.59E-16	2.58E-16	2.59E-16	2.59E-16	2.60E-16	2.62E-16
po216	3.53E-15	3.53E-15	3.53E-15	3.53E-15	3.54E-15	3.51E-15	3.48E-15	3.39E-15	3.23E-15
po218	8.20E-11	8.20E-11	8.20E-11	8.21E-11	8.21E-11	8.22E-11	8.24E-11	8.28E-11	8.36E-11
at217	8.09E-16	8.09E-16	8.09E-16	8.10E-16	8.10E-16	8.11E-16	8.12E-16	8.17E-16	8.25E-16
rn218	1.34E-26	1.34E-26	1.34E-26	1.29E-26	6.66E-28	6.92E-32	3.58E-37	.00E+00	.00E+00
rn219	5.86E-13	5.86E-13	5.86E-13	5.86E-13	5.86E-13	5.87E-13	5.88E-13	5.90E-13	5.93E-13
rn220	1.38E-12	1.38E-12	1.38E-12	1.38E-12	1.38E-12	1.37E-12	1.36E-12	1.32E-12	1.26E-12
rn222	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.49E-07	1.49E-07	1.50E-07	1.51E-07
fr221	7.50E-12	7.50E-12	7.50E-12	7.50E-12	7.50E-12	7.52E-12	7.53E-12	7.58E-12	7.65E-12
fr223	2.72E-12	2.72E-12	2.72E-12	2.72E-12	2.72E-12	2.72E-12	2.72E-12	2.73E-12	2.75E-12
ra222	1.48E-23	1.48E-23	1.48E-23	1.43E-23	7.37E-25	7.65E-29	3.95E-34	.00E+00	.00E+00
ra223	1.49E-07	1.49E-07	1.49E-07	1.49E-07	1.49E-07	1.49E-07	1.49E-07	1.50E-07	1.51E-07
ra224	7.98E-09	7.98E-09	7.98E-09	7.98E-09	8.00E-09	7.95E-09	7.88E-09	7.66E-09	7.30E-09
ra225	3.32E-08	3.32E-08	3.32E-08	3.32E-08	3.32E-08	3.33E-08	3.34E-08	3.36E-08	3.39E-08
ra226	2.31E-02	2.31E-02	2.31E-02	2.31E-02	2.31E-02	2.31E-02	2.32E-02	2.33E-02	2.35E-02
ra228	4.79E-10	4.79E-10	4.79E-10	4.79E-10	4.79E-10	4.80E-10	4.80E-10	4.81E-10	4.84E-10
ac225	2.24E-08	2.24E-08	2.24E-08	2.24E-08	2.25E-08	2.25E-08	2.25E-08	2.27E-08	2.29E-08
ac227	1.05E-04	1.05E-04	1.05E-04	1.05E-04	1.05E-04	1.05E-04	1.05E-04	1.06E-04	1.06E-04
ac228	5.85E-14	5.85E-14	5.85E-14	5.85E-14	5.85E-14	5.85E-14	5.86E-14	5.88E-14	5.91E-14
th226	7.34E-22	7.34E-22	7.34E-22	7.11E-22	3.66E-23	3.80E-27	1.96E-32	.00E+00	.00E+00
th227	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.44E-07	2.45E-07	2.45E-07	2.46E-07	2.47E-07
th228	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.54E-06	1.53E-06	1.49E-06	1.42E-06
th229	6.58E-03	6.58E-03	6.58E-03	6.58E-03	6.58E-03	6.59E-03	6.60E-03	6.64E-03	6.71E-03
th230	5.88E+00	5.88E+00	5.88E+00	5.88E+00	5.88E+00	5.88E+00	5.89E+00	5.91E+00	5.94E+00
th231	7.18E-07	7.18E-07	7.18E-07	7.05E-07	6.91E-07	6.91E-07	6.91E-07	6.91E-07	6.91E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 2

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
th232	1.20E+00	1.20E+00	1.20E+00	1.20E+00	1.20E+00	1.20E+00	1.20E+00	1.21E+00	1.21E+00
th233	1.10E-11	1.10E-11	1.10E-11	4.01E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	1.66E-01	1.66E-01	1.66E-01	1.66E-01	1.67E-01	1.67E-01	1.67E-01	1.67E-01	1.68E-01
pa232	2.86E-09	2.86E-09	2.86E-09	1.69E-09	6.00E-30	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04
pa234m	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	7.24E-19	7.24E-19	7.24E-19	7.00E-19	3.61E-20	3.74E-24	1.94E-29	.00E+00	.00E+00
u231	2.38E-15	2.38E-15	2.38E-15	2.01E-15	8.46E-22	1.62E-41	.00E+00	.00E+00	.00E+00
u232	5.63E-05	5.63E-05	5.63E-05	5.63E-05	5.62E-05	5.58E-05	5.53E-05	5.38E-05	5.12E-05
u233	3.16E+00	3.16E+00	3.16E+00	3.16E+00	3.16E+00	3.16E+00	3.16E+00	3.17E+00	3.19E+00
u234	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03
u235	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05
u236	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04
u237	7.38E-04	7.38E-04	7.38E-04	6.66E-04	7.16E-08	6.28E-11	5.98E-11	5.18E-11	4.07E-11
u238	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06
u239	7.58E-05	7.58E-05	7.58E-05	2.56E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	.00E+00	.00E+00	.00E+00	5.38E-42	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	2.03E-09	2.03E-09	2.03E-09	2.03E-09	1.73E-09	1.07E-09	5.66E-10	8.32E-11	3.41E-12
np236m	4.85E-10	4.85E-10	4.85E-10	2.31E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	4.62E-05	4.62E-05	4.62E-05	4.62E-05	4.62E-05	4.62E-05	4.62E-05	4.62E-05	4.62E-05
np237	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03
np238	3.68E-04	3.68E-04	3.68E-04	2.65E-04	1.38E-12	1.38E-12	1.37E-12	1.35E-12	1.32E-12
np239	1.10E-02	1.10E-02	1.10E-02	8.22E-03	8.61E-14	5.15E-14	5.15E-14	5.14E-14	5.14E-14
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.23E-12	2.23E-12	2.23E-12	2.21E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	2.63E-07	2.63E-07	2.63E-07	2.63E-07	2.48E-07	2.07E-07	1.63E-07	7.98E-08	2.42E-08
pu237	6.35E-11	6.35E-11	6.35E-11	6.26E-11	1.60E-11	2.34E-13	8.61E-16	4.30E-23	2.91E-35
pu238	5.57E+00	5.57E+00	5.57E+00	5.57E+00	5.56E+00	5.52E+00	5.48E+00	5.35E+00	5.14E+00
pu239	1.15E+03	1.15E+03	1.15E+03	1.15E+03	1.15E+03	1.15E+03	1.15E+03	1.15E+03	1.15E+03
pu240	5.49E+00	5.49E+00	5.49E+00	5.49E+00	5.49E+00	5.49E+00	5.49E+00	5.49E+00	5.48E+00
pu241	2.17E-03	2.17E-03	2.17E-03	2.17E-03	2.15E-03	2.07E-03	1.97E-03	1.71E-03	1.34E-03
pu242	2.20E-05	2.20E-05	2.20E-05	2.20E-05	2.20E-05	2.20E-05	2.20E-05	2.20E-05	2.21E-05
pu243	4.65E-14	4.65E-14	4.65E-14	1.62E-15	5.09E-34	5.09E-34	5.09E-34	5.09E-34	5.09E-34
pu244	3.94E-31	3.94E-31	3.94E-31	3.94E-31	3.95E-31	3.98E-31	4.02E-31	4.14E-31	4.33E-31
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	6.66E-18	6.66E-18	6.66E-18	1.64E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	3.06E-15	3.06E-15	3.06E-15	2.21E-15	5.11E-28	.00E+00	.00E+00	.00E+00	.00E+00
am241	2.45E-02	2.45E-02	2.45E-02	2.45E-02	2.45E-02	2.45E-02	2.46E-02	2.47E-02	2.49E-02
am242m	7.60E-06	7.60E-06	7.60E-06	7.60E-06	7.59E-06	7.56E-06	7.52E-06	7.41E-06	7.23E-06
am242	9.49E-10	9.49E-10	9.49E-10	3.99E-10	9.79E-11	9.75E-11	9.70E-11	9.56E-11	9.33E-11
am243	5.98E-08	5.98E-08	5.98E-08	5.98E-08	5.98E-08	5.98E-08	5.98E-08	5.98E-08	5.97E-08
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	4.56E-16	4.56E-16	4.56E-16	8.78E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	5.50E-20	5.50E-20	5.50E-20	5.39E-20	8.21E-21	2.45E-23	1.09E-26	9.55E-37	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 3

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cm242	1.92E-07	1.92E-07	1.92E-07	1.91E-07	1.37E-07	5.62E-08	2.73E-08	1.94E-08	1.88E-08
cm243	7.14E-14	7.14E-14	7.14E-14	7.14E-14	7.10E-14	6.97E-14	6.80E-14	6.32E-14	5.60E-14
cm244	6.42E-12	6.42E-12	6.42E-12	6.42E-12	6.36E-12	6.18E-12	5.95E-12	5.30E-12	4.38E-12
cm245	1.21E-15	1.21E-15	1.21E-15	1.21E-15	1.21E-15	1.21E-15	1.21E-15	1.21E-15	1.21E-15
cm246	1.04E-18	1.04E-18	1.04E-18	1.04E-18	1.04E-18	1.04E-18	1.04E-18	1.04E-18	1.04E-18
cm247	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23
cm248	2.11E-27	2.11E-27	2.11E-27	2.11E-27	2.11E-27	2.11E-27	2.11E-27	2.11E-27	2.11E-27
cm249	6.59E-38	6.59E-38	6.59E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	4.73E-34	4.73E-34	4.73E-34	4.72E-34	3.89E-34	2.15E-34	9.73E-35	9.06E-36	1.74E-37
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	3.21E-32	3.21E-32	3.21E-32	3.21E-32	3.22E-32	3.23E-32	3.24E-32	3.23E-32	3.20E-32
cf250	3.59E-36	3.59E-36	3.59E-36	3.59E-36	3.55E-36	3.41E-36	3.23E-36	2.76E-36	2.12E-36
cf251	1.14E-38	1.14E-38	1.14E-38	1.14E-38	1.14E-38	1.14E-38	1.14E-38	1.13E-38	1.13E-38
cf252	1.77E-42	1.77E-42	1.77E-42	1.77E-42	1.77E-42	1.41E-42	1.06E-42	3.53E-43	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 4

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	2.84E-08	2.84E-08	2.84E-08	2.84E-08	2.84E-08	2.84E-08	2.85E-08	2.87E-08	2.89E-08

tl207	7.61E-03	7.61E-03	7.61E-03	7.61E-03	7.60E-03	7.62E-03	7.63E-03	7.65E-03	7.69E-03
tl208	4.57E-04	4.57E-04	4.57E-04	4.67E-04	4.58E-04	4.55E-04	4.51E-04	4.39E-04	4.18E-04
tl209	2.74E-05	2.74E-05	2.74E-05	2.74E-05	2.74E-05	2.74E-05	2.75E-05	2.76E-05	2.79E-05
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	1.30E-03	1.30E-03	1.30E-03	1.24E-03	1.30E-03	1.31E-03	1.31E-03	1.32E-03	1.33E-03
pb210	2.15E-02	2.15E-02	2.15E-02	2.15E-02	2.15E-02	2.15E-02	2.16E-02	2.17E-02	2.19E-02
pb211	7.63E-03	7.63E-03	7.63E-03	7.63E-03	7.62E-03	7.64E-03	7.65E-03	7.67E-03	7.71E-03
pb212	1.27E-03	1.27E-03	1.27E-03	1.27E-03	1.28E-03	1.27E-03	1.26E-03	1.22E-03	1.16E-03
pb214	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.29E-02	2.29E-02	2.30E-02	2.33E-02
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.15E-02	2.15E-02	2.15E-02	2.15E-02	2.15E-02	2.15E-02	2.16E-02	2.17E-02	2.19E-02
bi211	7.63E-03	7.63E-03	7.63E-03	7.63E-03	7.62E-03	7.64E-03	7.65E-03	7.67E-03	7.71E-03
bi212	1.27E-03	1.27E-03	1.27E-03	1.30E-03	1.28E-03	1.27E-03	1.26E-03	1.22E-03	1.16E-03
bi213	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.31E-03	1.31E-03	1.32E-03	1.33E-03
bi214	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.29E-02	2.29E-02	2.30E-02	2.33E-02
po210	2.15E-02	2.15E-02	2.15E-02	2.15E-02	2.14E-02	2.13E-02	2.13E-02	2.15E-02	2.19E-02
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.10E-05	2.10E-05	2.10E-05	2.10E-05	2.10E-05	2.10E-05	2.10E-05	2.11E-05	2.12E-05
po212	8.14E-04	8.14E-04	8.14E-04	8.32E-04	8.17E-04	8.11E-04	8.04E-04	7.82E-04	7.45E-04
po213	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.29E-03	1.30E-03
po214	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.29E-02	2.29E-02	2.30E-02	2.33E-02
po215	7.63E-03	7.63E-03	7.63E-03	7.63E-03	7.62E-03	7.64E-03	7.65E-03	7.67E-03	7.71E-03
po216	1.27E-03	1.27E-03	1.27E-03	1.27E-03	1.28E-03	1.27E-03	1.26E-03	1.22E-03	1.16E-03
po218	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.29E-02	2.29E-02	2.31E-02	2.33E-02
at217	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.31E-03	1.31E-03	1.32E-03	1.33E-03
rn218	1.98E-14	1.98E-14	1.98E-14	1.91E-14	9.86E-16	1.02E-19	5.29E-25	.00E+00	.00E+00
rn219	7.63E-03	7.63E-03	7.63E-03	7.63E-03	7.62E-03	7.64E-03	7.65E-03	7.67E-03	7.71E-03
rn220	1.27E-03	1.27E-03	1.27E-03	1.27E-03	1.28E-03	1.27E-03	1.26E-03	1.22E-03	1.16E-03
rn222	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.29E-02	2.29E-02	2.31E-02	2.33E-02
fr221	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.31E-03	1.31E-03	1.32E-03	1.33E-03
fr223	1.05E-04	1.05E-04	1.05E-04	1.05E-04	1.05E-04	1.05E-04	1.05E-04	1.06E-04	1.06E-04
ra222	1.98E-14	1.98E-14	1.98E-14	1.91E-14	9.86E-16	1.02E-19	5.29E-25	.00E+00	.00E+00
ra223	7.63E-03	7.63E-03	7.63E-03	7.63E-03	7.62E-03	7.64E-03	7.65E-03	7.67E-03	7.71E-03
ra224	1.27E-03	1.27E-03	1.27E-03	1.27E-03	1.28E-03	1.27E-03	1.26E-03	1.22E-03	1.16E-03
ra225	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.31E-03	1.31E-03	1.32E-03	1.33E-03
ra226	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.29E-02	2.29E-02	2.31E-02	2.33E-02
ra228	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.32E-07
ac225	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.31E-03	1.31E-03	1.32E-03	1.33E-03
ac227	7.62E-03	7.62E-03	7.62E-03	7.62E-03	7.62E-03	7.63E-03	7.63E-03	7.66E-03	7.70E-03
ac228	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.32E-07
th226	1.98E-14	1.98E-14	1.98E-14	1.91E-14	9.86E-16	1.02E-19	5.29E-25	.00E+00	.00E+00
th227	7.52E-03	7.52E-03	7.52E-03	7.52E-03	7.52E-03	7.54E-03	7.55E-03	7.57E-03	7.61E-03
th228	1.27E-03	1.27E-03	1.27E-03	1.27E-03	1.27E-03	1.26E-03	1.25E-03	1.22E-03	1.16E-03
th229	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.31E-03	1.31E-03	1.32E-03	1.33E-03
th230	1.21E-01	1.21E-01	1.21E-01	1.21E-01	1.21E-01	1.21E-01	1.22E-01	1.22E-01	1.22E-01
th231	3.82E-01	3.82E-01	3.82E-01	3.75E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 5

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
th232	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.33E-07
th233	3.99E-04	3.99E-04	3.99E-04	1.45E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	7.87E-03	7.87E-03	7.87E-03	7.87E-03	7.87E-03	7.87E-03	7.88E-03	7.90E-03	7.94E-03
pa232	1.23E-03	1.23E-03	1.23E-03	7.25E-04	2.58E-24	.00E+00	.00E+00	.00E+00	.00E+00

pa233	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.04E+00	7.03E+00	7.03E+00	7.03E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.79E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.98E-14	1.98E-14	1.98E-14	1.91E-14	9.85E-16	1.02E-19	5.28E-25	.00E+00	.00E+00
u231	3.20E-10	3.20E-10	3.20E-10	2.71E-10	1.14E-16	.00E+00	.00E+00	.00E+00	.00E+00
u232	1.24E-03	1.24E-03	1.24E-03	1.24E-03	1.24E-03	1.23E-03	1.22E-03	1.19E-03	1.13E-03
u233	3.04E-02	3.04E-02	3.04E-02	3.04E-02	3.04E-02	3.05E-02	3.05E-02	3.06E-02	3.08E-02
u234	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01
u235	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01
u236	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00
u237	6.03E+01	6.03E+01	6.03E+01	5.44E+01	5.85E-03	5.13E-06	4.89E-06	4.23E-06	3.32E-06
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	2.54E+03	2.54E+03	2.54E+03	8.57E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	2.85E-06	2.85E-06	2.85E-06	2.84E-06	2.43E-06	1.50E-06	7.94E-07	1.17E-07	4.78E-09
np236m	2.86E-04	2.86E-04	2.86E-04	1.37E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	6.09E-07	6.09E-07	6.09E-07	6.09E-07	6.09E-07	6.09E-07	6.09E-07	6.09E-07	6.09E-07
np237	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00
np238	9.55E+01	9.55E+01	9.55E+01	6.88E+01	3.58E-07	3.57E-07	3.55E-07	3.50E-07	3.41E-07
np239	2.54E+03	2.54E+03	2.54E+03	1.91E+03	2.00E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.82E-05	2.82E-05	2.82E-05	2.80E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.37E-04	1.37E-04	1.37E-04	1.37E-04	1.30E-04	1.08E-04	8.53E-05	4.17E-05	1.27E-05
pu237	7.75E-07	7.75E-07	7.75E-07	7.63E-07	1.95E-07	2.85E-09	1.05E-11	5.24E-19	3.65E-31
pu238	9.54E+01	9.54E+01	9.54E+01	9.54E+01	9.52E+01	9.46E+01	9.39E+01	9.17E+01	8.81E+01
pu239	7.15E+01	7.15E+01	7.15E+01	7.15E+01	7.15E+01	7.15E+01	7.15E+01	7.15E+01	7.15E+01
pu240	1.25E+00	1.25E+00	1.25E+00	1.25E+00	1.25E+00	1.25E+00	1.25E+00	1.25E+00	1.24E+00
pu241	2.25E-01	2.25E-01	2.25E-01	2.25E-01	2.22E-01	2.14E-01	2.04E-01	1.77E-01	1.39E-01
pu242	8.70E-08	8.70E-08	8.70E-08	8.70E-08	8.70E-08	8.70E-08	8.71E-08	8.71E-08	8.73E-08
pu243	1.21E-07	1.21E-07	1.21E-07	4.22E-09	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27
pu244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	7.35E-12	7.35E-12	7.35E-12	1.81E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	7.86E-10	7.86E-10	7.86E-10	5.67E-10	1.31E-22	.00E+00	.00E+00	.00E+00	.00E+00
am241	8.40E-02	8.40E-02	8.40E-02	8.40E-02	8.40E-02	8.42E-02	8.44E-02	8.49E-02	8.55E-02
am242m	7.96E-05	7.96E-05	7.96E-05	7.96E-05	7.95E-05	7.92E-05	7.88E-05	7.77E-05	7.58E-05
am242	7.67E-04	7.67E-04	7.67E-04	3.23E-04	7.92E-05	7.89E-05	7.85E-05	7.73E-05	7.55E-05
am243	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	5.80E-10	5.80E-10	5.80E-10	1.12E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	9.09E-16	9.09E-16	9.09E-16	8.90E-16	1.36E-16	4.04E-19	1.80E-22	2.28E-32	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 6

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cm242	6.34E-04	6.34E-04	6.34E-04	6.33E-04	4.55E-04	1.86E-04	9.06E-05	6.43E-05	6.24E-05
cm243	3.69E-12	3.69E-12	3.69E-12	3.69E-12	3.67E-12	3.60E-12	3.51E-12	3.27E-12	2.89E-12
cm244	5.20E-10	5.20E-10	5.20E-10	5.20E-10	5.15E-10	5.00E-10	4.81E-10	4.29E-10	3.54E-10
cm245	2.08E-16	2.08E-16	2.08E-16	2.08E-16	2.08E-16	2.08E-16	2.08E-16	2.08E-16	2.08E-16
cm246	3.19E-19	3.19E-19	3.19E-19	3.19E-19	3.19E-19	3.19E-19	3.19E-19	3.19E-19	3.19E-19
cm247	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27
cm248	8.92E-30	8.92E-30	8.92E-30	8.92E-30	8.92E-30	8.92E-30	8.92E-30	8.92E-30	8.92E-30
cm249	7.76E-31	7.76E-31	7.76E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	7.76E-31	7.76E-31	7.76E-31	7.76E-31	6.39E-31	3.42E-31	1.60E-31	2.28E-32	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	1.37E-31	1.37E-31	1.37E-31	1.37E-31	1.37E-31	1.37E-31	1.37E-31	1.37E-31	1.37E-31
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	5.45E+03	5.45E+03	5.45E+03	2.24E+03	2.08E+02	2.08E+02	2.07E+02	2.05E+02	2.01E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 7

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
h 3	3.84E-05	3.84E-05	3.84E-05	3.84E-05	3.79E-05	3.63E-05	3.44E-05	2.90E-05	2.19E-05
li 6	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05
li 7	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07
be 9	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07
be 10	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06
c 14	1.12E-06	1.12E-06	1.12E-06	1.12E-06	1.12E-06	1.12E-06	1.12E-06	1.12E-06	1.12E-06
ni 66	1.25E-13	1.25E-13	1.25E-13	9.23E-14	1.55E-25	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	1.95E-16	1.95E-16	1.95E-16	1.44E-16	2.42E-28	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08
cu 67	2.51E-14	2.51E-14	2.51E-14	1.92E-14	7.66E-25	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09
zn 68	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10
zn 69	5.71E-16	5.71E-16	5.71E-16	1.48E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	6.78E-15	6.78E-15	6.78E-15	2.02E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09
zn 70	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08
ga 70	4.14E-18	4.14E-18	4.14E-18	1.27E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11
zn 71	1.53E-15	1.53E-15	1.53E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	6.32E-13	6.32E-13	6.32E-13	9.48E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06
ge 71	1.54E-17	1.54E-17	1.54E-17	1.45E-17	6.59E-20	3.74E-27	9.08E-37	.00E+00	.00E+00
ge 71m	1.59E-25	1.59E-25	1.59E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	5.56E-18	5.56E-18	5.56E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	8.64E-15	8.64E-15	8.64E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	3.24E-14	3.24E-14	3.24E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	9.98E-10	9.98E-10	9.98E-10	6.98E-10	1.04E-23	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	3.03E-10	3.03E-10	3.03E-10	2.63E-10	4.51E-24	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04
co 73	3.80E-18	3.80E-18	3.80E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	1.67E-15	1.67E-15	1.67E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	8.39E-14	8.39E-14	8.39E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	5.97E-13	5.97E-13	5.97E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	4.48E-10	4.48E-10	4.48E-10	1.47E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04
ge 73m	1.26E-14	1.26E-14	1.26E-14	4.12E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	5.73E-19	5.73E-19	5.73E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	2.38E-15	2.38E-15	2.38E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	1.67E-14	1.67E-14	1.67E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	7.42E-12	7.42E-12	7.42E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	1.08E-11	1.08E-11	1.08E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04
co 75	9.79E-20	9.79E-20	9.79E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	2.94E-16	2.94E-16	2.94E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	3.71E-14	3.71E-14	3.71E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	2.27E-12	2.27E-12	2.27E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	3.24E-11	3.24E-11	3.24E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	1.28E-09	1.28E-09	1.28E-09	7.65E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	6.30E-13	6.30E-13	6.30E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03
ni 76	1.50E-16	1.50E-16	1.50E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	9.66E-15	9.66E-15	9.66E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 8

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
zn 76	3.36E-12	3.36E-12	3.36E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	2.71E-11	2.71E-11	2.71E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02
as 76	6.47E-12	6.47E-12	6.47E-12	3.44E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06
ni 77	8.19E-18	8.19E-18	8.19E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	5.95E-15	5.95E-15	5.95E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	1.48E-12	1.48E-12	1.48E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	2.15E-11	2.15E-11	2.15E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	2.38E-08	2.38E-08	2.38E-08	5.47E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	8.81E-11	8.81E-11	8.81E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	2.66E-07	2.66E-07	2.66E-07	1.88E-07	5.41E-24	.00E+00	.00E+00	.00E+00	.00E+00
se 77	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02
se 77m	1.06E-13	1.06E-13	1.06E-13	7.50E-14	2.16E-30	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	1.57E-18	1.57E-18	1.57E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	7.49E-16	7.49E-16	7.49E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	1.22E-12	1.22E-12	1.22E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	1.68E-11	1.68E-11	1.68E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	2.64E-08	2.64E-08	2.64E-08	3.14E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	2.74E-08	2.74E-08	2.74E-08	4.69E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01
cu 79	1.76E-16	1.76E-16	1.76E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	4.26E-13	4.26E-13	4.26E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	1.33E-11	1.33E-11	1.33E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	1.87E-10	1.87E-10	1.87E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	5.63E-09	5.63E-09	5.63E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	2.28E-01	2.28E-01	2.28E-01	2.28E-01	2.28E-01	2.28E-01	2.28E-01	2.28E-01	2.28E-01
se 79m	2.42E-09	2.42E-09	2.42E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	2.39E-04	2.39E-04	2.39E-04	2.39E-04	2.39E-04	2.40E-04	2.40E-04	2.41E-04	2.44E-04
br 79m	4.15E-18	4.15E-18	4.15E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	6.90E-19	6.90E-19	6.90E-19	4.29E-19	1.89E-37	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	9.79E-18	9.79E-18	9.79E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	6.09E-14	6.09E-14	6.09E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	4.49E-12	4.49E-12	4.49E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	8.32E-10	8.32E-10	8.32E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	4.69E-10	4.69E-10	4.69E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01
br 80	2.73E-14	2.73E-14	2.73E-14	4.75E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	2.86E-13	2.86E-13	2.86E-13	6.64E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07

cu 81	7.00E-19	7.00E-19	7.00E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	2.75E-15	2.75E-15	2.75E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	2.25E-12	2.25E-12	2.25E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	2.34E-10	2.34E-10	2.34E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	1.47E-09	1.47E-09	1.47E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	5.11E-08	5.11E-08	5.11E-08	1.30E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	1.02E-08	1.02E-08	1.02E-08	2.74E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00
kr 81	2.02E-08	2.02E-08	2.02E-08	2.02E-08	2.02E-08	2.02E-08	2.02E-08	2.02E-08	2.02E-08
kr 81m	1.66E-18	1.66E-18	1.66E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	8.77E-16	8.77E-16	8.77E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	1.02E-12	1.02E-12	1.02E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 9

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
ge 82	1.51E-10	1.51E-10	1.51E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	9.97E-10	9.97E-10	9.97E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	2.62E-10	2.62E-10	2.62E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00
br 82	3.62E-09	3.62E-09	3.62E-09	2.26E-09	1.39E-27	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	3.89E-12	3.89E-12	3.89E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04
zn 83	1.54E-17	1.54E-17	1.54E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	3.56E-14	3.56E-14	3.56E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	2.58E-11	2.58E-11	2.58E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	1.16E-09	1.16E-09	1.16E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	7.89E-08	7.89E-08	7.89E-08	2.89E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	4.80E-09	4.80E-09	4.80E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	1.14E-06	1.14E-06	1.14E-06	1.21E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00
kr 83m	8.69E-07	8.69E-07	8.69E-07	3.98E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	2.18E-13	2.18E-13	2.18E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	9.82E-12	9.82E-12	9.82E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	3.46E-10	3.46E-10	3.46E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	4.87E-08	4.87E-08	4.87E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	4.95E-07	4.95E-07	4.95E-07	1.28E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	2.17E-09	2.17E-09	2.17E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00
ga 85	1.15E-16	1.15E-16	1.15E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	3.30E-13	3.30E-13	3.30E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	8.15E-11	8.15E-11	8.15E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	4.10E-09	4.10E-09	4.10E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	2.18E-09	2.18E-09	2.18E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	5.27E-08	5.27E-08	5.27E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.20E-02	2.10E-02	1.97E-02	1.62E-02	1.17E-02
kr 85m	4.93E-06	4.93E-06	4.93E-06	1.22E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	6.73E+00	6.73E+00	6.73E+00	6.73E+00	6.73E+00	6.74E+00	6.74E+00	6.74E+00	6.74E+00
ge 86	6.59E-14	6.59E-14	6.59E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	2.17E-11	2.17E-11	2.17E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	5.01E-09	5.01E-09	5.01E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	2.17E-08	2.17E-08	2.17E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	2.96E-10	2.96E-10	2.96E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01
rb 86	8.75E-09	8.75E-09	8.75E-09	8.43E-09	3.08E-10	1.10E-14	1.38E-20	2.75E-38	.00E+00
rb 86m	1.57E-14	1.57E-14	1.57E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05
ge 87	6.58E-13	6.58E-13	6.58E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	5.08E-12	5.08E-12	5.08E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	1.10E-09	1.10E-09	1.10E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	2.87E-08	2.87E-08	2.87E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	2.94E-06	2.94E-06	2.94E-06	6.20E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01
sr 87	2.48E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05
sr 87m	2.19E-12	2.19E-12	2.19E-12	5.90E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	8.42E-16	8.42E-16	8.42E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	1.11E-12	1.11E-12	1.11E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	1.47E-10	1.47E-10	1.47E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 10

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
br 88	8.72E-09	8.72E-09	8.72E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	9.40E-06	9.40E-06	9.40E-06	2.68E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	1.00E-06	1.00E-06	1.00E-06	3.13E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01
as 89	7.12E-15	7.12E-15	7.12E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	1.39E-11	1.39E-11	1.39E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	1.54E-09	1.54E-09	1.54E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	2.29E-07	2.29E-07	2.29E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	1.15E-06	1.15E-06	1.15E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	5.56E-03	5.56E-03	5.56E-03	5.49E-03	1.62E-03	3.72E-05	2.49E-07	7.43E-14	9.92E-25
y 89	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01
y 89m	1.94E-12	1.94E-12	1.94E-12	1.88E-12	5.54E-13	1.27E-14	8.50E-17	2.54E-23	3.39E-34
as 90	3.76E-17	3.76E-17	3.76E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	2.99E-12	2.99E-12	2.99E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	3.54E-10	3.54E-10	3.54E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	4.29E-08	4.29E-08	4.29E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	1.85E-07	1.85E-07	1.85E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	8.80E-08	8.80E-08	8.80E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	1.38E+00	1.38E+00	1.38E+00	1.38E+00	1.37E+00	1.35E+00	1.31E+00	1.22E+00	1.08E+00
y 90	3.59E-04	3.59E-04	3.59E-04	3.59E-04	3.57E-04	3.50E-04	3.42E-04	3.17E-04	2.81E-04
y 90m	3.16E-13	3.16E-13	3.16E-13	1.72E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	3.28E+01	3.28E+01	3.28E+01	3.28E+01	3.28E+01	3.28E+01	3.28E+01	3.29E+01	3.31E+01
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	1.48E-13	1.48E-13	1.48E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	4.09E-11	4.09E-11	4.09E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	7.88E-09	7.88E-09	7.88E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	8.88E-08	8.88E-08	8.88E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	5.45E-05	5.45E-05	5.45E-05	9.51E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	8.04E-03	8.04E-03	8.04E-03	7.99E-03	2.79E-03	1.07E-04	1.41E-06	3.25E-12	1.30E-21
y 91m	2.75E-06	2.75E-06	2.75E-06	5.26E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01
nb 91	1.05E-11	1.05E-11	1.05E-11	1.05E-11	1.05E-11	1.05E-11	1.05E-11	1.04E-11	1.04E-11
se 92	6.05E-15	6.05E-15	6.05E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	3.82E-12	3.82E-12	3.82E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	8.81E-10	8.81E-10	8.81E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	5.95E-09	5.95E-09	5.95E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	1.57E-05	1.57E-05	1.57E-05	3.38E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	2.06E-05	2.06E-05	2.06E-05	6.51E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01
nb 92	2.25E-09	2.25E-09	2.25E-09	2.25E-09	2.25E-09	2.25E-09	2.25E-09	2.25E-09	2.25E-09
se 93	1.52E-17	1.52E-17	1.52E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	1.93E-13	1.93E-13	1.93E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	1.97E-10	1.97E-10	1.97E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	5.72E-09	5.72E-09	5.72E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	7.67E-07	7.67E-07	7.67E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	4.23E-05	4.23E-05	4.23E-05	8.24E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01
nb 93	5.52E-03	5.52E-03	5.52E-03	5.52E-03	5.52E-03	5.53E-03	5.54E-03	5.58E-03	5.63E-03
nb 93m	2.63E-04	2.63E-04	2.63E-04	2.63E-04	2.63E-04	2.63E-04	2.63E-04	2.64E-04	2.65E-04
br 94	8.29E-15	8.29E-15	8.29E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	1.40E-11	1.40E-11	1.40E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	1.37E-09	1.37E-09	1.37E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 11

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sr 94	1.26E-07	1.26E-07	1.26E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	2.00E-06	2.00E-06	2.00E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01
nb 94	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05
nb 94m	7.73E-14	7.73E-14	7.73E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	6.54E-17	6.54E-17	6.54E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	2.48E-12	2.48E-12	2.48E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	9.17E-11	9.17E-11	9.17E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	3.82E-08	3.82E-08	3.82E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	1.14E-06	1.14E-06	1.14E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	1.01E-02	1.01E-02	1.01E-02	1.00E-02	3.82E-03	1.94E-04	3.72E-06	2.62E-11	6.76E-20
nb 95	5.53E-03	5.53E-03	5.53E-03	5.53E-03	3.48E-03	2.29E-04	4.61E-06	3.15E-11	8.13E-20
nb 95m	6.34E-06	6.34E-06	6.34E-06	6.33E-06	2.53E-06	1.29E-07	2.47E-09	1.74E-14	4.48E-23
mo 95	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01
br 96	1.30E-17	1.30E-17	1.30E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	1.90E-13	1.90E-13	1.90E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	1.24E-11	1.24E-11	1.24E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	1.19E-09	1.19E-09	1.19E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	1.02E-08	1.02E-08	1.02E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01
nb 96	1.41E-08	1.41E-08	1.41E-08	6.93E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02
kr 97	5.88E-16	5.88E-16	5.88E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	3.86E-12	3.86E-12	3.86E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	2.51E-10	2.51E-10	2.51E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	4.97E-09	4.97E-09	4.97E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	9.91E-05	9.91E-05	9.91E-05	3.70E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	7.07E-06	7.07E-06	7.07E-06	2.65E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	9.27E-08	9.27E-08	9.27E-08	3.47E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01
kr 98	3.02E-16	3.02E-16	3.02E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	1.16E-13	1.16E-13	1.16E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	1.40E-10	1.40E-10	1.40E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	6.80E-10	6.80E-10	6.80E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	5.18E-08	5.18E-08	5.18E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	4.84E-09	4.84E-09	4.84E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	1.93E-08	1.93E-08	1.93E-08	6.84E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01
tc 98	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06
rb 99	1.39E-15	1.39E-15	1.39E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	2.93E-11	2.93E-11	2.93E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	1.05E-09	1.05E-09	1.05E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	3.50E-09	3.50E-09	3.50E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	1.61E-08	1.61E-08	1.61E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	1.11E-07	1.11E-07	1.11E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	4.30E-04	4.30E-04	4.30E-04	3.34E-04	5.93E-14	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01
tc 99m	3.45E-05	3.45E-05	3.45E-05	2.93E-05	5.23E-15	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	6.62E-02	6.62E-02	6.62E-02	6.62E-02	6.62E-02	6.63E-02	6.65E-02	6.68E-02	6.75E-02

rb100	6.17E-16	6.17E-16	6.17E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	1.37E-12	1.37E-12	1.37E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	1.27E-10	1.27E-10	1.27E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 12

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
zr100	1.23E-08	1.23E-08	1.23E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	2.70E-09	2.70E-09	2.70E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	1.82E-10	1.82E-10	1.82E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01
tc100	2.54E-11	2.54E-11	2.54E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02
rb101	4.22E-18	4.22E-18	4.22E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	2.55E-13	2.55E-13	2.55E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	6.30E-11	6.30E-11	6.30E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	1.89E-09	1.89E-09	1.89E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	1.07E-08	1.07E-08	1.07E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	1.36E-06	1.36E-06	1.36E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	1.32E-06	1.32E-06	1.32E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01
sr102	8.69E-14	8.69E-14	8.69E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	7.06E-11	7.06E-11	7.06E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	2.13E-09	2.13E-09	2.13E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	1.58E-09	1.58E-09	1.58E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	8.94E-07	8.94E-07	8.94E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	6.96E-09	6.96E-09	6.96E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	1.64E-10	1.64E-10	1.64E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01
rh102	7.16E-09	7.16E-09	7.16E-09	7.16E-09	6.75E-09	5.64E-09	4.44E-09	2.17E-09	6.56E-10
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	1.01E-16	1.01E-16	1.01E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	6.36E-12	6.36E-12	6.36E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	2.75E-10	2.75E-10	2.75E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	1.09E-09	1.09E-09	1.09E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	6.49E-08	6.49E-08	6.49E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	5.33E-08	5.33E-08	5.33E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	3.34E-03	3.34E-03	3.34E-03	3.28E-03	6.81E-04	5.28E-06	8.36E-09	3.31E-17	3.29E-31
rh103	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01
rh103m	3.30E-06	3.30E-06	3.30E-06	3.25E-06	6.75E-07	5.23E-09	8.28E-12	3.28E-20	3.26E-34
sr104	4.34E-17	4.34E-17	4.34E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	2.42E-14	2.42E-14	2.42E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	1.21E-10	1.21E-10	1.21E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	1.26E-09	1.26E-09	1.26E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	3.60E-08	3.60E-08	3.60E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	6.79E-07	6.79E-07	6.79E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01
rh104	1.82E-10	1.82E-10	1.82E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	8.18E-11	8.18E-11	8.18E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02
y105	2.60E-16	2.60E-16	2.60E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	1.43E-11	1.43E-11	1.43E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	2.84E-10	2.84E-10	2.84E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	1.20E-08	1.20E-08	1.20E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	1.61E-07	1.61E-07	1.61E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	5.65E-06	5.65E-06	5.65E-06	1.37E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	4.50E-05	4.50E-05	4.50E-05	3.21E-05	2.11E-23	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	4.52E-09	4.52E-09	4.52E-09	1.10E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 13

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
y106	2.67E-18	2.67E-18	2.67E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	2.85E-13	2.85E-13	2.85E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	8.70E-12	8.70E-12	8.70E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	1.21E-09	1.21E-09	1.21E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	5.76E-09	5.76E-09	5.76E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	5.31E-03	5.31E-03	5.31E-03	5.30E-03	4.49E-03	2.69E-03	1.36E-03	1.76E-04	5.84E-06
rh106	4.93E-09	4.93E-09	4.93E-09	4.92E-09	4.17E-09	2.49E-09	1.26E-09	1.63E-10	5.42E-12
rh106m	2.99E-11	2.99E-11	2.99E-11	1.38E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00
ag106	6.35E-20	6.35E-20	6.35E-20	5.51E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	2.51E-20	2.51E-20	2.51E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	7.39E-16	7.39E-16	7.39E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	1.09E-12	1.09E-12	1.09E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	1.56E-10	1.56E-10	1.56E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	1.30E-09	1.30E-09	1.30E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	1.59E-08	1.59E-08	1.59E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	9.19E-08	9.19E-08	9.19E-08	1.19E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00
pd107m	2.76E-14	2.76E-14	2.76E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	7.17E-05	7.17E-05	7.17E-05	7.17E-05	7.18E-05	7.19E-05	7.20E-05	7.25E-05	7.32E-05
zr108	4.53E-17	4.53E-17	4.53E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	9.13E-15	9.13E-15	9.13E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	6.35E-12	6.35E-12	6.35E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	9.27E-11	9.27E-11	9.27E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	9.72E-09	9.72E-09	9.72E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	6.04E-10	6.04E-10	6.04E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	1.36E-10	1.36E-10	1.36E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01
ag108	4.45E-16	4.45E-16	4.45E-16	1.15E-18	1.15E-18	1.14E-18	1.14E-18	1.12E-18	1.09E-18
ag108m	3.72E-10	3.72E-10	3.72E-10	3.72E-10	3.72E-10	3.70E-10	3.68E-10	3.62E-10	3.53E-10
cd108	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08
zr109	1.26E-20	1.26E-20	1.26E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	5.18E-16	5.18E-16	5.18E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	6.08E-13	6.08E-13	6.08E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	7.19E-12	7.19E-12	7.19E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	6.79E-10	6.79E-10	6.79E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	1.74E-09	1.74E-09	1.74E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	5.44E-10	5.44E-10	5.44E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	1.08E-06	1.08E-06	1.08E-06	3.20E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	1.06E-11	1.06E-11	1.06E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01
ag109m	8.64E-10	8.64E-10	8.64E-10	2.57E-10	1.13E-19	7.46E-20	4.32E-20	8.36E-21	5.42E-22
cd109	1.30E-13	1.30E-13	1.30E-13	1.30E-13	1.14E-13	7.53E-14	4.36E-14	8.44E-15	5.47E-16
nb110	1.05E-17	1.05E-17	1.05E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	1.87E-13	1.87E-13	1.87E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	1.11E-12	1.11E-12	1.11E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	1.64E-10	1.64E-10	1.64E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	3.99E-12	3.99E-12	3.99E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	3.48E-10	3.48E-10	3.48E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01
ag110	1.60E-12	1.60E-12	1.60E-12	9.14E-16	7.14E-16	3.32E-16	1.21E-16	5.77E-18	3.63E-20
ag110m	5.91E-08	5.91E-08	5.91E-08	5.89E-08	4.60E-08	2.14E-08	7.78E-09	3.72E-10	2.34E-12

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 14

nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cd110	6.84E-04	6.84E-04	6.84E-04	6.84E-04	6.84E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04
nb111	1.24E-19	1.24E-19	1.24E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	3.56E-15	3.56E-15	3.56E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	7.46E-13	7.46E-13	7.46E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	8.16E-12	8.16E-12	8.16E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	9.02E-11	9.02E-11	9.02E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	1.19E-08	1.19E-08	1.19E-08	1.25E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	4.63E-09	4.63E-09	4.63E-09	2.25E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	5.47E-06	5.47E-06	5.47E-06	5.00E-06	1.27E-09	9.58E-21	1.67E-35	.00E+00	.00E+00
ag111m	5.50E-10	5.50E-10	5.50E-10	7.19E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01
cd111m	2.24E-15	2.24E-15	2.24E-15	2.70E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	2.35E-21	2.35E-21	2.35E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	1.21E-15	1.21E-15	1.21E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	3.94E-14	3.94E-14	3.94E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	1.04E-11	1.04E-11	1.04E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	8.44E-12	8.44E-12	8.44E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	4.87E-07	4.87E-07	4.87E-07	2.21E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	7.26E-08	7.26E-08	7.26E-08	3.86E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01
mo113	5.61E-18	5.61E-18	5.61E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	1.71E-14	1.71E-14	1.71E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	4.11E-12	4.11E-12	4.11E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	4.08E-12	4.08E-12	4.08E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	5.68E-10	5.68E-10	5.68E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	1.14E-07	1.14E-07	1.14E-07	5.18E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	7.94E-11	7.94E-11	7.94E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02
cd113m	4.47E-05	4.47E-05	4.47E-05	4.47E-05	4.42E-05	4.26E-05	4.05E-05	3.50E-05	2.73E-05
in113	2.11E-03	2.11E-03	2.11E-03	2.11E-03	2.11E-03	2.11E-03	2.12E-03	2.12E-03	2.13E-03
in113m	3.36E-18	3.36E-18	3.36E-18	1.47E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	4.79E-18	4.79E-18	4.79E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	8.44E-16	8.44E-16	8.44E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	4.47E-12	4.47E-12	4.47E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	4.46E-12	4.46E-12	4.46E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	7.64E-10	7.64E-10	7.64E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	2.43E-11	2.43E-11	2.43E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01
in114	1.92E-15	1.92E-15	1.92E-15	1.36E-15	3.92E-16	8.31E-18	5.00E-20	1.09E-26	8.59E-38
in114m	8.58E-11	8.58E-11	8.58E-11	8.46E-11	2.43E-11	5.16E-13	3.11E-15	6.77E-22	5.34E-33
sn114	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07
mo115	6.93E-21	6.93E-21	6.93E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	3.56E-17	3.56E-17	3.56E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	1.07E-13	1.07E-13	1.07E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	1.08E-11	1.08E-11	1.08E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	1.50E-10	1.50E-10	1.50E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	3.61E-09	3.61E-09	3.61E-09	7.90E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	2.16E-11	2.16E-11	2.16E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	7.77E-07	7.77E-07	7.77E-07	5.72E-07	5.40E-19	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	6.70E-07	6.70E-07	6.70E-07	6.60E-07	1.65E-07	2.29E-09	7.85E-12	3.15E-19	1.48E-31
in115	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02
in115m	6.52E-08	6.52E-08	6.52E-08	5.22E-08	7.66E-14	1.06E-15	3.64E-18	1.46E-25	6.79E-38

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 15

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sn115	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03

tc116	6.70E-18	6.70E-18	6.70E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	7.01E-14	7.01E-14	7.01E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	7.37E-13	7.37E-13	7.37E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	6.85E-11	6.85E-11	6.85E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	9.38E-10	9.38E-10	9.38E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	4.57E-12	4.57E-12	4.57E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01
in116	5.77E-14	5.77E-14	5.77E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	4.98E-11	4.98E-11	4.98E-11	4.92E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04
tc117	9.89E-20	9.89E-20	9.89E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	1.94E-15	1.94E-15	1.94E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	3.15E-13	3.15E-13	3.15E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	1.55E-11	1.55E-11	1.55E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	1.50E-10	1.50E-10	1.50E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	1.10E-11	1.10E-11	1.10E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	3.21E-08	3.21E-08	3.21E-08	4.04E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	8.63E-09	8.63E-09	8.63E-09	6.14E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	6.74E-09	6.74E-09	6.74E-09	4.28E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	2.28E-08	2.28E-08	2.28E-08	1.36E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02
sn117m	9.64E-09	9.64E-09	9.64E-09	9.29E-09	9.96E-11	8.04E-17	6.61E-25	.00E+00	.00E+00
tc118	1.59E-21	1.59E-21	1.59E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	5.39E-16	5.39E-16	5.39E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	1.67E-14	1.67E-14	1.67E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	4.68E-12	4.68E-12	4.68E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	1.00E-11	1.00E-11	1.00E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	3.78E-12	3.78E-12	3.78E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	1.30E-08	1.30E-08	1.30E-08	3.13E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	2.15E-11	2.15E-11	2.15E-11	5.20E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	4.51E-13	4.51E-13	4.51E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02
ru119	2.12E-17	2.12E-17	2.12E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	9.99E-15	9.99E-15	9.99E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	1.93E-12	1.93E-12	1.93E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	7.45E-12	7.45E-12	7.45E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	5.40E-10	5.40E-10	5.40E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	1.79E-10	1.79E-10	1.79E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	2.57E-10	2.57E-10	2.57E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	3.26E-09	3.26E-09	3.26E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01
sn119m	4.22E-07	4.22E-07	4.22E-07	4.21E-07	3.41E-07	1.78E-07	7.50E-08	5.62E-09	7.47E-11
ru120	4.59E-18	4.59E-18	4.59E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	7.13E-16	7.13E-16	7.13E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	2.04E-12	2.04E-12	2.04E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	2.82E-12	2.82E-12	2.82E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	2.37E-10	2.37E-10	2.37E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	1.45E-11	1.45E-11	1.45E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	1.71E-12	1.71E-12	1.71E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01
rh121	2.57E-16	2.57E-16	2.57E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 16

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
pd121	1.25E-13	1.25E-13	1.25E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	1.43E-12	1.43E-12	1.43E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	6.61E-11	6.61E-11	6.61E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	6.31E-12	6.31E-12	6.31E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	1.15E-09	1.15E-09	1.15E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	5.03E-07	5.03E-07	5.03E-07	2.74E-07	2.49E-09	2.46E-09	2.43E-09	2.34E-09	2.20E-09
sn121m	5.73E-05	5.73E-05	5.73E-05	5.73E-05	5.71E-05	5.65E-05	5.58E-05	5.38E-05	5.05E-05
sb121	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01
rh122	1.21E-17	1.21E-17	1.21E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	8.80E-14	8.80E-14	8.80E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	4.56E-13	4.56E-13	4.56E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	2.80E-11	2.80E-11	2.80E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	8.52E-12	8.52E-12	8.52E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	3.40E-12	3.40E-12	3.40E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01
sb122	2.20E-10	2.20E-10	2.20E-10	1.70E-10	2.04E-20	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	2.56E-14	2.56E-14	2.56E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05
rh123	1.21E-18	1.21E-18	1.21E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	2.80E-15	2.80E-15	2.80E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	1.37E-13	1.37E-13	1.37E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	3.15E-11	3.15E-11	3.15E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	2.30E-11	2.30E-11	2.30E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	5.13E-11	5.13E-11	5.13E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	7.15E-06	7.15E-06	7.15E-06	7.11E-06	4.41E-06	1.01E-06	1.42E-07	3.96E-10	2.20E-14
sn123m	1.35E-08	1.35E-08	1.35E-08	2.09E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01
te123	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09
te123m	8.01E-13	8.01E-13	8.01E-13	7.96E-13	4.76E-13	9.66E-14	1.16E-14	2.04E-17	5.20E-22
pd124	2.93E-15	2.93E-15	2.93E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	8.19E-14	8.19E-14	8.19E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	5.74E-12	5.74E-12	5.74E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	3.07E-11	3.07E-11	3.07E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01
sb124	2.74E-08	2.74E-08	2.74E-08	2.71E-08	9.74E-09	4.09E-10	6.10E-12	2.02E-17	1.49E-26
sb124m	1.18E-13	1.18E-13	1.18E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
pd125	1.99E-16	1.99E-16	1.99E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	4.38E-14	4.38E-14	4.38E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	5.88E-12	5.88E-12	5.88E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	1.16E-11	1.16E-11	1.16E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	4.20E-11	4.20E-11	4.20E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	2.92E-06	2.92E-06	2.92E-06	2.71E-06	4.51E-09	1.15E-17	4.50E-29	.00E+00	.00E+00
sn125m	4.67E-09	4.67E-09	4.67E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	1.01E-03	1.01E-03	1.01E-03	1.01E-03	9.48E-04	7.83E-04	6.08E-04	2.84E-04	7.97E-05
te125	2.51E-01	2.51E-01	2.51E-01	2.51E-01	2.51E-01	2.51E-01	2.51E-01	2.52E-01	2.52E-01
te125m	1.35E-05	1.35E-05	1.35E-05	1.35E-05	1.32E-05	1.11E-05	8.63E-06	4.03E-06	1.13E-06
pd126	6.79E-17	6.79E-17	6.79E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	8.14E-15	8.14E-15	8.14E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	2.43E-12	2.43E-12	2.43E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	1.53E-11	1.53E-11	1.53E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 17

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sb126	7.28E-08	7.28E-08	7.28E-08	6.98E-08	1.77E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08
sb126m	2.13E-10	2.13E-10	2.13E-10	1.32E-10	1.32E-10	1.32E-10	1.32E-10	1.32E-10	1.32E-10
te126	3.53E-03	3.53E-03	3.53E-03	3.53E-03	3.53E-03	3.53E-03	3.53E-03	3.54E-03	3.55E-03
xe126	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11
ag127	4.83E-15	4.83E-15	4.83E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	2.15E-12	2.15E-12	2.15E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	1.41E-11	1.41E-11	1.41E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	4.62E-11	4.62E-11	4.62E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	1.35E-07	1.35E-07	1.35E-07	4.89E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	7.21E-09	7.21E-09	7.21E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	1.64E-05	1.64E-05	1.64E-05	1.38E-05	1.51E-12	4.53E-34	.00E+00	.00E+00	.00E+00
te127	1.65E-06	1.65E-06	1.65E-06	1.54E-06	1.66E-07	2.89E-08	2.83E-09	2.67E-12	2.41E-17
te127m	8.12E-05	8.12E-05	8.12E-05	8.12E-05	4.75E-05	8.25E-06	8.09E-07	7.62E-10	6.89E-15
i127	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00
xe127	1.53E-16	1.53E-16	1.53E-16	1.50E-16	2.75E-17	1.45E-19	1.39E-22	1.20E-31	.00E+00
ag128	1.07E-15	1.07E-15	1.07E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	3.74E-12	3.74E-12	3.74E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	3.28E-11	3.28E-11	3.28E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	4.66E-07	4.66E-07	4.66E-07	2.15E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	2.99E-07	2.99E-07	2.99E-07	5.07E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	8.36E-08	8.36E-08	8.36E-08	4.60E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00
i128	1.35E-11	1.35E-11	1.35E-11	6.02E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05
cd129	4.50E-13	4.50E-13	4.50E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	2.38E-11	2.38E-11	2.38E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	1.43E-08	1.43E-08	1.43E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	5.96E-08	5.96E-08	5.96E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	4.68E-06	4.68E-06	4.68E-06	1.08E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	1.16E-06	1.16E-06	1.16E-06	1.76E-07	2.30E-08	7.85E-11	4.19E-14	6.38E-24	.00E+00
te129m	1.59E-04	1.59E-04	1.59E-04	1.56E-04	2.49E-05	8.51E-08	4.55E-11	6.92E-21	3.01E-37
i129	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00
xe129	1.42E-04	1.42E-04	1.42E-04	1.42E-04	1.42E-04	1.43E-04	1.43E-04	1.44E-04	1.45E-04
xe129m	9.71E-14	9.71E-14	9.71E-14	8.98E-14	8.70E-17	4.16E-26	1.78E-38	.00E+00	.00E+00
cd130	2.90E-13	2.90E-13	2.90E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	1.25E-11	1.25E-11	1.25E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	9.87E-08	9.87E-08	9.87E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	2.20E-07	2.20E-07	2.20E-07	2.33E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	2.16E-07	2.16E-07	2.16E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01
i130	9.68E-09	9.68E-09	9.68E-09	2.53E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	4.86E-11	4.86E-11	4.86E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03
cd131	7.83E-15	7.83E-15	7.83E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	3.68E-12	3.68E-12	3.68E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	1.42E-08	1.42E-08	1.42E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	1.41E-06	1.41E-06	1.41E-06	2.02E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	1.53E-06	1.53E-06	1.53E-06	2.96E-08	1.09E-29	.00E+00	.00E+00	.00E+00	.00E+00
te131m	1.64E-05	1.64E-05	1.64E-05	9.46E-06	3.49E-27	.00E+00	.00E+00	.00E+00	.00E+00
i131	7.93E-04	7.93E-04	7.93E-04	7.36E-04	3.48E-07	1.72E-17	3.65E-31	.00E+00	.00E+00
xe131	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01
xe131m	1.27E-05	1.27E-05	1.27E-05	1.27E-05	2.00E-07	2.30E-14	1.32E-23	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 18

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cd132	1.12E-15	1.12E-15	1.12E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	6.33E-13	6.33E-13	6.33E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	1.03E-08	1.03E-08	1.03E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	1.33E-07	1.33E-07	1.33E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	1.01E-07	1.01E-07	1.01E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	4.81E-04	4.81E-04	4.81E-04	3.89E-04	2.33E-12	.00E+00	.00E+00	.00E+00	.00E+00
i132	1.41E-05	1.41E-05	1.41E-05	1.17E-05	7.01E-14	.00E+00	.00E+00	.00E+00	.00E+00
xe132	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01
cs132	5.43E-11	5.43E-11	5.43E-11	4.88E-11	3.57E-15	5.81E-28	.00E+00	.00E+00	.00E+00
ba132	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08

in133	6.36E-15	6.36E-15	6.36E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	1.04E-10	1.04E-10	1.04E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	1.45E-07	1.45E-07	1.45E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	1.15E-06	1.15E-06	1.15E-06	3.27E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	4.26E-06	4.26E-06	4.26E-06	6.42E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	2.00E-04	2.00E-04	2.00E-04	9.24E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	1.43E-09	1.43E-09	1.43E-09	1.78E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	1.21E-03	1.21E-03	1.21E-03	1.17E-03	1.01E-08	1.59E-24	.00E+00	.00E+00	.00E+00
xe133m	1.47E-05	1.47E-05	1.47E-05	1.35E-05	1.04E-17	.00E+00	.00E+00	.00E+00	.00E+00
cs133	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01
ba133	9.60E-12	9.60E-12	9.60E-12	9.60E-12	9.45E-12	8.99E-12	8.42E-12	6.91E-12	4.97E-12
in134	7.11E-16	7.11E-16	7.11E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	8.67E-12	8.67E-12	8.67E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	1.59E-10	1.59E-10	1.59E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	1.19E-09	1.19E-09	1.19E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	6.95E-06	6.95E-06	6.95E-06	2.96E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	9.79E-06	9.79E-06	9.79E-06	2.49E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	3.13E-08	3.13E-08	3.13E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01
xe134m	7.71E-12	7.71E-12	7.71E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	1.90E-04	1.90E-04	1.90E-04	1.90E-04	1.75E-04	1.36E-04	9.70E-05	3.54E-05	6.59E-06
cs134m	2.32E-09	2.32E-09	2.32E-09	7.64E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	3.19E-02	3.19E-02	3.19E-02	3.19E-02	3.20E-02	3.20E-02	3.20E-02	3.21E-02	3.21E-02
sn135	2.62E-13	2.62E-13	2.62E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	1.16E-10	1.16E-10	1.16E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	2.55E-08	2.55E-08	2.55E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	6.03E-05	6.03E-05	6.03E-05	4.80E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	8.72E-05	8.72E-05	8.72E-05	3.19E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	4.32E-07	4.32E-07	4.32E-07	3.04E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01
cs135m	4.87E-11	4.87E-11	4.87E-11	3.23E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	8.74E-03	8.74E-03	8.74E-03	8.74E-03	8.74E-03	8.76E-03	8.77E-03	8.83E-03	8.91E-03
ba135m	1.08E-12	1.08E-12	1.08E-12	6.03E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	3.40E-14	3.40E-14	3.40E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	7.19E-12	7.19E-12	7.19E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	1.15E-08	1.15E-08	1.15E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	1.11E-07	1.11E-07	1.11E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	2.86E-08	2.86E-08	2.86E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01
cs136	3.71E-06	3.71E-06	3.71E-06	3.52E-06	3.24E-08	1.64E-14	7.22E-23	.00E+00	.00E+00
ba136	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02
ba136m	1.13E-13	1.13E-13	1.13E-13	1.07E-13	9.84E-16	4.97E-22	2.19E-30	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 19

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sb137	1.01E-11	1.01E-11	1.01E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	6.92E-10	6.92E-10	6.92E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	3.30E-08	3.30E-08	3.30E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	5.76E-07	5.76E-07	5.76E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.43E+00	2.39E+00	2.33E+00	2.18E+00	1.94E+00
ba137	5.40E+01	5.40E+01	5.40E+01	5.40E+01	5.40E+01	5.40E+01	5.41E+01	5.42E+01	5.45E+01
ba137m	3.73E-07	3.73E-07	3.73E-07	3.73E-07	3.71E-07	3.64E-07	3.56E-07	3.32E-07	2.96E-07
sb138	1.35E-14	1.35E-14	1.35E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	5.28E-11	5.28E-11	5.28E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	4.38E-09	4.38E-09	4.38E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	2.21E-06	2.21E-06	2.21E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	5.29E-06	5.29E-06	5.29E-06	3.18E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	1.15E-08	1.15E-08	1.15E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01
la138	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04
sb139	1.14E-15	1.14E-15	1.14E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	2.85E-12	2.85E-12	2.85E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	9.57E-10	9.57E-10	9.57E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	8.48E-08	8.48E-08	8.48E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	1.45E-06	1.45E-06	1.45E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	1.34E-05	1.34E-05	1.34E-05	1.14E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01
ce139	1.48E-10	1.48E-10	1.48E-10	1.47E-10	9.38E-11	2.34E-11	3.72E-12	1.49E-14	1.51E-18
pr139	2.52E-16	2.52E-16	2.52E-16	5.81E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	7.08E-13	7.08E-13	7.08E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	8.19E-11	8.19E-11	8.19E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	2.16E-08	2.16E-08	2.16E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	1.53E-07	1.53E-07	1.53E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	2.90E-03	2.90E-03	2.90E-03	2.75E-03	2.18E-05	6.95E-12	1.67E-20	.00E+00	.00E+00
la140	3.82E-04	3.82E-04	3.82E-04	3.78E-04	3.30E-06	1.05E-12	2.52E-21	.00E+00	.00E+00
ce140	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01
pr140	1.02E-14	1.02E-14	1.02E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	1.59E-15	1.59E-15	1.59E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	3.81E-12	3.81E-12	3.81E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	9.98E-10	9.98E-10	9.98E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	4.67E-08	4.67E-08	4.67E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	2.67E-06	2.67E-06	2.67E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	3.44E-05	3.44E-05	3.44E-05	5.36E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	6.85E-03	6.85E-03	6.85E-03	6.74E-03	1.01E-03	2.85E-06	1.18E-09	8.37E-20	1.02E-36
pr141	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01
nd141	5.71E-16	5.71E-16	5.71E-16	7.14E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	1.64E-15	1.64E-15	1.64E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	5.70E-13	5.70E-13	5.70E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	2.53E-10	2.53E-10	2.53E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	1.95E-09	1.95E-09	1.95E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	1.55E-06	1.55E-06	1.55E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	1.36E-05	1.36E-05	1.36E-05	2.67E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01
pr142	3.58E-08	3.58E-08	3.58E-08	1.50E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03
i143	6.94E-15	6.94E-15	6.94E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 20

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
xe143	2.61E-11	2.61E-11	2.61E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	1.14E-09	1.14E-09	1.14E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	3.25E-08	3.25E-08	3.25E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	2.12E-06	2.12E-06	2.12E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	2.99E-04	2.99E-04	2.99E-04	1.82E-04	5.96E-24	.00E+00	.00E+00	.00E+00	.00E+00
pr143	2.95E-03	2.95E-03	2.95E-03	2.92E-03	3.31E-05	2.58E-11	2.02E-19	.00E+00	.00E+00
nd143	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01
i144	8.63E-17	8.63E-17	8.63E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	4.72E-12	4.72E-12	4.72E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	1.66E-10	1.66E-10	1.66E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	2.17E-08	2.17E-08	2.17E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	9.45E-08	9.45E-08	9.45E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	5.76E-02	5.76E-02	5.76E-02	5.74E-02	4.63E-02	2.37E-02	9.74E-03	6.78E-04	7.97E-06
pr144	2.43E-06	2.43E-06	2.43E-06	2.42E-06	1.95E-06	9.98E-07	4.10E-07	2.85E-08	3.36E-10
pr144m	1.42E-08	1.42E-08	1.42E-08	1.41E-08	1.14E-08	5.82E-09	2.39E-09	1.66E-10	1.96E-12
nd144	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01

i145	3.42E-18	3.42E-18	3.42E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	2.28E-13	2.28E-13	2.28E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	1.83E-11	1.83E-11	1.83E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	3.50E-09	3.50E-09	3.50E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	3.88E-08	3.88E-08	3.88E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	3.06E-07	3.06E-07	3.06E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	3.65E-05	3.65E-05	3.65E-05	2.28E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01
pm145	6.31E-11	6.31E-11	6.31E-11	6.31E-11	6.30E-11	6.22E-11	6.05E-11	5.44E-11	4.48E-11
sm145	2.98E-12	2.98E-12	2.98E-12	2.98E-12	2.48E-12	1.42E-12	6.73E-13	7.21E-14	1.74E-15
xe146	1.38E-14	1.38E-14	1.38E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	2.94E-12	2.94E-12	2.94E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	9.93E-10	9.93E-10	9.93E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	6.72E-09	6.72E-09	6.72E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	1.05E-06	1.05E-06	1.05E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	1.89E-06	1.89E-06	1.89E-06	4.83E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01
pm146	1.19E-10	1.19E-10	1.19E-10	1.19E-10	1.16E-10	1.05E-10	9.29E-11	6.38E-11	3.41E-11
sm146	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06
xe147	1.38E-17	1.38E-17	1.38E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	4.58E-14	4.58E-14	4.58E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	3.50E-11	3.50E-11	3.50E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	1.84E-09	1.84E-09	1.84E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	5.43E-08	5.43E-08	5.43E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	8.12E-07	8.12E-07	8.12E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	9.44E-04	9.44E-04	9.44E-04	8.87E-04	3.22E-06	9.16E-14	8.88E-24	.00E+00	.00E+00
pm147	8.22E-02	8.22E-02	8.22E-02	8.22E-02	7.80E-02	6.39E-02	4.91E-02	2.22E-02	5.92E-03
sm147	2.17E+01	2.17E+01	2.17E+01	2.17E+01	2.17E+01	2.17E+01	2.17E+01	2.17E+01	2.18E+01
cs148	3.02E-15	3.02E-15	3.02E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	4.56E-12	4.56E-12	4.56E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	1.29E-10	1.29E-10	1.29E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	3.81E-08	3.81E-08	3.81E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	1.01E-07	1.01E-07	1.01E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01
pm148	6.15E-09	6.15E-09	6.15E-09	5.43E-09	6.22E-11	6.12E-13	1.33E-15	1.37E-23	6.38E-37
pm148m	4.09E-08	4.09E-08	4.09E-08	4.02E-08	9.03E-09	8.90E-11	1.94E-13	1.99E-21	9.70E-35

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 21

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sm148	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02
cs149	2.57E-17	2.57E-17	2.57E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	4.67E-13	4.67E-13	4.67E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	7.38E-11	7.38E-11	7.38E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	1.81E-09	1.81E-09	1.81E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	6.42E-08	6.42E-08	6.42E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	3.01E-06	3.01E-06	3.01E-06	2.00E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	9.26E-05	9.26E-05	9.26E-05	7.00E-05	5.40E-17	.00E+00	.00E+00	.00E+00	.00E+00
sm149	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00
eu149	2.04E-14	2.04E-14	2.04E-14	2.03E-14	1.05E-14	1.35E-15	8.86E-17	2.53E-20	3.12E-26
cs150	1.68E-18	1.68E-18	1.68E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	4.88E-14	4.88E-14	4.88E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	2.41E-12	2.41E-12	2.41E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	5.40E-10	5.40E-10	5.40E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	1.65E-09	1.65E-09	1.65E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00
pm150	1.94E-10	1.94E-10	1.94E-10	3.91E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00
eu150	3.32E-09	3.32E-09	3.32E-09	3.32E-09	3.31E-09	3.26E-09	3.20E-09	3.02E-09	2.74E-09

ba151	1.53E-16	1.53E-16	1.53E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	3.71E-13	3.71E-13	3.71E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	3.29E-11	3.29E-11	3.29E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	2.46E-09	2.46E-09	2.46E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	1.46E-07	1.46E-07	1.46E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	2.01E-05	2.01E-05	2.01E-05	1.13E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	5.49E-01	5.49E-01	5.49E-01	5.49E-01	5.48E-01	5.45E-01	5.40E-01	5.28E-01	5.08E-01
eu151	3.50E+00	3.50E+00	3.50E+00	3.50E+00	3.50E+00	3.50E+00	3.51E+00	3.52E+00	3.54E+00
ba152	1.60E-18	1.60E-18	1.60E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	3.06E-15	3.06E-15	3.06E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	3.49E-11	3.49E-11	3.49E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	2.89E-10	2.89E-10	2.89E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	8.40E-08	8.40E-08	8.40E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	3.08E-08	3.08E-08	3.08E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	1.05E-09	1.05E-09	1.05E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00
eu152	4.61E-03	4.61E-03	4.61E-03	4.61E-03	4.55E-03	4.38E-03	4.16E-03	3.56E-03	2.74E-03
eu152m	2.04E-07	2.04E-07	2.04E-07	3.43E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	7.30E-02	7.30E-02	7.30E-02	7.30E-02	7.30E-02	7.30E-02	7.31E-02	7.32E-02	7.35E-02
la153	1.04E-15	1.04E-15	1.04E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	1.45E-12	1.45E-12	1.45E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	6.85E-11	6.85E-11	6.85E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	4.69E-09	4.69E-09	4.69E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	2.54E-08	2.54E-08	2.54E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	1.33E-05	1.33E-05	1.33E-05	9.31E-06	1.19E-19	.00E+00	.00E+00	.00E+00	.00E+00
eu153	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00
gd153	1.86E-07	1.86E-07	1.86E-07	1.86E-07	1.44E-07	6.53E-08	2.29E-08	9.86E-10	5.22E-12
la154	1.19E-17	1.19E-17	1.19E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	1.74E-13	1.74E-13	1.74E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	2.43E-12	2.43E-12	2.43E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	1.09E-09	1.09E-09	1.09E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	3.28E-09	3.28E-09	3.28E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	7.29E-10	7.29E-10	7.29E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 22

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sm154	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01
eu154	1.39E-04	1.39E-04	1.39E-04	1.39E-04	1.36E-04	1.28E-04	1.18E-04	9.27E-05	6.19E-05
gd154	5.53E-03	5.53E-03	5.53E-03	5.53E-03	5.53E-03	5.54E-03	5.55E-03	5.57E-03	5.60E-03
la155	6.03E-20	6.03E-20	6.03E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	3.63E-15	3.63E-15	3.63E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	4.68E-13	4.68E-13	4.68E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	1.48E-10	1.48E-10	1.48E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	7.52E-10	7.52E-10	7.52E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	2.30E-08	2.30E-08	2.30E-08	8.71E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	2.53E-03	2.53E-03	2.53E-03	2.53E-03	2.44E-03	2.19E-03	1.88E-03	1.21E-03	5.76E-04
gd155m	5.62E-18	5.62E-18	5.62E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	2.79E-01	2.79E-01	2.79E-01	2.79E-01	2.79E-01	2.79E-01	2.80E-01	2.80E-01	2.81E-01
ce156	3.07E-16	3.07E-16	3.07E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	1.84E-14	1.84E-14	1.84E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	4.34E-11	4.34E-11	4.34E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	7.45E-11	7.45E-11	7.45E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	2.57E-07	2.57E-07	2.57E-07	4.38E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	1.00E-05	1.00E-05	1.00E-05	9.78E-06	1.69E-07	5.91E-13	3.39E-20	.00E+00	.00E+00
gd156	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01
ce157	5.23E-18	5.23E-18	5.23E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	2.62E-15	2.62E-15	2.62E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	1.14E-12	1.14E-12	1.14E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	1.28E-10	1.28E-10	1.28E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	1.81E-09	1.81E-09	1.81E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	2.08E-07	2.08E-07	2.08E-07	7.02E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02
pr158	6.01E-17	6.01E-17	6.01E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	1.99E-13	1.99E-13	1.99E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	1.90E-12	1.90E-12	1.90E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	5.66E-10	5.66E-10	5.66E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	5.05E-09	5.05E-09	5.05E-09	2.05E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02
pr159	2.71E-18	2.71E-18	2.71E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	4.06E-15	4.06E-15	4.06E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	2.90E-13	2.90E-13	2.90E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	9.07E-11	9.07E-11	9.07E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	7.62E-10	7.62E-10	7.62E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	4.75E-08	4.75E-08	4.75E-08	1.97E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02
nd160	3.20E-16	3.20E-16	3.20E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	7.67E-15	7.67E-15	7.67E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	1.11E-11	1.11E-11	1.11E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	1.05E-11	1.05E-11	1.05E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03
tb160	2.95E-09	2.95E-09	2.95E-09	2.92E-09	1.24E-09	8.88E-11	2.68E-12	7.34E-17	1.83E-24
dy160	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06
nd161	5.18E-18	5.18E-18	5.18E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	1.03E-15	1.03E-15	1.03E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	1.39E-13	1.39E-13	1.39E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	3.00E-12	3.00E-12	3.00E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	1.97E-11	1.97E-11	1.97E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	5.39E-08	5.39E-08	5.39E-08	4.87E-08	6.39E-12	6.27E-24	7.30E-40	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 23

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
dy161	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03
pm162	2.89E-17	2.89E-17	2.89E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	2.80E-14	2.80E-14	2.80E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	2.71E-12	2.71E-12	2.71E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	1.58E-11	1.58E-11	1.58E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	1.48E-11	1.48E-11	1.48E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	3.22E-12	3.22E-12	3.22E-12	1.85E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04
sm163	6.00E-16	6.00E-16	6.00E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	2.54E-14	2.54E-14	2.54E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	9.86E-13	9.86E-13	9.86E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	1.38E-11	1.38E-11	1.38E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04
sm164	5.62E-17	5.62E-17	5.62E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	6.70E-16	6.70E-16	6.70E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	4.10E-12	4.10E-12	4.10E-12	4.18E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	7.38E-13	7.38E-13	7.38E-13	6.72E-33	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05
sm165	1.06E-18	1.06E-18	1.06E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	9.59E-17	9.59E-17	9.59E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	3.69E-14	3.69E-14	3.69E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	2.01E-13	2.01E-13	2.01E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	1.50E-11	1.50E-11	1.50E-11	1.23E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	1.10E-13	1.10E-13	1.10E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05
dy166	6.00E-11	6.00E-11	6.00E-11	4.89E-11	6.47E-19	.00E+00	.00E+00	.00E+00	.00E+00
ho166	2.00E-11	2.00E-11	2.00E-11	1.89E-11	3.16E-19	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	2.84E-08	2.84E-08	2.84E-08	2.84E-08	2.84E-08	2.84E-08	2.84E-08	2.83E-08	2.82E-08
er166	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06
er167	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09
er167m	1.36E-20	1.36E-20	1.36E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	2.81E-13	2.81E-13	2.81E-13	2.61E-13	3.68E-16	5.65E-25	1.14E-36	.00E+00	.00E+00
tm169	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09
tm170	1.96E-14	1.96E-14	1.96E-14	1.95E-14	1.21E-14	2.73E-15	3.82E-16	1.04E-18	5.51E-23
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	1.95E-11	1.95E-11	1.95E-11	1.95E-11	1.95E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11
er171	1.53E-14	1.53E-14	1.53E-14	1.68E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	3.49E-11	3.49E-11	3.49E-11	3.49E-11	3.20E-11	2.44E-11	1.70E-11	5.75E-12	9.46E-13
yb171	8.49E-09	8.49E-09	8.49E-09	8.49E-09	8.49E-09	8.50E-09	8.51E-09	8.52E-09	8.52E-09
er172	7.43E-14	7.43E-14	7.43E-14	5.30E-14	4.82E-27	.00E+00	.00E+00	.00E+00	.00E+00
tm172	9.95E-14	9.95E-14	9.95E-14	9.52E-14	2.58E-23	.00E+00	.00E+00	.00E+00	.00E+00
yb172	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09
total	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 24

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
h 3	3.72E-01	3.72E-01	3.72E-01	3.72E-01	3.67E-01	3.51E-01	3.32E-01	2.81E-01	2.12E-01
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07
c 14	5.01E-06	5.01E-06	5.01E-06	5.01E-06	5.01E-06	5.01E-06	5.01E-06	5.01E-06	5.00E-06
ni 66	1.09E-07	1.09E-07	1.09E-07	8.03E-08	1.35E-19	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	1.09E-07	1.09E-07	1.09E-07	8.04E-08	1.35E-19	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	1.90E-08	1.90E-08	1.90E-08	1.45E-08	5.80E-19	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	2.76E-08	2.76E-08	2.76E-08	7.17E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	2.24E-08	2.24E-08	2.24E-08	6.68E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	5.27E-10	5.27E-10	5.27E-10	1.62E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	1.65E-06	1.65E-06	1.65E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	7.05E-06	7.05E-06	7.05E-06	1.06E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	2.48E-12	2.48E-12	2.48E-12	2.34E-12	1.06E-14	6.02E-22	1.37E-31	.00E+00	.00E+00
ge 71m	1.24E-12	1.24E-12	1.24E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	7.06E-06	7.06E-06	7.06E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	3.54E-04	3.54E-04	3.54E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	7.83E-04	7.83E-04	7.83E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	9.34E-04	9.34E-04	9.34E-04	6.53E-04	9.71E-18	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	9.35E-04	9.35E-04	9.35E-04	8.13E-04	1.39E-17	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	4.55E-06	4.55E-06	4.55E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	5.27E-04	5.27E-04	5.27E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	2.54E-03	2.54E-03	2.54E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	3.93E-03	3.93E-03	3.93E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	3.96E-03	3.96E-03	3.96E-03	1.29E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	3.91E-03	3.91E-03	3.91E-03	1.28E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	9.51E-07	9.51E-07	9.51E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	4.03E-04	4.03E-04	4.03E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	3.92E-03	3.92E-03	3.92E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	1.18E-02	1.18E-02	1.18E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	3.40E-03	3.40E-03	3.40E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	1.80E-07	1.80E-07	1.80E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	1.91E-04	1.91E-04	1.91E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	6.02E-03	6.02E-03	6.02E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	3.35E-02	3.35E-02	3.35E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	3.87E-02	3.87E-02	3.87E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	3.89E-02	3.89E-02	3.89E-02	2.32E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	1.99E-03	1.99E-03	1.99E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	7.32E-05	7.32E-05	7.32E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	5.51E-03	5.51E-03	5.51E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 25

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
zn 76	8.90E-02	8.90E-02	8.90E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	1.24E-01	1.24E-01	1.24E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	1.01E-05	1.01E-05	1.01E-05	5.39E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	1.16E-05	1.16E-05	1.16E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	2.86E-03	2.86E-03	2.86E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	1.05E-01	1.05E-01	1.05E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	2.39E-01	2.39E-01	2.39E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	8.58E-02	8.58E-02	8.58E-02	1.97E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	2.44E-01	2.44E-01	2.44E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	2.79E-01	2.79E-01	2.79E-01	1.97E-01	5.67E-18	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	8.93E-04	8.93E-04	8.93E-04	6.30E-04	1.81E-20	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	1.73E-06	1.73E-06	1.73E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	9.19E-04	9.19E-04	9.19E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	1.20E-01	1.20E-01	1.20E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	4.78E-01	4.78E-01	4.78E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	7.24E-01	7.24E-01	7.24E-01	8.59E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	7.30E-01	7.30E-01	7.30E-01	1.25E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	1.86E-04	1.86E-04	1.86E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	6.08E-02	6.08E-02	6.08E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	6.33E-01	6.33E-01	6.33E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	1.40E+00	1.40E+00	1.40E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	1.49E+00	1.49E+00	1.49E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03
se 79m	1.47E+00	1.47E+00	1.47E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	1.22E-07	1.22E-07	1.22E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	7.82E-13	7.82E-13	7.82E-13	4.86E-13	2.05E-31	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	1.54E-05	1.54E-05	1.54E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	1.59E-02	1.59E-02	1.59E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	3.82E-01	3.82E-01	3.82E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	3.98E+00	3.98E+00	3.98E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	4.35E+00	4.35E+00	4.35E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	3.64E-06	3.64E-06	3.64E-06	6.31E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	2.54E-06	2.54E-06	2.54E-06	5.89E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	1.31E-06	1.31E-06	1.31E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	3.13E-03	3.13E-03	3.13E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	2.55E-01	2.55E-01	2.55E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	4.29E+00	4.29E+00	4.29E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	6.17E+00	6.17E+00	6.17E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	6.43E+00	6.43E+00	6.43E+00	1.64E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	4.12E-01	4.12E-01	4.12E-01	1.11E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	4.18E-10	4.18E-10	4.18E-10	4.18E-10	4.18E-10	4.18E-10	4.18E-10	4.18E-10	4.18E-10
kr 81m	1.78E-08	1.78E-08	1.78E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	9.52E-04	9.52E-04	9.52E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	2.34E-01	2.34E-01	2.34E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 26

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
ge 82	4.53E+00	4.53E+00	4.53E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	7.18E+00	7.18E+00	7.18E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	2.65E+00	2.65E+00	2.65E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	3.92E-03	3.92E-03	3.92E-03	2.45E-03	1.50E-21	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	1.46E-03	1.46E-03	1.46E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	2.50E-05	2.50E-05	2.50E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	1.56E-02	1.56E-02	1.56E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	1.84E+00	1.84E+00	1.84E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	1.18E+01	1.18E+01	1.18E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	8.02E+00	8.02E+00	8.02E+00	2.93E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	9.30E+00	9.30E+00	9.30E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	1.80E+01	1.80E+01	1.80E+01	1.91E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	1.79E+01	1.79E+01	1.79E+01	8.23E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	2.98E-01	2.98E-01	2.98E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	1.10E+00	1.10E+00	1.10E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	8.45E+00	8.45E+00	8.45E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	3.41E+01	3.41E+01	3.41E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	3.49E+01	3.49E+01	3.49E+01	9.05E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	8.11E-01	8.11E-01	8.11E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	1.76E-04	1.76E-04	1.76E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	1.76E-01	1.76E-01	1.76E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	5.34E+00	5.34E+00	5.34E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	1.72E+01	1.72E+01	1.72E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	1.52E+01	1.52E+01	1.52E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	4.06E+01	4.06E+01	4.06E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	8.79E+00	8.79E+00	8.79E+00	8.78E+00	8.65E+00	8.24E+00	7.72E+00	6.36E+00	4.60E+00
kr 85m	4.06E+01	4.06E+01	4.06E+01	1.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	3.51E-02	3.51E-02	3.51E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	3.16E+00	3.16E+00	3.16E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	4.30E+01	4.30E+01	4.30E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	5.17E+01	5.17E+01	5.17E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	8.63E+00	8.63E+00	8.63E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	7.13E-04	7.13E-04	7.13E-04	6.87E-04	2.51E-05	8.97E-10	1.13E-15	.00E+00	.00E+00
rb 86m	3.37E-05	3.37E-05	3.37E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	6.38E-01	6.38E-01	6.38E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	2.20E+00	2.20E+00	2.20E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	2.55E+01	2.55E+01	2.55E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	6.69E+01	6.69E+01	6.69E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	8.33E+01	8.33E+01	8.33E+01	1.76E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	2.81E-05	2.81E-05	2.81E-05	7.57E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	8.37E-04	8.37E-04	8.37E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	1.06E+00	1.06E+00	1.06E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	1.25E+01	1.25E+01	1.25E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 27

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
br 88	6.78E+01	6.78E+01	6.78E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	1.18E+02	1.18E+02	1.18E+02	3.37E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	1.21E+02	1.21E+02	1.21E+02	3.76E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	7.45E-03	7.45E-03	7.45E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	4.30E+00	4.30E+00	4.30E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	4.47E+01	4.47E+01	4.47E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	1.52E+02	1.52E+02	1.52E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	1.60E+02	1.60E+02	1.60E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	1.61E+02	1.61E+02	1.61E+02	1.59E+02	4.70E+01	1.08E+00	7.22E-03	2.16E-09	2.88E-20
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	1.53E-02	1.53E-02	1.53E-02	1.48E-02	4.37E-03	1.00E-04	6.71E-07	2.01E-13	2.68E-24
as 90	5.17E-05	5.17E-05	5.17E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	8.77E-01	8.77E-01	8.77E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	2.31E+01	2.31E+01	2.31E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	1.67E+02	1.67E+02	1.67E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	1.52E+02	1.52E+02	1.52E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	4.28E+01	4.28E+01	4.28E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.94E+02	1.90E+02	1.86E+02	1.72E+02	1.52E+02
y 90	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.94E+02	1.90E+02	1.86E+02	1.72E+02	1.52E+02
y 90m	3.46E-06	3.46E-06	3.46E-06	1.88E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	6.81E-02	6.81E-02	6.81E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	8.45E+00	8.45E+00	8.45E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	1.14E+02	1.14E+02	1.14E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	1.89E+02	1.89E+02	1.89E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	1.97E+02	1.97E+02	1.97E+02	3.44E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	1.97E+02	1.97E+02	1.97E+02	1.96E+02	6.84E+01	2.62E+00	3.46E-02	7.97E-08	3.20E-17
y 91m	1.14E+02	1.14E+02	1.14E+02	2.19E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	6.06E-11	6.06E-11	6.06E-11	6.06E-11	6.06E-11	6.05E-11	6.05E-11	6.03E-11	6.00E-11
se 92	4.41E-03	4.41E-03	4.41E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	1.28E+00	1.28E+00	1.28E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	5.84E+01	5.84E+01	5.84E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	1.62E+02	1.62E+02	1.62E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	1.97E+02	1.97E+02	1.97E+02	4.25E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	1.99E+02	1.99E+02	1.99E+02	6.27E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13
se 93	1.91E-05	1.91E-05	1.91E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	1.33E-01	1.33E-01	1.33E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	1.85E+01	1.85E+01	1.85E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	1.22E+02	1.22E+02	1.22E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	2.09E+02	2.09E+02	2.09E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	1.41E+02	1.41E+02	1.41E+02	2.75E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	6.26E-02	6.26E-02	6.26E-02	6.26E-02	6.26E-02	6.27E-02	6.27E-02	6.29E-02	6.31E-02
br 94	8.99E-03	8.99E-03	8.99E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	7.98E+00	7.98E+00	7.98E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	6.09E+01	6.09E+01	6.09E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 28

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sr 94	2.01E+02	2.01E+02	2.01E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	2.14E+02	2.14E+02	2.14E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	1.92E-06	1.92E-06	1.92E-06	1.92E-06	1.92E-06	1.92E-06	1.92E-06	1.92E-06	1.91E-06
nb 94m	2.47E-05	2.47E-05	2.47E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	7.27E-05	7.27E-05	7.27E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	3.78E-01	3.78E-01	3.78E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	2.84E+01	2.84E+01	2.84E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	1.81E+02	1.81E+02	1.81E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	2.15E+02	2.15E+02	2.15E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	2.17E+02	2.17E+02	2.17E+02	2.15E+02	8.21E+01	4.17E+00	7.99E-02	5.62E-07	1.45E-15
nb 95	2.17E+02	2.17E+02	2.17E+02	2.17E+02	1.37E+02	8.99E+00	1.81E-01	1.24E-06	3.20E-15
nb 95m	2.41E+00	2.41E+00	2.41E+00	2.41E+00	9.65E-01	4.90E-02	9.39E-04	6.61E-09	1.71E-17
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	1.72E-05	1.72E-05	1.72E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	7.62E-02	7.62E-02	7.62E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	7.30E+00	7.30E+00	7.30E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	1.32E+02	1.32E+02	1.32E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	2.02E+02	2.02E+02	2.02E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	1.98E-02	1.98E-02	1.98E-02	9.69E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	6.84E-04	6.84E-04	6.84E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	2.61E+00	2.61E+00	2.61E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	6.95E+01	6.95E+01	6.95E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	1.65E+02	1.65E+02	1.65E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	1.90E+02	1.90E+02	1.90E+02	7.09E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	1.90E+02	1.90E+02	1.90E+02	7.12E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	1.80E+02	1.80E+02	1.80E+02	6.72E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	2.17E-04	2.17E-04	2.17E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	1.17E-01	1.17E-01	1.17E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	2.48E+01	2.48E+01	2.48E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	1.22E+02	1.22E+02	1.22E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	1.94E+02	1.94E+02	1.94E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	1.95E+02	1.95E+02	1.95E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	7.22E-01	7.22E-01	7.22E-01	2.56E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09
rb 99	2.69E-03	2.69E-03	2.69E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	1.23E+01	1.23E+01	1.23E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	8.11E+01	8.11E+01	8.11E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	1.90E+02	1.90E+02	1.90E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	1.23E+02	1.23E+02	1.23E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	8.11E+01	8.11E+01	8.11E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	2.06E+02	2.06E+02	2.06E+02	1.60E+02	2.85E-08	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	6.76E-01	6.76E-01	6.76E-01	6.76E-01	6.76E-01	6.76E-01	6.76E-01	6.76E-01	6.76E-01
tc 99m	1.82E+02	1.82E+02	1.82E+02	1.54E+02	2.76E-08	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	7.08E-04	7.08E-04	7.08E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	7.63E-01	7.63E-01	7.63E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	1.96E+01	1.96E+01	1.96E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 29

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
zr100	1.96E+02	1.96E+02	1.96E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	2.03E+02	2.03E+02	2.03E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	6.91E+00	6.91E+00	6.91E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	1.81E-01	1.81E-01	1.81E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	5.03E-06	5.03E-06	5.03E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	1.47E-01	1.47E-01	1.47E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	1.41E+01	1.41E+01	1.41E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	1.06E+02	1.06E+02	1.06E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	1.68E+02	1.68E+02	1.68E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	1.73E+02	1.73E+02	1.73E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	1.73E+02	1.73E+02	1.73E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	3.35E-02	3.35E-02	3.35E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	8.68E+00	8.68E+00	8.68E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	8.12E+01	8.12E+01	8.12E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	1.35E+02	1.35E+02	1.35E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	1.46E+02	1.46E+02	1.46E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	1.46E+02	1.46E+02	1.46E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	6.95E-02	6.95E-02	6.95E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	8.66E-06	8.66E-06	8.66E-06	8.65E-06	8.16E-06	6.82E-06	5.37E-06	2.62E-06	7.93E-07
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	9.29E-05	9.29E-05	9.29E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	2.68E+00	2.68E+00	2.68E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	2.32E+01	2.32E+01	2.32E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	7.97E+01	7.97E+01	7.97E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	1.05E+02	1.05E+02	1.05E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	1.08E+02	1.08E+02	1.08E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	1.08E+02	1.08E+02	1.08E+02	1.06E+02	2.20E+01	1.71E-01	2.70E-04	1.07E-12	1.06E-26
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	1.07E+02	1.07E+02	1.07E+02	1.06E+02	2.20E+01	1.70E-01	2.69E-04	1.07E-12	1.06E-26
sr104	2.89E-05	2.89E-05	2.89E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	2.05E-02	2.05E-02	2.05E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	5.08E+00	5.08E+00	5.08E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	2.84E+01	2.84E+01	2.84E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	6.52E+01	6.52E+01	6.52E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	6.72E+01	6.72E+01	6.72E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	4.67E-01	4.67E-01	4.67E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	3.41E-02	3.41E-02	3.41E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	1.90E-04	1.90E-04	1.90E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	3.12E+00	3.12E+00	3.12E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	1.04E+01	1.04E+01	1.04E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	3.64E+01	3.64E+01	3.64E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	3.79E+01	3.79E+01	3.79E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	3.80E+01	3.80E+01	3.80E+01	9.23E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	3.80E+01	3.80E+01	3.80E+01	2.71E+01	1.78E-17	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	1.08E+01	1.08E+01	1.08E+01	2.63E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 30

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
y106	3.18E-06	3.18E-06	3.18E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	3.35E-02	3.35E-02	3.35E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	9.26E-01	9.26E-01	9.26E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	1.53E+01	1.53E+01	1.53E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	1.70E+01	1.70E+01	1.70E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	1.76E+01	1.76E+01	1.76E+01	1.76E+01	1.49E+01	8.91E+00	4.51E+00	5.84E-01	1.94E-02
rh106	1.76E+01	1.76E+01	1.76E+01	1.76E+01	1.49E+01	8.91E+00	4.51E+00	5.84E-01	1.94E-02
rh106m	4.08E-04	4.08E-04	4.08E-04	1.89E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	4.69E-12	4.69E-12	4.69E-12	4.06E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	2.87E-08	2.87E-08	2.87E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	3.21E-04	3.21E-04	3.21E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	1.50E-01	1.50E-01	1.50E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	4.69E+00	4.69E+00	4.69E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	6.45E+00	6.45E+00	6.45E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	7.44E+00	7.44E+00	7.44E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	7.45E+00	7.45E+00	7.45E+00	9.66E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04
pd107m	1.37E-04	1.37E-04	1.37E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	1.25E-05	1.25E-05	1.25E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	3.94E-03	3.94E-03	3.94E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	4.43E-01	4.43E-01	4.43E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	1.87E+00	1.87E+00	1.87E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	3.72E+00	3.72E+00	3.72E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	3.76E+00	3.76E+00	3.76E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	3.95E-02	3.95E-02	3.95E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	3.27E-07	3.27E-07	3.27E-07	8.45E-10	8.43E-10	8.40E-10	8.35E-10	8.22E-10	8.00E-10
ag108m	9.71E-09	9.71E-09	9.71E-09	9.71E-09	9.70E-09	9.66E-09	9.60E-09	9.45E-09	9.19E-09
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	1.00E-08	1.00E-08	1.00E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	1.70E-04	1.70E-04	1.70E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	4.47E-02	4.47E-02	4.47E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	5.32E-01	5.32E-01	5.32E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	2.01E+00	2.01E+00	2.01E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	2.25E+00	2.25E+00	2.25E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	1.13E+00	1.13E+00	1.13E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	2.26E+00	2.26E+00	2.26E+00	6.73E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	3.89E-03	3.89E-03	3.89E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	2.26E+00	2.26E+00	2.26E+00	6.73E-01	2.95E-10	1.95E-10	1.13E-10	2.19E-11	1.42E-12
cd109	3.37E-10	3.37E-10	3.37E-10	3.37E-10	2.95E-10	1.95E-10	1.13E-10	2.19E-11	1.42E-12
nb110	8.33E-06	8.33E-06	8.33E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	6.92E-03	6.92E-03	6.92E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	1.37E-01	1.37E-01	1.37E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	1.12E+00	1.12E+00	1.12E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	1.30E-01	1.30E-01	1.30E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	1.25E+00	1.25E+00	1.25E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	6.67E-03	6.67E-03	6.67E-03	3.81E-06	2.98E-06	1.39E-06	5.03E-07	2.41E-08	1.51E-10
ag110m	2.81E-04	2.81E-04	2.81E-04	2.80E-04	2.19E-04	1.02E-04	3.70E-05	1.77E-06	1.11E-08

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 31

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	7.35E-08	7.35E-08	7.35E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	7.77E-04	7.77E-04	7.77E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	3.83E-02	3.83E-02	3.83E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	5.19E-01	5.19E-01	5.19E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	8.34E-01	8.34E-01	8.34E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	8.64E-01	8.64E-01	8.64E-01	9.08E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	2.38E-02	2.38E-02	2.38E-02	1.16E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	8.65E-01	8.65E-01	8.65E-01	7.90E-01	2.00E-04	1.51E-15	2.65E-30	.00E+00	.00E+00
ag111m	8.63E-01	8.63E-01	8.63E-01	1.13E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	7.81E-08	7.81E-08	7.81E-08	9.40E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	2.73E-09	2.73E-09	2.73E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	1.25E-04	1.25E-04	1.25E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	9.19E-03	9.19E-03	9.19E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	2.90E-01	2.90E-01	2.90E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	5.67E-01	5.67E-01	5.67E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	6.47E-01	6.47E-01	6.47E-01	2.94E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	6.48E-01	6.48E-01	6.48E-01	3.45E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	2.45E-06	2.45E-06	2.45E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	2.61E-03	2.61E-03	2.61E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	1.37E-01	1.37E-01	1.37E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	4.53E-01	4.53E-01	4.53E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	6.10E-01	6.10E-01	6.10E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	5.90E-01	5.90E-01	5.90E-01	2.68E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	1.15E-01	1.15E-01	1.15E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14
cd113m	1.00E-02	1.00E-02	1.00E-02	1.00E-02	9.91E-03	9.55E-03	9.10E-03	7.85E-03	6.14E-03
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	5.62E-11	5.62E-11	5.62E-11	2.47E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	1.26E-06	1.26E-06	1.26E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	4.13E-04	4.13E-04	4.13E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	5.44E-02	5.44E-02	5.44E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	2.60E-01	2.60E-01	2.60E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	5.15E-01	5.15E-01	5.15E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	5.23E-01	5.23E-01	5.23E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	2.64E-06	2.64E-06	2.64E-06	1.87E-06	5.39E-07	1.14E-08	6.88E-11	1.50E-17	1.18E-28
in114m	1.99E-06	1.99E-06	1.99E-06	1.96E-06	5.64E-07	1.20E-08	7.19E-11	1.57E-17	1.24E-28
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	5.40E-09	5.40E-09	5.40E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	1.29E-05	1.29E-05	1.29E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	1.20E-02	1.20E-02	1.20E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	1.27E-01	1.27E-01	1.27E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	3.87E-01	3.87E-01	3.87E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	2.95E-01	2.95E-01	2.95E-01	6.46E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	1.18E-01	1.18E-01	1.18E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	3.96E-01	3.96E-01	3.96E-01	2.92E-01	2.75E-13	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	1.71E-02	1.71E-02	1.71E-02	1.68E-02	4.21E-03	5.84E-05	2.00E-07	8.03E-15	3.77E-27
in115	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13
in115m	3.96E-01	3.96E-01	3.96E-01	3.17E-01	4.66E-07	6.46E-09	2.21E-11	8.86E-19	4.11E-31

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 32

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	5.64E-06	5.64E-06	5.64E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	4.01E-03	4.01E-03	4.01E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	7.55E-02	7.55E-02	7.55E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	5.24E-01	5.24E-01	5.24E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	5.68E-01	5.68E-01	5.68E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	4.28E-02	4.28E-02	4.28E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	3.98E-04	3.98E-04	3.98E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	1.49E-03	1.49E-03	1.49E-03	1.47E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	6.29E-08	6.29E-08	6.29E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	5.45E-04	5.45E-04	5.45E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	2.49E-02	2.49E-02	2.49E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	2.99E-01	2.99E-01	2.99E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	1.99E-01	1.99E-01	1.99E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	1.99E-01	1.99E-01	1.99E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	3.45E-01	3.45E-01	3.45E-01	4.35E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	6.88E-02	6.88E-02	6.88E-02	4.89E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	2.47E-01	2.47E-01	2.47E-01	1.57E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	3.15E-01	3.15E-01	3.15E-01	1.88E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	7.91E-04	7.91E-04	7.91E-04	7.63E-04	8.17E-06	6.60E-12	5.43E-20	.00E+00	.00E+00
tc118	1.86E-09	1.86E-09	1.86E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	7.78E-05	7.78E-05	7.78E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	5.05E-03	5.05E-03	5.05E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	1.44E-01	1.44E-01	1.44E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	2.55E-01	2.55E-01	2.55E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	1.81E-01	1.81E-01	1.81E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	4.11E-01	4.11E-01	4.11E-01	9.93E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	4.12E-01	4.12E-01	4.12E-01	9.95E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	1.62E-04	1.62E-04	1.62E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	1.03E-05	1.03E-05	1.03E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	2.04E-03	2.04E-03	2.04E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	1.04E-01	1.04E-01	1.04E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	3.37E-01	3.37E-01	3.37E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	3.17E-01	3.17E-01	3.17E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	1.29E-01	1.29E-01	1.29E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	1.69E-01	1.69E-01	1.69E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	2.86E-01	2.86E-01	2.86E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	1.58E-03	1.58E-03	1.58E-03	1.58E-03	1.28E-03	6.66E-04	2.81E-04	2.10E-05	2.80E-07
ru120	1.23E-06	1.23E-06	1.23E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	3.89E-04	3.89E-04	3.89E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	4.91E-02	4.91E-02	4.91E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	2.27E-01	2.27E-01	2.27E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	4.39E-01	4.39E-01	4.39E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	4.42E-01	4.42E-01	4.42E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	3.48E-03	3.48E-03	3.48E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	9.62E-05	9.62E-05	9.62E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 33

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
pd121	1.82E-02	1.82E-02	1.82E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	1.67E-01	1.67E-01	1.67E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	4.57E-01	4.57E-01	4.57E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	2.55E-02	2.55E-02	2.55E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	4.62E-01	4.62E-01	4.62E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	4.81E-01	4.81E-01	4.81E-01	2.62E-01	2.38E-03	2.36E-03	2.33E-03	2.24E-03	2.10E-03
sn121m	3.08E-03	3.08E-03	3.08E-03	3.08E-03	3.07E-03	3.04E-03	3.00E-03	2.89E-03	2.71E-03
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	1.05E-05	1.05E-05	1.05E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	5.77E-03	5.77E-03	5.77E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	8.78E-02	8.78E-02	8.78E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	4.95E-01	4.95E-01	4.95E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	5.25E-01	5.25E-01	5.25E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	3.06E-02	3.06E-02	3.06E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	8.72E-05	8.72E-05	8.72E-05	6.75E-05	8.08E-15	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	9.37E-06	9.37E-06	9.37E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	8.25E-07	8.25E-07	8.25E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	8.56E-04	8.56E-04	8.56E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	3.22E-02	3.22E-02	3.22E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	3.24E-01	3.24E-01	3.24E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	3.52E-01	3.52E-01	3.52E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	9.86E-02	9.86E-02	9.86E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	5.88E-02	5.88E-02	5.88E-02	5.84E-02	3.62E-02	8.28E-03	1.17E-03	3.26E-06	1.81E-10
sn123m	5.17E-01	5.17E-01	5.17E-01	7.98E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19
te123m	7.11E-09	7.11E-09	7.11E-09	7.07E-09	4.22E-09	8.57E-10	1.03E-10	1.81E-13	4.62E-18
pd124	5.19E-04	5.19E-04	5.19E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	2.99E-02	2.99E-02	2.99E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	5.80E-01	5.80E-01	5.80E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	8.82E-01	8.82E-01	8.82E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	4.80E-04	4.80E-04	4.80E-04	4.75E-04	1.70E-04	7.16E-06	1.07E-07	3.54E-13	2.61E-22
sb124m	1.15E-04	1.15E-04	1.15E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	1.08E-04	1.08E-04	1.08E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	1.19E-02	1.19E-02	1.19E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	3.43E-01	3.43E-01	3.43E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	4.48E-01	4.48E-01	4.48E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	3.11E-01	3.11E-01	3.11E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	3.16E-01	3.16E-01	3.16E-01	2.94E-01	4.89E-04	1.24E-12	4.88E-24	.00E+00	.00E+00
sn125m	7.38E-01	7.38E-01	7.38E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	1.05E+00	1.05E+00	1.05E+00	1.05E+00	9.94E-01	8.21E-01	6.37E-01	2.97E-01	8.35E-02
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	2.43E-01	2.43E-01	2.43E-01	2.43E-01	2.37E-01	2.00E-01	1.55E-01	7.26E-02	2.04E-02
pd126	2.41E-05	2.41E-05	2.41E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	5.22E-03	5.22E-03	5.22E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	4.30E-01	4.30E-01	4.30E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	9.44E-01	9.44E-01	9.44E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 34

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sb126	6.09E-03	6.09E-03	6.09E-03	5.84E-03	1.48E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03
sb126m	1.67E-02	1.67E-02	1.67E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	2.45E-03	2.45E-03	2.45E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	3.34E-01	3.34E-01	3.34E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	1.09E+00	1.09E+00	1.09E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	1.09E+00	1.09E+00	1.09E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	1.58E+00	1.58E+00	1.58E+00	5.75E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	2.59E+00	2.59E+00	2.59E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	4.38E+00	4.38E+00	4.38E+00	3.69E+00	4.05E-07	1.21E-28	.00E+00	.00E+00	.00E+00
te127	4.36E+00	4.36E+00	4.36E+00	4.06E+00	4.39E-01	7.63E-02	7.48E-03	7.04E-06	6.37E-11
te127m	7.66E-01	7.66E-01	7.66E-01	7.66E-01	4.48E-01	7.79E-02	7.63E-03	7.19E-06	6.50E-11
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	4.31E-12	4.31E-12	4.31E-12	4.23E-12	7.77E-13	4.11E-15	3.92E-18	3.40E-27	.00E+00
ag128	1.00E-03	1.00E-03	1.00E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	3.13E-01	3.13E-01	3.13E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	3.21E+00	3.21E+00	3.21E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	1.16E+01	1.16E+01	1.16E+01	5.36E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	8.12E-01	8.12E-01	8.12E-01	1.38E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	1.18E+01	1.18E+01	1.18E+01	6.50E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	7.95E-04	7.95E-04	7.95E-04	3.54E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	1.32E-01	1.32E-01	1.32E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	3.53E+00	3.53E+00	3.53E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	9.67E+00	9.67E+00	9.67E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	1.30E+01	1.30E+01	1.30E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	2.58E+01	2.58E+01	2.58E+01	5.99E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	2.43E+01	2.43E+01	2.43E+01	3.68E+00	4.81E-01	1.64E-03	8.78E-07	1.34E-16	.00E+00
te129m	4.78E+00	4.78E+00	4.78E+00	4.71E+00	7.50E-01	2.57E-03	1.37E-06	2.09E-16	.00E+00
i129	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	1.11E-08	1.11E-08	1.11E-08	1.02E-08	9.91E-12	4.74E-21	.00E+00	.00E+00	.00E+00
cd130	5.29E-02	5.29E-02	5.29E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	3.40E+00	3.40E+00	3.40E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	3.84E+01	3.84E+01	3.84E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	8.06E+00	8.06E+00	8.06E+00	8.55E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	4.97E+01	4.97E+01	4.97E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	1.89E-02	1.89E-02	1.89E-02	4.94E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	7.81E-03	7.81E-03	7.81E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	6.35E-03	6.35E-03	6.35E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	1.17E+00	1.17E+00	1.17E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	3.14E+01	3.14E+01	3.14E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	8.78E+01	8.78E+01	8.78E+01	1.26E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	8.80E+01	8.80E+01	8.80E+01	1.70E+00	6.26E-22	.00E+00	.00E+00	.00E+00	.00E+00
te131m	1.31E+01	1.31E+01	1.31E+01	7.55E+00	2.78E-21	.00E+00	.00E+00	.00E+00	.00E+00
i131	9.83E+01	9.83E+01	9.83E+01	9.13E+01	4.32E-02	2.14E-12	4.52E-26	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	1.07E+00	1.07E+00	1.07E+00	1.07E+00	1.67E-02	1.92E-09	1.10E-18	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 35

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cd132	7.08E-04	7.08E-04	7.08E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	2.91E-01	2.91E-01	2.91E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	2.20E+01	2.20E+01	2.20E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	4.51E+01	4.51E+01	4.51E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	5.14E+01	5.14E+01	5.14E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	1.46E+02	1.46E+02	1.46E+02	1.18E+02	7.07E-07	.00E+00	.00E+00	.00E+00	.00E+00
i132	1.47E+02	1.47E+02	1.47E+02	1.22E+02	7.29E-07	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	8.29E-06	8.29E-06	8.29E-06	7.45E-06	5.46E-10	8.88E-23	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	4.84E-03	4.84E-03	4.84E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	6.12E+00	6.12E+00	6.12E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	8.21E+01	8.21E+01	8.21E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	1.30E+02	1.30E+02	1.30E+02	3.70E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	1.09E+02	1.09E+02	1.09E+02	1.64E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	2.27E+02	2.27E+02	2.27E+02	1.05E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	1.35E+01	1.35E+01	1.35E+01	1.68E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	2.27E+02	2.27E+02	2.27E+02	2.19E+02	1.89E-03	2.98E-19	.00E+00	.00E+00	.00E+00
xe133m	6.61E+00	6.61E+00	6.61E+00	6.05E+00	4.67E-12	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	2.45E-09	2.45E-09	2.45E-09	2.45E-09	2.41E-09	2.30E-09	2.15E-09	1.77E-09	1.27E-09
in134	7.44E-04	7.44E-04	7.44E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	7.02E-01	7.02E-01	7.02E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	1.58E+01	1.58E+01	1.58E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	9.64E+00	9.64E+00	9.64E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	2.33E+02	2.33E+02	2.33E+02	9.94E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	2.61E+02	2.61E+02	2.61E+02	6.65E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	1.19E+01	1.19E+01	1.19E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	2.24E+00	2.24E+00	2.24E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.26E-01	1.76E-01	1.26E-01	4.58E-02	8.53E-03
cs134m	1.86E-02	1.86E-02	1.86E-02	6.14E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	5.23E-02	5.23E-02	5.23E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	5.67E+00	5.67E+00	5.67E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	1.12E+02	1.12E+02	1.12E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	2.13E+02	2.13E+02	2.13E+02	1.70E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	2.22E+02	2.22E+02	2.22E+02	8.11E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	3.94E+01	3.94E+01	3.94E+01	2.77E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02
cs135m	1.28E-03	1.28E-03	1.28E-03	8.48E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	8.71E-07	8.71E-07	8.71E-07	4.88E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	3.93E-03	3.93E-03	3.93E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	7.28E-01	7.28E-01	7.28E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	5.47E+01	5.47E+01	5.47E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	1.10E+02	1.10E+02	1.10E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	5.06E+01	5.06E+01	5.06E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	2.71E-01	2.71E-01	2.71E-01	2.57E-01	2.36E-03	1.19E-09	5.27E-18	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	3.03E-02	3.03E-02	3.03E-02	2.87E-02	2.65E-04	1.34E-10	5.90E-19	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 36

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sb137	1.74E+00	1.74E+00	1.74E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	1.63E+01	1.63E+01	1.63E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	1.11E+02	1.11E+02	1.11E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	2.07E+02	2.07E+02	2.07E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.12E+02	2.12E+02	2.12E+02	2.12E+02	2.11E+02	2.08E+02	2.03E+02	1.89E+02	1.69E+02
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	2.01E+02	2.01E+02	2.01E+02	2.01E+02	1.99E+02	1.96E+02	1.92E+02	1.79E+02	1.59E+02
sb138	6.36E-03	6.36E-03	6.36E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	3.08E+00	3.08E+00	3.08E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	5.52E+01	5.52E+01	5.52E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	2.14E+02	2.14E+02	2.14E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	2.24E+02	2.24E+02	2.24E+02	1.35E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	5.39E+00	5.39E+00	5.39E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12
sb139	4.25E-04	4.25E-04	4.25E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	3.98E-01	3.98E-01	3.98E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	3.38E+01	3.38E+01	3.38E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	1.73E+02	1.73E+02	1.73E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	2.12E+02	2.12E+02	2.12E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	2.14E+02	2.14E+02	2.14E+02	1.83E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	1.01E-06	1.01E-06	1.01E-06	1.00E-06	6.40E-07	1.60E-07	2.54E-08	1.02E-10	1.03E-14
pr139	1.29E-09	1.29E-09	1.29E-09	2.97E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	6.39E-02	6.39E-02	6.39E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	7.67E+00	7.67E+00	7.67E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	1.28E+02	1.28E+02	1.28E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	1.94E+02	1.94E+02	1.94E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	2.12E+02	2.12E+02	2.12E+02	2.01E+02	1.60E+00	5.09E-07	1.22E-15	.00E+00	.00E+00
la140	2.13E+02	2.13E+02	2.13E+02	2.10E+02	1.84E+00	5.86E-07	1.40E-15	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	4.03E-06	4.03E-06	4.03E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	4.67E-04	4.67E-04	4.67E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	6.63E-01	6.63E-01	6.63E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	4.62E+01	4.62E+01	4.62E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	1.50E+02	1.50E+02	1.50E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	1.95E+02	1.95E+02	1.95E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	1.95E+02	1.95E+02	1.95E+02	3.04E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	1.95E+02	1.95E+02	1.95E+02	1.92E+02	2.88E+01	8.13E-02	3.36E-05	2.39E-15	2.28E-32
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	5.10E-09	5.10E-09	5.10E-09	6.38E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	2.21E-04	2.21E-04	2.21E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	2.26E-01	2.26E-01	2.26E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	1.65E+01	1.65E+01	1.65E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	9.13E+01	9.13E+01	9.13E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	1.94E+02	1.94E+02	1.94E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	1.97E+02	1.97E+02	1.97E+02	3.89E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06
pr142	4.13E-02	4.13E-02	4.13E-02	1.73E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	1.36E-03	1.36E-03	1.36E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 37

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
xe143	2.15E+00	2.15E+00	2.15E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	5.06E+01	5.06E+01	5.06E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	1.77E+02	1.77E+02	1.77E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	1.98E+02	1.98E+02	1.98E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	1.99E+02	1.99E+02	1.99E+02	1.21E+02	3.96E-18	.00E+00	.00E+00	.00E+00	.00E+00
pr143	1.99E+02	1.99E+02	1.99E+02	1.97E+02	2.23E+00	1.73E-06	1.36E-14	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	4.63E-05	4.63E-05	4.63E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	3.36E-01	3.36E-01	3.36E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	1.28E+01	1.28E+01	1.28E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	1.49E+02	1.49E+02	1.49E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	1.81E+02	1.81E+02	1.81E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	1.83E+02	1.83E+02	1.83E+02	1.83E+02	1.47E+02	7.54E+01	3.10E+01	2.16E+00	2.54E-02
pr144	1.83E+02	1.83E+02	1.83E+02	1.83E+02	1.47E+02	7.54E+01	3.10E+01	2.16E+00	2.54E-02
pr144m	2.57E+00	2.57E+00	2.57E+00	2.56E+00	2.06E+00	1.06E+00	4.34E-01	3.02E-02	3.55E-04
nd144	6.10E-11	6.10E-11	6.10E-11	6.10E-11	6.10E-11	6.10E-11	6.10E-11	6.11E-11	6.11E-11
i145	1.38E-06	1.38E-06	1.38E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	1.97E-02	1.97E-02	1.97E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	2.40E+00	2.40E+00	2.40E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	6.32E+01	6.32E+01	6.32E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	1.22E+02	1.22E+02	1.22E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	1.32E+02	1.32E+02	1.32E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	1.32E+02	1.32E+02	1.32E+02	8.26E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	8.79E-09	8.79E-09	8.79E-09	8.79E-09	8.78E-09	8.67E-09	8.44E-09	7.58E-09	6.24E-09
sm145	7.91E-09	7.91E-09	7.91E-09	7.89E-09	6.58E-09	3.76E-09	1.78E-09	1.91E-10	4.62E-12
xe146	1.89E-03	1.89E-03	1.89E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	6.62E-01	6.62E-01	6.62E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	3.49E+01	3.49E+01	3.49E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	8.28E+01	8.28E+01	8.28E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	1.00E+02	1.00E+02	1.00E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	1.01E+02	1.01E+02	1.01E+02	2.58E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	5.29E-08	5.29E-08	5.29E-08	5.29E-08	5.13E-08	4.67E-08	4.12E-08	2.83E-08	1.51E-08
sm146	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11
xe147	5.34E-06	5.34E-06	5.34E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	6.45E-03	6.45E-03	6.45E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	3.84E+00	3.84E+00	3.84E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	3.22E+01	3.22E+01	3.22E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	7.40E+01	7.40E+01	7.40E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	7.64E+01	7.64E+01	7.64E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	7.64E+01	7.64E+01	7.64E+01	7.18E+01	2.61E-01	7.41E-09	7.19E-19	.00E+00	.00E+00
pm147	7.63E+01	7.63E+01	7.63E+01	7.63E+01	7.23E+01	5.92E+01	4.55E+01	2.06E+01	5.49E+00
sm147	4.98E-07	4.98E-07	4.98E-07	4.98E-07	4.98E-07	4.98E-07	4.98E-07	4.99E-07	4.99E-07
cs148	1.12E-03	1.12E-03	1.12E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	5.73E-01	5.73E-01	5.73E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	9.36E+00	9.36E+00	9.36E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	5.19E+01	5.19E+01	5.19E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	5.67E+01	5.67E+01	5.67E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	1.01E-03	1.01E-03	1.01E-03	8.93E-04	1.02E-05	1.01E-07	2.19E-10	2.25E-18	1.14E-31
pm148m	8.74E-04	8.74E-04	8.74E-04	8.60E-04	1.93E-04	1.90E-06	4.14E-09	4.26E-17	2.08E-30

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 38

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sm148	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15
cs149	7.99E-06	7.99E-06	7.99E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	5.09E-02	5.09E-02	5.09E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	2.32E+00	2.32E+00	2.32E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	2.64E+01	2.64E+01	2.64E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	3.59E+01	3.59E+01	3.59E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	3.67E+01	3.67E+01	3.67E+01	2.43E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	3.67E+01	3.67E+01	3.67E+01	2.78E+01	2.14E-11	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12
eu149	1.93E-10	1.93E-10	1.93E-10	1.91E-10	9.85E-11	1.27E-11	8.34E-13	2.38E-16	2.94E-22
cs150	1.02E-06	1.02E-06	1.02E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	3.82E-03	3.82E-03	3.82E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	2.98E-01	2.98E-01	2.98E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	1.02E+01	1.02E+01	1.02E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	2.00E+01	2.00E+01	2.00E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	1.52E-03	1.52E-03	1.52E-03	3.05E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	2.21E-07	2.21E-07	2.21E-07	2.21E-07	2.20E-07	2.17E-07	2.13E-07	2.01E-07	1.82E-07
ba151	3.44E-05	3.44E-05	3.44E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	3.85E-02	3.85E-02	3.85E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	2.41E+00	2.41E+00	2.41E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	9.72E+00	9.72E+00	9.72E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	1.46E+01	1.46E+01	1.46E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	1.47E+01	1.47E+01	1.47E+01	8.25E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	1.44E+01	1.44E+01	1.44E+01	1.44E+01	1.44E+01	1.43E+01	1.42E+01	1.39E+01	1.34E+01
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	2.83E-07	2.83E-07	2.83E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	7.97E-04	7.97E-04	7.97E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	3.39E-01	3.39E-01	3.39E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	3.17E+00	3.17E+00	3.17E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	9.12E+00	9.12E+00	9.12E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	9.29E+00	9.29E+00	9.29E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	1.73E-01	1.73E-01	1.73E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	8.14E-01	8.14E-01	8.14E-01	8.14E-01	8.04E-01	7.73E-01	7.34E-01	6.28E-01	4.84E-01
eu152m	4.52E-01	4.52E-01	4.52E-01	7.58E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	1.59E-12	1.59E-12	1.59E-12	1.59E-12	1.59E-12	1.59E-12	1.59E-12	1.60E-12	1.60E-12
la153	2.34E-04	2.34E-04	2.34E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	7.28E-02	7.28E-02	7.28E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	1.12E+00	1.12E+00	1.12E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	5.12E+00	5.12E+00	5.12E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	5.79E+00	5.79E+00	5.79E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	5.89E+00	5.89E+00	5.89E+00	4.12E+00	5.25E-14	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	6.58E-04	6.58E-04	6.58E-04	6.56E-04	5.08E-04	2.31E-04	8.09E-05	3.49E-06	1.85E-08
la154	5.86E-06	5.86E-06	5.86E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	6.32E-03	6.32E-03	6.32E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	1.68E-01	1.68E-01	1.68E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	1.99E+00	1.99E+00	1.99E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	2.33E+00	2.33E+00	2.33E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	3.32E-01	3.32E-01	3.32E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 39

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	3.75E-02	3.75E-02	3.75E-02	3.75E-02	3.68E-02	3.46E-02	3.19E-02	2.51E-02	1.67E-02
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	2.85E-08	2.85E-08	2.85E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	5.00E-04	5.00E-04	5.00E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	3.04E-02	3.04E-02	3.04E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	5.93E-01	5.93E-01	5.93E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	1.14E+00	1.14E+00	1.14E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	1.25E+00	1.25E+00	1.25E+00	4.74E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	1.25E+00	1.25E+00	1.25E+00	1.25E+00	1.20E+00	1.08E+00	9.29E-01	5.96E-01	2.84E-01
gd155m	1.32E-05	1.32E-05	1.32E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	3.72E-05	3.72E-05	3.72E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	3.50E-03	3.50E-03	3.50E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	1.60E-01	1.60E-01	1.60E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	4.12E-01	4.12E-01	4.12E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	5.49E-01	5.49E-01	5.49E-01	9.36E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	5.53E-01	5.53E-01	5.53E-01	5.39E-01	9.32E-03	3.26E-08	1.87E-15	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	1.75E-06	1.75E-06	1.75E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	4.95E-04	4.95E-04	4.95E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	3.30E-02	3.30E-02	3.30E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	1.50E-01	1.50E-01	1.50E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	2.68E-01	2.68E-01	2.68E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	2.74E-01	2.74E-01	2.74E-01	9.23E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	2.55E-05	2.55E-05	2.55E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	5.27E-03	5.27E-03	5.27E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	3.57E-02	3.57E-02	3.57E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	1.22E-01	1.22E-01	1.22E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	1.31E-01	1.31E-01	1.31E-01	5.31E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	1.07E-06	1.07E-06	1.07E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	4.49E-04	4.49E-04	4.49E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	6.86E-03	6.86E-03	6.86E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	3.98E-02	3.98E-02	3.98E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	4.98E-02	4.98E-02	4.98E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	5.04E-02	5.04E-02	5.04E-02	2.10E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	2.87E-05	2.87E-05	2.87E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	7.42E-04	7.42E-04	7.42E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	1.08E-02	1.08E-02	1.08E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	1.69E-02	1.69E-02	1.69E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	3.33E-05	3.33E-05	3.33E-05	3.30E-05	1.40E-05	1.00E-06	3.02E-08	8.29E-13	2.07E-20
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	1.17E-06	1.17E-06	1.17E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	9.10E-05	9.10E-05	9.10E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	2.03E-03	2.03E-03	2.03E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	5.00E-03	5.00E-03	5.00E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	6.30E-03	6.30E-03	6.30E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	6.33E-03	6.33E-03	6.33E-03	5.73E-03	7.51E-07	7.38E-19	.00E+00	.00E+00	.00E+00

1
0

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 40

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	6.21E-06	6.21E-06	6.21E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	3.71E-04	3.71E-04	3.71E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	1.16E-03	1.16E-03	1.16E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	2.18E-03	2.18E-03	2.18E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	2.21E-03	2.21E-03	2.21E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	2.79E-05	2.79E-05	2.79E-05	1.61E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	3.27E-05	3.27E-05	3.27E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	2.31E-04	2.31E-04	2.31E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	7.36E-04	7.36E-04	7.36E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	8.19E-04	8.19E-04	8.19E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	2.79E-06	2.79E-06	2.79E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	3.01E-05	3.01E-05	3.01E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	2.17E-04	2.17E-04	2.17E-04	2.21E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	2.82E-04	2.82E-04	2.82E-04	2.57E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	1.61E-07	1.61E-07	1.61E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	4.84E-06	4.84E-06	4.84E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	5.97E-05	5.97E-05	5.97E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	1.08E-04	1.08E-04	1.08E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	1.22E-04	1.22E-04	1.22E-04	1.00E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	9.97E-05	9.97E-05	9.97E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	1.39E-05	1.39E-05	1.39E-05	1.13E-05	1.50E-13	.00E+00	.00E+00	.00E+00	.00E+00
ho166	1.41E-05	1.41E-05	1.41E-05	1.33E-05	2.23E-13	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	5.10E-08	5.10E-08	5.10E-08	5.10E-08	5.10E-08	5.10E-08	5.09E-08	5.09E-08	5.07E-08
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	4.02E-10	4.02E-10	4.02E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	2.31E-08	2.31E-08	2.31E-08	2.14E-08	3.03E-11	4.64E-20	9.13E-32	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	1.17E-10	1.17E-10	1.17E-10	1.16E-10	7.20E-11	1.63E-11	2.28E-12	6.21E-15	3.29E-19
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	3.74E-08	3.74E-08	3.74E-08	4.09E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	3.81E-08	3.81E-08	3.81E-08	3.80E-08	3.48E-08	2.65E-08	1.85E-08	6.26E-09	1.03E-09
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	2.75E-08	2.75E-08	2.75E-08	1.96E-08	1.78E-21	.00E+00	.00E+00	.00E+00	.00E+00
tm172	2.85E-08	2.85E-08	2.85E-08	2.73E-08	7.38E-18	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	2.07E+04	2.07E+04	2.07E+04	4.80E+03	1.64E+03	1.06E+03	9.09E+02	7.62E+02	6.58E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 41

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
he 4	1.15E+00	1.16E+00	1.17E+00	1.18E+00	1.21E+00	1.27E+00	1.32E+00	1.37E+00	1.41E+00	1.45E+00	1.54E+00
tl206	1.33E-16	1.34E-16	1.36E-16	1.38E-16	1.43E-16	1.57E-16	1.71E-16	1.85E-16	2.00E-16	2.15E-16	2.47E-16
tl207	4.04E-11	4.06E-11	4.08E-11	4.12E-11	4.20E-11	4.39E-11	4.59E-11	4.79E-11	4.99E-11	5.19E-11	5.58E-11
tl208	1.41E-12	1.34E-12	1.28E-12	1.16E-12	9.50E-13	5.78E-13	3.52E-13	2.14E-13	1.31E-13	7.96E-14	2.97E-14
tl209	6.82E-14	6.89E-14	6.95E-14	7.09E-14	7.36E-14	8.07E-14	8.80E-14	9.57E-14	1.04E-13	1.12E-13	1.29E-13
pb206	2.97E-03	3.02E-03	3.06E-03	3.15E-03	3.34E-03	3.84E-03	4.38E-03	4.96E-03	5.60E-03	6.29E-03	7.81E-03
pb207	1.51E-03	1.53E-03	1.55E-03	1.58E-03	1.64E-03	1.80E-03	1.98E-03	2.16E-03	2.34E-03	2.54E-03	2.95E-03
pb208	2.61E-04	2.63E-04	2.65E-04	2.70E-04	2.76E-04	2.89E-04	2.96E-04	3.01E-04	3.04E-04	3.06E-04	3.07E-04
pb209	2.88E-10	2.91E-10	2.94E-10	2.99E-10	3.11E-10	3.41E-10	3.72E-10	4.04E-10	4.38E-10	4.73E-10	5.47E-10
pb210	2.87E-04	2.90E-04	2.92E-04	2.98E-04	3.09E-04	3.38E-04	3.68E-04	3.99E-04	4.31E-04	4.64E-04	5.33E-04
pb211	3.12E-10	3.14E-10	3.15E-10	3.19E-10	3.25E-10	3.40E-10	3.55E-10	3.71E-10	3.86E-10	4.01E-10	4.32E-10
pb212	8.37E-10	7.97E-10	7.59E-10	6.87E-10	5.64E-10	3.43E-10	2.09E-10	1.27E-10	7.74E-11	4.72E-11	1.76E-11
pb214	7.09E-10	7.16E-10	7.22E-10	7.36E-10	7.62E-10	8.31E-10	9.03E-10	9.76E-10	1.05E-09	1.13E-09	1.29E-09
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.83E-04	1.85E-04	1.88E-04	1.94E-04	2.05E-04	2.36E-04	2.69E-04	3.05E-04	3.44E-04	3.87E-04	4.82E-04
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.77E-07	1.78E-07	1.80E-07	1.83E-07	1.90E-07	2.08E-07	2.26E-07	2.46E-07	2.65E-07	2.86E-07	3.28E-07
bi211	1.85E-11	1.86E-11	1.87E-11	1.89E-11	1.92E-11	2.01E-11	2.11E-11	2.20E-11	2.29E-11	2.38E-11	2.56E-11
bi212	7.94E-11	7.56E-11	7.20E-11	6.51E-11	5.35E-11	3.25E-11	1.98E-11	1.21E-11	7.34E-12	4.48E-12	1.67E-12
bi213	6.86E-11	6.93E-11	6.99E-11	7.13E-11	7.40E-11	8.11E-11	8.85E-11	9.62E-11	1.04E-10	1.13E-10	1.30E-10
bi214	5.27E-10	5.31E-10	5.36E-10	5.46E-10	5.66E-10	6.17E-10	6.70E-10	7.25E-10	7.82E-10	8.40E-10	9.62E-10
po210	4.88E-06	4.92E-06	4.97E-06	5.06E-06	5.25E-06	5.74E-06	6.25E-06	6.78E-06	7.32E-06	7.89E-06	9.06E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.05E-16	2.06E-16	2.07E-16	2.09E-16	2.13E-16	2.23E-16	2.33E-16	2.43E-16	2.53E-16	2.63E-16	2.83E-16
po212	4.17E-21	3.97E-21	3.78E-21	3.42E-21	2.81E-21	1.71E-21	1.04E-21	6.33E-22	3.86E-22	2.35E-22	8.77E-23
po213	1.03E-19	1.04E-19	1.05E-19	1.07E-19	1.11E-19	1.22E-19	1.33E-19	1.45E-19	1.57E-19	1.69E-19	1.96E-19
po214	7.24E-17	7.31E-17	7.38E-17	7.51E-17	7.79E-17	8.49E-17	9.22E-17	9.97E-17	1.08E-16	1.16E-16	1.32E-16

po215	2.62E-16	2.63E-16	2.64E-16	2.67E-16	2.72E-16	2.85E-16	2.97E-16	3.10E-16	3.23E-16	3.36E-16	3.61E-16
po216	3.23E-15	3.08E-15	2.93E-15	2.65E-15	2.17E-15	1.32E-15	8.05E-16	4.90E-16	2.99E-16	1.82E-16	6.79E-17
po218	8.36E-11	8.44E-11	8.51E-11	8.67E-11	8.99E-11	9.80E-11	1.06E-10	1.15E-10	1.24E-10	1.33E-10	1.53E-10
at217	8.25E-16	8.33E-16	8.41E-16	8.58E-16	8.91E-16	9.76E-16	1.07E-15	1.16E-15	1.25E-15	1.35E-15	1.57E-15
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	5.93E-13	5.96E-13	5.99E-13	6.04E-13	6.16E-13	6.45E-13	6.74E-13	7.03E-13	7.32E-13	7.61E-13	8.19E-13
rn220	1.26E-12	1.20E-12	1.14E-12	1.03E-12	8.49E-13	5.16E-13	3.14E-13	1.91E-13	1.17E-13	7.11E-14	2.65E-14
rn222	1.51E-07	1.53E-07	1.54E-07	1.57E-07	1.63E-07	1.77E-07	1.92E-07	2.08E-07	2.24E-07	2.41E-07	2.76E-07
fr221	7.65E-12	7.73E-12	7.80E-12	7.95E-12	8.26E-12	9.05E-12	9.87E-12	1.07E-11	1.16E-11	1.26E-11	1.45E-11
fr223	2.75E-12	2.76E-12	2.77E-12	2.80E-12	2.86E-12	2.99E-12	3.13E-12	3.26E-12	3.40E-12	3.53E-12	3.80E-12
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	1.51E-07	1.51E-07	1.52E-07	1.54E-07	1.56E-07	1.64E-07	1.71E-07	1.79E-07	1.86E-07	1.93E-07	2.08E-07
ra224	7.30E-09	6.96E-09	6.62E-09	5.99E-09	4.92E-09	2.99E-09	1.82E-09	1.11E-09	6.75E-10	4.12E-10	1.53E-10
ra225	3.39E-08	3.42E-08	3.45E-08	3.52E-08	3.66E-08	4.01E-08	4.37E-08	4.75E-08	5.15E-08	5.56E-08	6.43E-08
ra226	2.35E-02	2.37E-02	2.40E-02	2.44E-02	2.53E-02	2.76E-02	2.99E-02	3.24E-02	3.49E-02	3.75E-02	4.29E-02
ra228	4.84E-10	4.86E-10	4.89E-10	4.94E-10	5.03E-10	5.28E-10	5.52E-10	5.76E-10	6.00E-10	6.24E-10	6.77E-10
ac225	2.29E-08	2.31E-08	2.33E-08	2.38E-08	2.47E-08	2.71E-08	2.95E-08	3.21E-08	3.48E-08	3.76E-08	4.35E-08
ac227	1.06E-04	1.07E-04	1.07E-04	1.08E-04	1.11E-04	1.16E-04	1.21E-04	1.26E-04	1.32E-04	1.37E-04	1.47E-04
ac228	5.91E-14	5.94E-14	5.97E-14	6.02E-14	6.14E-14	6.44E-14	6.73E-14	7.03E-14	7.33E-14	7.62E-14	8.26E-14
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	2.47E-07	2.49E-07	2.50E-07	2.52E-07	2.57E-07	2.69E-07	2.81E-07	2.93E-07	3.06E-07	3.18E-07	3.42E-07
th228	1.42E-06	1.35E-06	1.29E-06	1.16E-06	9.55E-07	5.81E-07	3.54E-07	2.15E-07	1.31E-07	8.00E-08	2.98E-08
th229	6.71E-03	6.77E-03	6.84E-03	6.97E-03	7.24E-03	7.93E-03	8.66E-03	9.41E-03	1.02E-02	1.10E-02	1.27E-02
th230	5.94E+00	5.97E+00	6.00E+00	6.06E+00	6.17E+00	6.47E+00	6.76E+00	7.06E+00	7.35E+00	7.65E+00	8.24E+00
th231	6.91E-07	6.91E-07	6.91E-07	6.91E-07	6.91E-07	6.91E-07	6.91E-07	6.91E-07	6.91E-07	6.91E-07	6.91E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 42

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
th232	1.21E+00	1.22E+00	1.23E+00	1.24E+00	1.26E+00	1.32E+00	1.38E+00	1.44E+00	1.50E+00	1.56E+00	1.68E+00
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	1.68E-01	1.69E-01	1.70E-01	1.71E-01	1.75E-01	1.83E-01	1.91E-01	1.99E-01	2.07E-01	2.15E-01	2.31E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04
pa234m	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	5.12E-05	4.88E-05	4.64E-05	4.20E-05	3.45E-05	2.10E-05	1.28E-05	7.77E-06	4.73E-06	2.88E-06	1.07E-06
u233	3.19E+00	3.21E+00	3.22E+00	3.25E+00	3.32E+00	3.47E+00	3.63E+00	3.79E+00	3.95E+00	4.11E+00	4.42E+00
u234	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03
u235	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05
u236	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04
u237	4.07E-11	3.19E-11	2.51E-11	1.55E-11	5.89E-12	5.26E-13	4.70E-14	4.19E-15	3.75E-16	3.35E-17	2.67E-19
u238	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	3.41E-12	1.39E-13	5.71E-15	9.58E-18	2.69E-23	3.57E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	4.62E-05	4.62E-05	4.62E-05	4.62E-05	4.62E-05	4.62E-05	4.62E-05	4.61E-05	4.61E-05	4.61E-05	4.61E-05
np237	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03
np238	1.32E-12	1.28E-12	1.25E-12	1.19E-12	1.08E-12	8.45E-13	6.61E-13	5.17E-13	4.04E-13	3.16E-13	1.93E-13
np239	5.14E-14	5.14E-14	5.14E-14	5.13E-14	5.12E-14	5.10E-14	5.07E-14	5.05E-14	5.03E-14	5.00E-14	4.96E-14
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+80	.00E+00

pu236	2.42E-08	7.40E-09	2.31E-09	3.06E-10	1.05E-10	1.04E-10	1.04E-10	1.04E-10	1.04E-10	1.04E-10	1.03E-10
pu237	2.91E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	5.14E+00	4.95E+00	4.75E+00	4.39E+00	3.75E+00	2.53E+00	1.70E+00	1.15E+00	7.72E-01	5.20E-01	2.36E-01
pu239	1.15E+03	1.15E+03	1.15E+03	1.15E+03	1.15E+03	1.15E+03	1.15E+03	1.15E+03	1.14E+03	1.14E+03	1.14E+03
pu240	5.48E+00	5.48E+00	5.48E+00	5.47E+00	5.46E+00	5.43E+00	5.40E+00	5.37E+00	5.34E+00	5.32E+00	5.26E+00
pu241	1.34E-03	1.05E-03	8.27E-04	5.10E-04	1.94E-04	1.73E-05	1.55E-06	1.38E-07	1.24E-08	1.10E-09	8.80E-12
pu242	2.21E-05	2.21E-05	2.21E-05	2.22E-05	2.23E-05	2.25E-05	2.27E-05	2.28E-05	2.29E-05	2.30E-05	2.31E-05
pu243	5.09E-34	5.09E-34	5.09E-34	5.09E-34	5.09E-34	5.09E-34	5.09E-34	5.09E-34	5.09E-34	5.09E-34	5.09E-34
pu244	4.33E-31	4.52E-31	4.72E-31	5.11E-31	5.88E-31	7.82E-31	9.75E-31	1.17E-30	1.36E-30	1.56E-30	1.94E-30
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	2.49E-02	2.50E-02	2.50E-02	2.49E-02	2.45E-02	2.28E-02	2.10E-02	1.94E-02	1.79E-02	1.65E-02	1.41E-02
am242m	7.23E-06	7.06E-06	6.89E-06	6.55E-06	5.94E-06	4.65E-06	3.63E-06	2.84E-06	2.22E-06	1.74E-06	1.06E-06
am242	9.33E-11	9.10E-11	8.88E-11	8.46E-11	7.66E-11	5.99E-11	4.69E-11	3.67E-11	2.87E-11	2.24E-11	1.37E-11
am243	5.97E-08	5.97E-08	5.97E-08	5.96E-08	5.95E-08	5.92E-08	5.90E-08	5.87E-08	5.84E-08	5.81E-08	5.76E-08
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 43

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cm242	1.88E-08	1.84E-08	1.79E-08	1.71E-08	1.55E-08	1.21E-08	9.47E-09	7.40E-09	5.79E-09	4.53E-09	2.77E-09
cm243	5.60E-14	4.96E-14	4.39E-14	3.44E-14	2.12E-14	6.27E-15	1.86E-15	5.51E-16	1.63E-16	4.84E-17	4.25E-18
cm244	4.38E-12	3.61E-12	2.98E-12	2.03E-12	9.46E-13	1.39E-13	2.05E-14	3.03E-15	4.46E-16	6.57E-17	1.43E-18
cm245	1.21E-15	1.21E-15	1.21E-15	1.21E-15	1.21E-15	1.20E-15	1.20E-15	1.19E-15	1.19E-15	1.18E-15	1.17E-15
cm246	1.04E-18	1.04E-18	1.04E-18	1.03E-18	1.03E-18	1.02E-18	1.02E-18	1.01E-18	1.00E-18	9.94E-19	9.79E-19
cm247	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23
cm248	2.11E-27	2.11E-27	2.11E-27	2.11E-27	2.11E-27	2.11E-27	2.10E-27	2.10E-27	2.10E-27	2.10E-27	2.10E-27
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	1.74E-37	3.32E-39	6.35E-41	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	3.20E-32	3.16E-32	3.13E-32	3.07E-32	2.95E-32	2.67E-32	2.42E-32	2.19E-32	1.99E-32	1.80E-32	1.48E-32
cf250	2.12E-36	1.62E-36	1.25E-36	7.33E-37	2.54E-37	1.80E-38	1.27E-39	8.97E-41	6.31E-42	3.50E-43	.00E+00
cf251	1.13E-38	1.12E-38	1.12E-38	1.11E-38	1.09E-38	1.05E-38	1.01E-38	9.75E-39	9.38E-39	9.03E-39	8.36E-39
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
fm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 44

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	2.89E-08	2.92E-08	2.95E-08	3.00E-08	3.12E-08	3.41E-08	3.71E-08	4.02E-08	4.34E-08	4.68E-08	5.37E-08

tl207	7.69E-03	7.73E-03	7.77E-03	7.84E-03	7.99E-03	8.37E-03	8.75E-03	9.13E-03	9.50E-03	9.88E-03	1.06E-02
tl208	4.18E-04	3.98E-04	3.79E-04	3.43E-04	2.82E-04	1.71E-04	1.04E-04	6.35E-05	3.87E-05	2.36E-05	8.79E-06
tl209	2.79E-05	2.82E-05	2.85E-05	2.90E-05	3.01E-05	3.30E-05	3.60E-05	3.92E-05	4.24E-05	4.58E-05	5.30E-05
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	1.33E-03	1.34E-03	1.35E-03	1.38E-03	1.43E-03	1.57E-03	1.72E-03	1.86E-03	2.02E-03	2.18E-03	2.52E-03
pb210	2.19E-02	2.21E-02	2.23E-02	2.27E-02	2.36E-02	2.58E-02	2.81E-02	3.05E-02	3.29E-02	3.54E-02	4.07E-02
pb211	7.71E-03	7.75E-03	7.79E-03	7.87E-03	8.02E-03	8.39E-03	8.77E-03	9.15E-03	9.53E-03	9.91E-03	1.07E-02
pb212	1.16E-03	1.11E-03	1.05E-03	9.55E-04	7.83E-04	4.76E-04	2.90E-04	1.77E-04	1.08E-04	6.56E-05	2.45E-05
pb214	2.33E-02	2.35E-02	2.37E-02	2.41E-02	2.50E-02	2.73E-02	2.96E-02	3.20E-02	3.45E-02	3.71E-02	4.25E-02
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.19E-02	2.21E-02	2.23E-02	2.28E-02	2.36E-02	2.58E-02	2.81E-02	3.05E-02	3.29E-02	3.54E-02	4.07E-02
bi211	7.71E-03	7.75E-03	7.79E-03	7.87E-03	8.02E-03	8.39E-03	8.77E-03	9.15E-03	9.53E-03	9.91E-03	1.07E-02
bi212	1.16E-03	1.11E-03	1.05E-03	9.55E-04	7.83E-04	4.76E-04	2.90E-04	1.77E-04	1.08E-04	6.56E-05	2.45E-05
bi213	1.33E-03	1.34E-03	1.35E-03	1.38E-03	1.43E-03	1.57E-03	1.72E-03	1.86E-03	2.02E-03	2.18E-03	2.52E-03
bi214	2.33E-02	2.35E-02	2.37E-02	2.41E-02	2.50E-02	2.73E-02	2.96E-02	3.20E-02	3.45E-02	3.71E-02	4.25E-02
po210	2.19E-02	2.21E-02	2.23E-02	2.28E-02	2.36E-02	2.58E-02	2.81E-02	3.05E-02	3.29E-02	3.54E-02	4.07E-02
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.12E-05	2.13E-05	2.14E-05	2.16E-05	2.20E-05	2.31E-05	2.41E-05	2.52E-05	2.62E-05	2.72E-05	2.93E-05
po212	7.45E-04	7.10E-04	6.76E-04	6.12E-04	5.02E-04	3.05E-04	1.86E-04	1.13E-04	6.89E-05	4.20E-05	1.57E-05
po213	1.30E-03	1.31E-03	1.33E-03	1.35E-03	1.40E-03	1.54E-03	1.68E-03	1.83E-03	1.98E-03	2.14E-03	2.47E-03
po214	2.33E-02	2.35E-02	2.37E-02	2.41E-02	2.50E-02	2.73E-02	2.96E-02	3.20E-02	3.45E-02	3.71E-02	4.25E-02
po215	7.71E-03	7.75E-03	7.79E-03	7.87E-03	8.02E-03	8.39E-03	8.77E-03	9.15E-03	9.53E-03	9.91E-03	1.07E-02
po216	1.16E-03	1.11E-03	1.05E-03	9.55E-04	7.83E-04	4.76E-04	2.90E-04	1.77E-04	1.08E-04	6.56E-05	2.45E-05
po218	2.33E-02	2.35E-02	2.37E-02	2.41E-02	2.50E-02	2.73E-02	2.96E-02	3.20E-02	3.45E-02	3.71E-02	4.25E-02
at217	1.33E-03	1.34E-03	1.35E-03	1.38E-03	1.43E-03	1.57E-03	1.72E-03	1.86E-03	2.02E-03	2.18E-03	2.52E-03
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	7.71E-03	7.75E-03	7.79E-03	7.87E-03	8.02E-03	8.39E-03	8.77E-03	9.15E-03	9.53E-03	9.91E-03	1.07E-02
rn220	1.16E-03	1.11E-03	1.05E-03	9.55E-04	7.83E-04	4.76E-04	2.90E-04	1.77E-04	1.08E-04	6.56E-05	2.45E-05
rn222	2.33E-02	2.35E-02	2.37E-02	2.41E-02	2.50E-02	2.73E-02	2.96E-02	3.20E-02	3.45E-02	3.71E-02	4.25E-02
fr221	1.33E-03	1.34E-03	1.35E-03	1.38E-03	1.43E-03	1.57E-03	1.72E-03	1.86E-03	2.02E-03	2.18E-03	2.52E-03
fr223	1.06E-04	1.07E-04	1.07E-04	1.08E-04	1.10E-04	1.16E-04	1.21E-04	1.26E-04	1.31E-04	1.37E-04	1.47E-04
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	7.71E-03	7.75E-03	7.79E-03	7.87E-03	8.02E-03	8.39E-03	8.77E-03	9.15E-03	9.53E-03	9.91E-03	1.07E-02
ra224	1.16E-03	1.11E-03	1.05E-03	9.55E-04	7.83E-04	4.76E-04	2.90E-04	1.77E-04	1.08E-04	6.56E-05	2.45E-05
ra225	1.33E-03	1.34E-03	1.35E-03	1.38E-03	1.43E-03	1.57E-03	1.72E-03	1.86E-03	2.02E-03	2.18E-03	2.52E-03
ra226	2.33E-02	2.35E-02	2.37E-02	2.41E-02	2.50E-02	2.73E-02	2.96E-02	3.20E-02	3.45E-02	3.71E-02	4.25E-02
ra228	1.32E-07	1.33E-07	1.33E-07	1.35E-07	1.37E-07	1.44E-07	1.51E-07	1.57E-07	1.64E-07	1.70E-07	1.85E-07
ac225	1.33E-03	1.34E-03	1.35E-03	1.38E-03	1.43E-03	1.57E-03	1.72E-03	1.86E-03	2.02E-03	2.18E-03	2.52E-03
ac227	7.70E-03	7.74E-03	7.78E-03	7.85E-03	8.01E-03	8.39E-03	8.77E-03	9.15E-03	9.53E-03	9.90E-03	1.07E-02
ac228	1.32E-07	1.33E-07	1.33E-07	1.35E-07	1.37E-07	1.44E-07	1.51E-07	1.57E-07	1.64E-07	1.70E-07	1.85E-07
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	7.61E-03	7.64E-03	7.68E-03	7.76E-03	7.91E-03	8.28E-03	8.65E-03	9.02E-03	9.40E-03	9.77E-03	1.05E-02
th228	1.16E-03	1.11E-03	1.05E-03	9.55E-04	7.83E-04	4.76E-04	2.90E-04	1.77E-04	1.08E-04	6.56E-05	2.45E-05
th229	1.33E-03	1.34E-03	1.35E-03	1.38E-03	1.43E-03	1.57E-03	1.72E-03	1.86E-03	2.02E-03	2.18E-03	2.52E-03
th230	1.22E-01	1.23E-01	1.24E-01	1.25E-01	1.27E-01	1.33E-01	1.40E-01	1.46E-01	1.52E-01	1.58E-01	1.70E-01
th231	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 45

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
th232	1.33E-07	1.34E-07	1.34E-07	1.36E-07	1.38E-07	1.45E-07	1.52E-07	1.58E-07	1.65E-07	1.72E-07	1.85E-07
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	7.94E-03	7.98E-03	8.02E-03	8.09E-03	8.25E-03	8.63E-03	9.01E-03	9.38E-03	9.76E-03	1.01E-02	1.09E-02
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pa233	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	1.13E-03	1.08E-03	1.03E-03	9.28E-04	7.61E-04	4.63E-04	2.82E-04	1.72E-04	1.04E-04	6.36E-05	2.36E-05
u233	3.08E-02	3.09E-02	3.11E-02	3.14E-02	3.20E-02	3.35E-02	3.50E-02	3.65E-02	3.81E-02	3.96E-02	4.26E-02
u234	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01
u235	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01
u236	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00
u237	3.32E-06	2.61E-06	2.05E-06	1.26E-06	4.81E-07	4.29E-08	3.83E-09	3.42E-10	3.06E-11	2.73E-12	2.18E-14
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	4.78E-09	1.96E-10	8.01E-12	1.34E-14	3.78E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	6.09E-07	6.09E-07	6.09E-07	6.09E-07	6.09E-07	6.09E-07	6.08E-07	6.08E-07	6.08E-07	6.08E-07	6.07E-07
np237	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00
np238	3.41E-07	3.33E-07	3.25E-07	3.09E-07	2.80E-07	2.19E-07	1.71E-07	1.34E-07	1.05E-07	8.20E-08	5.01E-08
np239	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.18E-08	1.18E-08	1.17E-08	1.17E-08	1.16E-08	1.15E-08
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.27E-05	3.87E-06	1.21E-06	1.60E-07	5.51E-08	5.42E-08	5.41E-08	5.41E-08	5.41E-08	5.41E-08	5.41E-08
pu237	3.65E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	8.81E+01	8.47E+01	8.14E+01	7.53E+01	6.43E+01	4.33E+01	2.92E+01	1.96E+01	1.32E+01	8.91E+00	4.04E+00
pu239	7.15E+01	7.15E+01	7.15E+01	7.14E+01	7.14E+01	7.13E+01	7.12E+01	7.11E+01	7.10E+01	7.09E+01	7.07E+01
pu240	1.24E+00	1.24E+00	1.24E+00	1.24E+00	1.24E+00	1.23E+00	1.23E+00	1.22E+00	1.21E+00	1.21E+00	1.19E+00
pu241	1.39E-01	1.09E-01	8.56E-02	5.28E-02	2.01E-02	1.79E-03	1.60E-04	1.43E-05	1.28E-06	1.14E-07	9.11E-10
pu242	8.73E-08	8.74E-08	8.75E-08	8.77E-08	8.81E-08	8.90E-08	8.97E-08	9.02E-08	9.06E-08	9.10E-08	9.14E-08
pu243	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27
pu244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	8.55E-02	8.58E-02	8.59E-02	8.56E-02	8.40E-02	7.81E-02	7.21E-02	6.66E-02	6.14E-02	5.67E-02	4.83E-02
am242m	7.58E-05	7.40E-05	7.22E-05	6.87E-05	6.23E-05	4.87E-05	3.81E-05	2.98E-05	2.33E-05	1.82E-05	1.11E-05
am242	7.55E-05	7.36E-05	7.18E-05	6.84E-05	6.20E-05	4.85E-05	3.79E-05	2.97E-05	2.32E-05	1.81E-05	1.11E-05
am243	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.18E-08	1.18E-08	1.17E-08	1.17E-08	1.16E-08	1.15E-08
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 46

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cm242	6.24E-05	6.09E-05	5.94E-05	5.66E-05	5.13E-05	4.01E-05	3.14E-05	2.45E-05	1.92E-05	1.50E-05	9.17E-06
cm243	2.89E-12	2.56E-12	2.27E-12	1.78E-12	1.09E-12	3.24E-13	9.60E-14	2.85E-14	8.43E-15	2.50E-15	2.20E-16
cm244	3.54E-10	2.93E-10	2.42E-10	1.65E-10	7.66E-11	1.13E-11	1.66E-12	2.45E-13	3.61E-14	5.32E-15	1.16E-16
cm245	2.08E-16	2.08E-16	2.08E-16	2.07E-16	2.07E-16	2.06E-16	2.05E-16	2.05E-16	2.04E-16	2.03E-16	2.01E-16
cm246	3.19E-19	3.18E-19	3.18E-19	3.18E-19	3.17E-19	3.14E-19	3.12E-19	3.10E-19	3.08E-19	3.05E-19	3.01E-19
cm247	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27
cm248	8.92E-30	8.92E-30	8.92E-30	8.92E-30	8.92E-30	8.92E-30	8.92E-30	8.92E-30	8.92E-30	8.92E-30	8.92E-30
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	1.37E-31	1.37E-31	1.37E-31	1.37E-31	1.14E-31	1.14E-31	9.13E-32	9.13E-32	9.13E-32	6.85E-32	6.85E-32
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	2.01E+02	1.98E+02	1.94E+02	1.88E+02	1.77E+02	1.56E+02	1.42E+02	1.32E+02	1.26E+02	1.21E+02	1.16E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 47

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
h 3	2.19E-05	1.65E-05	1.25E-05	7.12E-06	2.31E-06	1.39E-07	8.36E-09	5.03E-10	3.02E-11	1.82E-12	6.58E-15
li 6	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05
li 7	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07
be 9	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07
be 10	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06
c 14	1.12E-06	1.12E-06	1.12E-06	1.12E-06	1.12E-06	1.11E-06	1.10E-06	1.10E-06	1.09E-06	1.08E-06	1.07E-06
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09
zn 68	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09
zn 70	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 48

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	2.28E-01	2.28E-01	2.28E-01	2.27E-01	2.27E-01	2.27E-01	2.27E-01	2.27E-01	2.27E-01	2.27E-01	2.27E-01
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	2.44E-04	2.46E-04	2.49E-04	2.53E-04	2.63E-04	2.87E-04	3.11E-04	3.35E-04	3.59E-04	3.82E-04	4.30E-04
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07

cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00
kr 81	2.02E-08	2.02E-08	2.02E-08	2.02E-08	2.02E-08	2.02E-08	2.02E-08	2.02E-08	2.01E-08	2.01E-08	2.01E-08
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 49

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	1.17E-02	8.49E-03	6.14E-03	3.22E-03	8.83E-04	3.48E-05	1.37E-06	5.41E-08	2.13E-09	8.41E-11	1.31E-13
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	6.74E+00	6.75E+00	6.75E+00	6.75E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01
rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01
sr 87	2.48E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05	2.49E-05	2.49E-05
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 50

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	9.92E-25	1.32E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01
y 89m	3.39E-34	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	1.08E+00	9.54E-01	8.44E-01	6.60E-01	4.03E-01	1.18E-01	3.43E-02	1.00E-02	2.93E-03	8.54E-04	7.28E-05
y 90	2.81E-04	2.48E-04	2.19E-04	1.71E-04	1.05E-04	3.06E-05	8.93E-06	2.61E-06	7.61E-07	2.22E-07	1.89E-08
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	3.31E+01	3.32E+01	3.33E+01	3.35E+01	3.37E+01	3.40E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	1.30E-21	5.23E-31	2.09E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01
nb 91	1.04E-11	1.03E-11	1.03E-11	1.02E-11	9.96E-12	9.47E-12	9.00E-12	8.55E-12	8.12E-12	7.72E-12	6.97E-12
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01
nb 92	2.25E-09	2.25E-09	2.25E-09	2.25E-09	2.25E-09	2.25E-09	2.25E-09	2.25E-09	2.25E-09	2.25E-09	2.25E-09
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01
nb 93	5.63E-03	5.69E-03	5.75E-03	5.86E-03	6.09E-03	6.67E-03	7.25E-03	7.82E-03	8.40E-03	8.98E-03	1.01E-02
nb 93m	2.65E-04	2.66E-04	2.66E-04	2.67E-04	2.68E-04	2.69E-04	2.69E-04	2.69E-04	2.69E-04	2.69E-04	2.69E-04
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 51

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01
nb 94	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.01E-05	1.01E-05	1.01E-05
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	6.76E-20	1.74E-28	4.50E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	8.13E-20	2.10E-28	6.01E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	4.48E-23	1.16E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01
tc 98	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	6.75E-02	6.81E-02	6.88E-02	7.01E-02	7.27E-02	7.92E-02	8.57E-02	9.21E-02	9.86E-02	1.05E-01	1.18E-01

rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 52

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01
rh102	6.56E-10	1.99E-10	6.01E-11	5.50E-12	4.62E-14	2.98E-19	1.92E-24	1.24E-29	8.00E-35	5.16E-40	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	3.29E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01
rh103m	3.26E-34	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 53

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	5.84E-06	1.94E-07	6.42E-09	7.07E-12	8.54E-18	1.37E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	5.42E-12	1.80E-13	5.96E-15	6.56E-18	7.93E-24	1.27E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	7.32E-05	7.39E-05	7.47E-05	7.62E-05	7.92E-05	8.66E-05	9.40E-05	1.01E-04	1.09E-04	1.16E-04	1.31E-04
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01
ag108	1.09E-18	1.06E-18	1.03E-18	9.76E-19	8.75E-19	6.66E-19	5.07E-19	3.86E-19	2.94E-19	2.24E-19	1.29E-19
ag108m	3.53E-10	3.43E-10	3.34E-10	3.16E-10	2.83E-10	2.16E-10	1.64E-10	1.25E-10	9.51E-11	7.24E-11	4.20E-11
cd108	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01
ag109m	5.42E-22	3.51E-23	2.28E-24	9.55E-27	1.68E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	5.47E-16	3.54E-17	2.30E-18	9.64E-21	1.70E-25	2.22E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01
ag110	3.63E-20	2.28E-22	1.44E-24	5.69E-29	8.91E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	2.34E-12	1.47E-14	9.27E-17	3.67E-21	5.75E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 54

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cd110	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02
cd113m	2.73E-05	2.14E-05	1.67E-05	1.02E-05	3.83E-06	3.28E-07	2.81E-08	2.40E-09	2.06E-10	1.76E-11	1.29E-13
in113	2.13E-03	2.14E-03	2.14E-03	2.15E-03	2.15E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01
in114	8.59E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	5.34E-33	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	1.48E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02
in115m	6.79E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 55

0

nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sn115	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03

tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01
sn119m	7.47E-11	9.94E-13	1.32E-14	2.34E-18	7.32E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 56

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	2.20E-09	2.06E-09	1.94E-09	1.71E-09	1.33E-09	7.07E-10	3.77E-10	2.01E-10	1.07E-10	5.69E-11	1.61E-11
sn121m	5.05E-05	4.74E-05	4.45E-05	3.92E-05	3.05E-05	1.62E-05	8.65E-06	4.61E-06	2.45E-06	1.31E-06	3.70E-07
sb121	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	2.20E-14	1.22E-18	6.74E-23	2.07E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01
te123	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09
te123m	5.20E-22	1.32E-26	3.37E-31	2.19E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01
sb124	1.49E-26	1.10E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	7.97E-05	2.24E-05	6.29E-06	4.96E-07	3.09E-09	9.47E-15	2.90E-20	8.88E-26	2.72E-31	8.33E-37	.00E+00
te125	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01
te125m	1.13E-06	3.18E-07	8.93E-08	7.05E-09	4.39E-11	1.34E-16	4.12E-22	1.26E-27	3.86E-33	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.64E-01	3.64E-01	3.64E-01	3.64E-01	3.64E-01	3.64E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 57

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sb126	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08
sb126m	1.32E-10	1.32E-10	1.32E-10	1.32E-10	1.32E-10	1.32E-10	1.32E-10	1.32E-10	1.31E-10	1.31E-10	1.31E-10
te126	3.55E-03	3.56E-03	3.58E-03	3.60E-03	3.65E-03	3.78E-03	3.90E-03	4.03E-03	4.16E-03	4.28E-03	4.53E-03
xe126	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	2.41E-17	2.18E-22	1.97E-27	1.65E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	6.89E-15	6.23E-20	5.63E-25	4.60E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	3.01E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00
xe129	1.45E-04	1.47E-04	1.48E-04	1.51E-04	1.57E-04	1.71E-04	1.85E-04	1.99E-04	2.14E-04	2.28E-04	2.57E-04
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 58

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08

in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01
ba133	4.97E-12	3.57E-12	2.57E-12	1.33E-12	3.56E-13	1.32E-14	4.90E-16	1.82E-17	6.74E-19	2.50E-20	3.44E-23
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	6.59E-06	1.23E-06	2.28E-07	7.92E-09	9.52E-12	4.77E-19	2.39E-26	1.20E-33	5.99E-41	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	8.91E-03	9.00E-03	9.09E-03	9.26E-03	9.61E-03	1.05E-02	1.14E-02	1.22E-02	1.31E-02	1.40E-02	1.57E-02
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 59

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	1.94E+00	1.73E+00	1.54E+00	1.22E+00	7.69E-01	2.42E-01	7.63E-02	2.40E-02	7.56E-03	2.38E-03	2.36E-04
ba137	5.45E+01	5.47E+01	5.49E+01	5.52E+01	5.56E+01	5.62E+01	5.63E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01
ba137m	2.96E-07	2.64E-07	2.35E-07	1.86E-07	1.17E-07	3.70E-08	1.16E-08	3.67E-09	1.16E-09	3.64E-10	3.61E-11
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01
la138	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01
ce139	1.51E-18	1.53E-22	1.54E-26	1.58E-34	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	1.02E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 60

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	7.97E-06	9.38E-08	1.10E-09	1.53E-13	2.93E-21	1.49E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	3.36E-10	3.95E-12	4.65E-14	6.43E-18	1.23E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	1.96E-12	2.30E-14	2.71E-16	3.75E-20	7.19E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01

i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01
pm145	4.48E-11	3.68E-11	3.03E-11	2.05E-11	9.35E-12	1.32E-12	1.86E-13	2.63E-14	3.71E-15	5.23E-16	1.04E-17
sm145	1.74E-15	4.21E-17	1.02E-18	5.95E-22	2.03E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01
pm146	3.41E-11	1.82E-11	9.73E-12	2.78E-12	2.26E-13	4.29E-16	8.14E-19	1.54E-21	2.92E-24	5.54E-27	1.99E-32
sm146	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	5.92E-03	1.58E-03	4.22E-04	3.00E-05	1.52E-07	2.78E-13	5.09E-19	9.32E-25	1.70E-30	3.12E-36	.00E+00
sm147	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01
pm148	6.38E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	9.70E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 61

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sm148	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00
eu149	3.12E-26	3.86E-32	4.77E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00
eu150	2.74E-09	2.49E-09	2.26E-09	1.86E-09	1.26E-09	4.79E-10	1.82E-10	6.92E-11	2.63E-11	9.98E-12	1.44E-12

ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	5.08E-01	4.89E-01	4.70E-01	4.36E-01	3.73E-01	2.54E-01	1.73E-01	1.18E-01	8.00E-02	5.44E-02	2.52E-02
eu151	3.54E+00	3.56E+00	3.58E+00	3.61E+00	3.67E+00	3.79E+00	3.88E+00	3.93E+00	3.97E+00	3.99E+00	4.02E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00
eu152	2.74E-03	2.11E-03	1.63E-03	9.69E-04	3.42E-04	2.54E-05	1.89E-06	1.40E-07	1.04E-08	7.72E-10	4.25E-12
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	7.35E-02	7.36E-02	7.38E-02	7.40E-02	7.41E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00
gd153	5.22E-12	2.77E-14	1.46E-16	4.11E-21	3.23E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 62

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sm154	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01
eu154	6.19E-05	4.14E-05	2.76E-05	1.23E-05	2.45E-06	4.34E-08	7.68E-10	1.36E-11	2.41E-13	4.26E-15	1.33E-18
gd154	5.60E-03	5.62E-03	5.64E-03	5.65E-03	5.66E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	5.76E-04	2.75E-04	1.31E-04	2.98E-05	1.54E-06	9.37E-10	5.69E-13	3.46E-16	2.10E-19	1.28E-22	4.73E-29
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	2.81E-01	2.81E-01	2.81E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03
tb160	1.83E-24	4.55E-32	1.13E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 63

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
dy161	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	2.82E-08	2.82E-08	2.81E-08	2.79E-08	2.76E-08	2.68E-08	2.61E-08	2.53E-08	2.46E-08	2.39E-08	2.25E-08
er166	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06
er167	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09
tm170	5.51E-23	2.92E-27	1.55E-31	4.35E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	9.46E-13	1.56E-13	2.56E-14	6.92E-16	5.07E-19	7.35E-27	1.07E-34	1.44E-42	.00E+00	.00E+00	.00E+00
yb171	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09
total	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 64

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
h 3	2.12E-01	1.60E-01	1.21E-01	6.88E-02	2.24E-02	1.34E-03	8.09E-05	4.86E-06	2.92E-07	1.76E-08	6.36E-11
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07
c 14	5.00E-06	5.00E-06	5.00E-06	4.99E-06	4.98E-06	4.95E-06	4.92E-06	4.89E-06	4.86E-06	4.83E-06	4.77E-06
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 65

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	4.18E-10	4.18E-10	4.18E-10	4.18E-10	4.18E-10	4.18E-10	4.18E-10	4.18E-10	4.18E-10	4.18E-10	4.17E-10
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 66

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	4.60E+00	3.33E+00	2.41E+00	1.26E+00	3.46E-01	1.37E-02	5.39E-04	2.12E-05	8.38E-07	3.30E-08	5.13E-11
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 67

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	2.88E-20	3.88E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	2.68E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	1.52E+02	1.35E+02	1.19E+02	9.31E+01	5.69E+01	1.66E+01	4.85E+00	1.42E+00	4.13E-01	1.21E-01	1.03E-02
y 90	1.52E+02	1.35E+02	1.19E+02	9.31E+01	5.69E+01	1.66E+01	4.85E+00	1.42E+00	4.13E-01	1.21E-01	1.03E-02
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	3.20E-17	1.28E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	6.00E-11	5.97E-11	5.94E-11	5.88E-11	5.76E-11	5.47E-11	5.20E-11	4.94E-11	4.70E-11	4.46E-11	4.03E-11
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	6.31E-02	6.33E-02	6.35E-02	6.37E-02	6.39E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 68

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	1.91E-06	1.91E-06	1.91E-06	1.91E-06	1.91E-06	1.91E-06	1.91E-06	1.90E-06	1.90E-06	1.90E-06	1.89E-06
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	1.45E-15	3.74E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	3.20E-15	8.25E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	1.71E-17	4.40E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	6.76E-01	6.76E-01	6.76E-01	6.76E-01	6.76E-01	6.76E-01	6.76E-01	6.76E-01	6.76E-01	6.75E-01	6.75E-01
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	7.93E-07	2.40E-07	7.27E-08	6.66E-09	5.58E-11	3.60E-16	2.32E-21	1.50E-26	9.13E-32	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	1.06E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	1.06E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 70

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	1.94E-02	6.42E-04	2.13E-05	2.34E-08	2.83E-14	4.55E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	1.94E-02	6.42E-04	2.13E-05	2.34E-08	2.83E-14	4.55E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	8.00E-10	7.78E-10	7.57E-10	7.17E-10	6.43E-10	4.89E-10	3.72E-10	2.84E-10	2.16E-10	1.64E-10	9.52E-11
ag108m	9.19E-09	8.94E-09	8.70E-09	8.24E-09	7.39E-09	5.62E-09	4.28E-09	3.26E-09	2.48E-09	1.89E-09	1.09E-09
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	1.42E-12	9.18E-14	5.95E-15	2.50E-17	4.40E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	1.42E-12	9.18E-14	5.95E-15	2.50E-17	4.40E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	1.51E-10	9.52E-13	5.99E-15	2.37E-19	3.72E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	1.11E-08	7.00E-11	4.41E-13	1.74E-17	2.73E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14
cd113m	6.14E-03	4.80E-03	3.75E-03	2.30E-03	8.59E-04	7.36E-05	6.30E-06	5.39E-07	4.61E-08	3.95E-09	2.90E-11
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	1.18E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	1.24E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	3.77E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13
in115m	4.11E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 72

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	2.80E-07	3.72E-09	4.95E-11	8.76E-15	2.74E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 73

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	2.10E-03	1.98E-03	1.86E-03	1.64E-03	1.27E-03	6.77E-04	3.61E-04	1.92E-04	1.02E-04	5.45E-05	1.54E-05
sn121m	2.71E-03	2.55E-03	2.39E-03	2.11E-03	1.64E-03	8.72E-04	4.65E-04	2.47E-04	1.32E-04	7.02E-05	1.99E-05
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	1.81E-10	1.00E-14	5.54E-19	1.70E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19
te123m	4.62E-18	1.18E-22	2.99E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	2.61E-22	1.83E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	8.35E-02	2.35E-02	6.59E-03	5.20E-04	3.24E-06	9.92E-12	3.04E-17	9.31E-23	2.85E-28	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	2.04E-02	5.73E-03	1.61E-03	1.27E-04	7.91E-07	2.42E-12	7.42E-18	2.27E-23	6.96E-29	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 74

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sb126	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.44E-03
sb126m	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	6.37E-11	5.76E-16	5.21E-21	4.34E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	6.50E-11	5.88E-16	5.31E-21	4.34E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 75

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	1.27E-09	9.14E-10	6.57E-10	3.40E-10	9.10E-11	3.38E-12	1.25E-13	4.64E-15	1.72E-16	6.38E-18	8.78E-21
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	8.53E-03	1.59E-03	2.96E-04	1.03E-05	1.23E-08	6.17E-16	3.09E-23	1.55E-30	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 76
0
nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	1.69E+02	1.50E+02	1.34E+02	1.06E+02	6.69E+01	2.11E+01	6.64E+00	2.09E+00	6.58E-01	2.07E-01	2.06E-02
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	1.59E+02	1.42E+02	1.26E+02	1.00E+02	6.32E+01	1.99E+01	6.27E+00	1.97E+00	6.22E-01	1.96E-01	1.94E-02
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	1.03E-14	1.04E-18	1.05E-22	1.07E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	2.28E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 77

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	2.54E-02	2.99E-04	3.51E-06	4.86E-10	9.31E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	2.54E-02	2.99E-04	3.51E-06	4.86E-10	9.31E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	3.55E-04	4.18E-06	4.92E-08	6.81E-12	1.30E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11
i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	6.24E-09	5.13E-09	4.22E-09	2.85E-09	1.30E-09	1.84E-10	2.59E-11	3.66E-12	5.17E-13	7.29E-14	1.45E-15
sm145	4.62E-12	1.12E-13	2.70E-15	1.58E-18	5.37E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	1.51E-08	8.07E-09	4.31E-09	1.23E-09	1.00E-10	1.90E-13	3.60E-16	6.83E-19	1.30E-21	2.46E-24	8.83E-30
sm146	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	5.49E+00	1.47E+00	3.91E-01	2.79E-02	1.41E-04	2.58E-10	4.72E-16	8.64E-22	1.58E-27	.00E+00	.00E+00
sm147	4.99E-07	4.99E-07	4.99E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	1.14E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	2.08E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 78

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sm148	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12
eu149	2.94E-22	3.64E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	1.82E-07	1.65E-07	1.50E-07	1.24E-07	8.40E-08	3.19E-08	1.21E-08	4.61E-09	1.75E-09	6.65E-10	9.59E-11
ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	1.34E+01	1.29E+01	1.24E+01	1.15E+01	9.83E+00	6.69E+00	4.55E+00	3.09E+00	2.11E+00	1.43E+00	6.63E-01
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	4.84E-01	3.73E-01	2.88E-01	1.71E-01	6.04E-02	4.49E-03	3.33E-04	2.47E-05	1.84E-06	1.36E-07	7.51E-10
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	1.60E-12	1.60E-12	1.61E-12	1.61E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	1.85E-08	9.77E-11	5.18E-13	1.45E-17	1.14E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 79

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	1.67E-02	1.12E-02	7.47E-03	3.33E-03	6.64E-04	1.17E-05	2.08E-07	3.68E-09	6.50E-11	1.15E-12	3.60E-16
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	2.84E-01	1.36E-01	6.46E-02	1.47E-02	7.60E-04	4.62E-07	2.81E-10	1.71E-13	1.04E-16	6.31E-20	2.33E-26
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	2.07E-20	5.14E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 80

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	5.07E-08	5.06E-08	5.04E-08	5.01E-08	4.96E-08	4.81E-08	4.68E-08	4.54E-08	4.41E-08	4.29E-08	4.05E-08
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	3.29E-19	1.75E-23	9.25E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	1.03E-09	1.69E-10	2.79E-11	7.54E-13	5.52E-16	8.00E-24	1.14E-31	.00E+00	.00E+00	.00E+00	.00E+00
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	6.58E+02	5.81E+02	5.15E+02	4.07E+02	2.55E+02	8.18E+01	2.81E+01	1.09E+01	5.11E+00	2.97E+00	1.62E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 81

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
he 4	1.54E+00	1.61E+00	2.00E+00	2.75E+00	4.22E+00	5.66E+00	7.06E+00	8.44E+00	9.79E+00	1.11E+01	1.24E+01
tl206	2.47E-16	2.81E-16	4.88E-16	9.71E-16	2.16E-15	3.48E-15	4.83E-15	6.18E-15	7.51E-15	8.82E-15	1.01E-14
tl207	5.58E-11	5.98E-11	8.06E-11	1.19E-10	1.94E-10	2.66E-10	3.35E-10	4.01E-10	4.64E-10	5.25E-10	5.83E-10
tl208	2.97E-14	1.12E-14	4.61E-16	5.46E-16	8.66E-16	1.19E-15	1.51E-15	1.83E-15	2.15E-15	2.47E-15	2.79E-15
tl209	1.29E-13	1.48E-13	2.60E-13	5.67E-13	1.49E-12	2.75E-12	4.31E-12	6.09E-12	8.08E-12	1.02E-11	1.25E-11
pb206	7.81E-03	9.56E-03	2.21E-02	6.93E-02	2.73E-01	6.43E-01	1.19E+00	1.92E+00	2.82E+00	3.90E+00	5.15E+00
pb207	2.95E-03	3.40E-03	6.08E-03	1.37E-02	3.77E-02	7.28E-02	1.19E-01	1.75E-01	2.41E-01	3.17E-01	4.02E-01
pb208	3.07E-04	3.08E-04	3.08E-04	3.09E-04	3.09E-04	3.10E-04	3.11E-04	3.12E-04	3.13E-04	3.15E-04	3.16E-04
pb209	5.47E-10	6.26E-10	1.10E-09	2.40E-09	6.28E-09	1.16E-08	1.82E-08	2.57E-08	3.41E-08	4.32E-08	5.27E-08
pb210	5.33E-04	6.06E-04	1.05E-03	2.09E-03	4.65E-03	7.50E-03	1.04E-02	1.33E-02	1.62E-02	1.90E-02	2.18E-02
pb211	4.32E-10	4.62E-10	6.24E-10	9.22E-10	1.50E-09	2.06E-09	2.59E-09	3.10E-09	3.59E-09	4.06E-09	4.51E-09
pb212	1.76E-11	6.63E-12	2.73E-13	3.24E-13	5.13E-13	7.03E-13	8.93E-13	1.08E-12	1.27E-12	1.46E-12	1.65E-12
pb214	1.29E-09	1.47E-09	2.45E-09	4.88E-09	1.08E-08	1.75E-08	2.43E-08	3.10E-08	3.77E-08	4.43E-08	5.07E-08
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	4.82E-04	5.92E-04	1.39E-03	4.58E-03	2.03E-02	5.33E-02	1.09E-01	1.90E-01	3.02E-01	4.46E-01	6.25E-01
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	3.28E-07	3.73E-07	6.47E-07	1.29E-06	2.86E-06	4.61E-06	6.41E-06	8.20E-06	9.97E-06	1.17E-05	1.34E-05
bi211	2.56E-11	2.74E-11	3.70E-11	5.47E-11	8.90E-11	1.22E-10	1.53E-10	1.84E-10	2.13E-10	2.41E-10	2.67E-10
bi212	1.67E-12	6.29E-13	2.59E-14	3.07E-14	4.87E-14	6.67E-14	8.47E-14	1.03E-13	1.21E-13	1.39E-13	1.57E-13
bi213	1.30E-10	1.49E-10	2.61E-10	5.70E-10	1.49E-09	2.77E-09	4.33E-09	6.13E-09	8.12E-09	1.03E-08	1.26E-08
bi214	9.62E-10	1.09E-09	1.82E-09	3.62E-09	8.05E-09	1.30E-08	1.80E-08	2.31E-08	2.80E-08	3.29E-08	3.77E-08
po210	9.06E-06	1.03E-05	1.79E-05	3.56E-05	7.91E-05	1.27E-04	1.77E-04	2.27E-04	2.75E-04	3.23E-04	3.70E-04
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.83E-16	3.03E-16	4.09E-16	6.04E-16	9.83E-16	1.35E-15	1.70E-15	2.03E-15	2.35E-15	2.66E-15	2.95E-15
po212	8.77E-23	3.31E-23	1.36E-24	1.61E-24	2.56E-24	3.51E-24	4.45E-24	5.40E-24	6.34E-24	7.29E-24	8.24E-24
po213	1.96E-19	2.24E-19	3.92E-19	8.57E-19	2.25E-18	4.16E-18	6.51E-18	9.21E-18	1.22E-17	1.54E-17	1.89E-17
po214	1.32E-16	1.50E-16	2.50E-16	4.98E-16	1.11E-15	1.78E-15	2.48E-15	3.17E-15	3.85E-15	4.52E-15	5.18E-15

po215	3.61E-16	3.87E-16	5.22E-16	7.72E-16	1.26E-15	1.72E-15	2.17E-15	2.59E-15	3.00E-15	3.40E-15	3.77E-15
po216	6.79E-17	2.56E-17	1.05E-18	1.25E-18	1.98E-18	2.71E-18	3.45E-18	4.18E-18	4.91E-18	5.64E-18	6.37E-18
po218	1.53E-10	1.73E-10	2.89E-10	5.75E-10	1.28E-09	2.06E-09	2.86E-09	3.66E-09	4.45E-09	5.22E-09	5.98E-09
at217	1.57E-15	1.79E-15	3.14E-15	6.86E-15	1.80E-14	3.33E-14	5.21E-14	7.37E-14	9.77E-14	1.24E-13	1.51E-13
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	8.19E-13	8.77E-13	1.18E-12	1.75E-12	2.85E-12	3.90E-12	4.91E-12	5.88E-12	6.81E-12	7.70E-12	8.55E-12
rn220	2.65E-14	9.99E-15	4.12E-16	4.88E-16	7.74E-16	1.06E-15	1.35E-15	1.63E-15	1.92E-15	2.20E-15	2.49E-15
rn222	2.76E-07	3.13E-07	5.22E-07	1.04E-06	2.31E-06	3.72E-06	5.17E-06	6.62E-06	8.04E-06	9.44E-06	1.08E-05
fr221	1.45E-11	1.66E-11	2.91E-11	6.36E-11	1.67E-10	3.09E-10	4.83E-10	6.84E-10	9.06E-10	1.15E-09	1.40E-09
fr223	3.80E-12	4.07E-12	5.49E-12	8.12E-12	1.32E-11	1.81E-11	2.28E-11	2.73E-11	3.16E-11	3.57E-11	3.97E-11
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	2.08E-07	2.23E-07	3.01E-07	4.45E-07	7.23E-07	9.91E-07	1.25E-06	1.49E-06	1.73E-06	1.96E-06	2.17E-06
ra224	1.53E-10	5.79E-11	2.39E-12	2.82E-12	4.48E-12	6.14E-12	7.79E-12	9.45E-12	1.11E-11	1.28E-11	1.44E-11
ra225	6.43E-08	7.36E-08	1.29E-07	2.82E-07	7.39E-07	1.37E-06	2.14E-06	3.03E-06	4.01E-06	5.07E-06	6.20E-06
ra226	4.29E-02	4.87E-02	8.12E-02	1.62E-01	3.60E-01	5.79E-01	8.05E-01	1.03E+00	1.25E+00	1.47E+00	1.68E+00
ra228	6.77E-10	7.25E-10	9.68E-10	1.45E-09	2.42E-09	3.39E-09	4.36E-09	5.33E-09	6.30E-09	7.27E-09	8.24E-09
ac225	4.35E-08	4.97E-08	8.71E-08	1.90E-07	4.99E-07	9.24E-07	1.45E-06	2.05E-06	2.71E-06	3.43E-06	4.19E-06
ac227	1.47E-04	1.58E-04	2.13E-04	3.15E-04	5.12E-04	7.02E-04	8.83E-04	1.06E-03	1.22E-03	1.38E-03	1.54E-03
ac228	8.26E-14	8.85E-14	1.18E-13	1.77E-13	2.96E-13	4.14E-13	5.32E-13	6.50E-13	7.69E-13	8.87E-13	1.01E-12
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	3.42E-07	3.66E-07	4.94E-07	7.30E-07	1.19E-06	1.63E-06	2.05E-06	2.45E-06	2.84E-06	3.21E-06	3.57E-06
th228	2.98E-08	1.12E-08	4.64E-10	5.49E-10	8.70E-10	1.19E-09	1.51E-09	1.84E-09	2.16E-09	2.48E-09	2.80E-09
th229	1.27E-02	1.46E-02	2.55E-02	5.58E-02	1.46E-01	2.71E-01	4.23E-01	5.99E-01	7.94E-01	1.00E+00	1.23E+00
th230	8.24E+00	8.83E+00	1.18E+01	1.76E+01	2.90E+01	4.02E+01	5.11E+01	6.17E+01	7.22E+01	8.23E+01	9.23E+01
th231	6.91E-07	6.91E-07	6.91E-07	6.91E-07	6.91E-07	6.92E-07	6.92E-07	6.92E-07	6.92E-07	6.92E-07	6.92E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 82

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
th232	1.68E+00	1.80E+00	2.41E+00	3.61E+00	6.02E+00	8.43E+00	1.08E+01	1.33E+01	1.57E+01	1.81E+01	2.05E+01
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	2.31E-01	2.47E-01	3.26E-01	4.82E-01	7.84E-01	1.07E+00	1.35E+00	1.62E+00	1.87E+00	2.12E+00	2.35E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.39E-04	3.39E-04	3.39E-04	3.38E-04	3.38E-04	3.38E-04	3.38E-04	3.38E-04	3.37E-04	3.37E-04	3.37E-04
pa234m	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	1.07E-06	3.97E-07	5.18E-09	2.42E-09	2.40E-09	2.37E-09	2.34E-09	2.31E-09	2.28E-09	2.26E-09	2.23E-09
u233	4.42E+00	4.74E+00	6.31E+00	9.45E+00	1.57E+01	2.19E+01	2.80E+01	3.40E+01	4.00E+01	4.60E+01	5.19E+01
u234	2.15E+03	2.15E+03	2.15E+03	2.14E+03	2.13E+03	2.12E+03	2.11E+03	2.11E+03	2.10E+03	2.09E+03	2.08E+03
u235	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05
u236	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04
u237	2.67E-19	2.13E-21	5.62E-26	5.18E-26	4.40E-26	3.74E-26	3.17E-26	2.70E-26	2.29E-26	1.95E-26	1.65E-26
u238	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	4.61E-05	4.61E-05	4.59E-05	4.57E-05	4.51E-05	4.46E-05	4.40E-05	4.35E-05	4.30E-05	4.25E-05	4.20E-05
np237	9.97E+03	9.97E+03	9.97E+03	9.96E+03	9.96E+03	9.95E+03	9.94E+03	9.94E+03	9.93E+03	9.92E+03	9.92E+03
np238	1.93E-13	1.18E-13	1.01E-14	7.42E-17	3.99E-21	2.14E-25	1.15E-29	6.18E-34	.00E+00	.00E+00	.00E+00
np239	4.96E-14	4.91E-14	4.68E-14	4.26E-14	3.53E-14	2.93E-14	2.43E-14	2.01E-14	1.66E-14	1.38E-14	1.14E-14
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	1.03E-10	1.03E-10	1.03E-10	1.02E-10	1.01E-10	1.00E-10	9.88E-11	9.76E-11	9.65E-11	9.53E-11	9.42E-11
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	2.36E-01	1.07E-01	2.06E-03	7.61E-07	1.33E-13	1.60E-18	8.50E-23	4.57E-27	2.45E-31	1.32E-35	7.07E-40
pu239	1.14E+03	1.14E+03	1.12E+03	1.09E+03	1.03E+03	9.69E+02	9.15E+02	8.64E+02	8.16E+02	7.70E+02	7.27E+02
pu240	5.26E+00	5.21E+00	4.94E+00	4.44E+00	3.60E+00	2.91E+00	2.36E+00	1.91E+00	1.54E+00	1.25E+00	1.01E+00
pu241	8.80E-12	7.02E-14	1.86E-18	1.71E-18	1.45E-18	1.23E-18	1.05E-18	8.91E-19	7.57E-19	6.43E-19	5.46E-19
pu242	2.31E-05	2.32E-05	2.33E-05	2.32E-05	2.31E-05	2.30E-05	2.30E-05	2.29E-05	2.28E-05	2.27E-05	2.26E-05
pu243	5.09E-34	5.09E-34	5.09E-34	5.09E-34	5.09E-34	5.09E-34	5.09E-34	5.08E-34	5.08E-34	5.08E-34	5.08E-34
pu244	1.94E-30	2.33E-30	4.26E-30	8.13E-30	1.58E-29	2.35E-29	3.11E-29	3.87E-29	4.63E-29	5.39E-29	6.14E-29
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	1.41E-02	1.20E-02	5.38E-03	1.08E-03	4.39E-05	1.78E-06	7.23E-08	2.93E-09	1.19E-10	4.82E-12	1.95E-13
am242m	1.06E-06	6.50E-07	5.57E-08	4.08E-10	2.19E-14	1.18E-18	6.32E-23	3.40E-27	1.82E-31	9.80E-36	5.26E-40
am242	1.37E-11	8.39E-12	7.18E-13	5.26E-15	2.83E-19	1.52E-23	8.16E-28	4.38E-32	2.34E-36	.00E+00	.00E+00
am243	5.76E-08	5.71E-08	5.44E-08	4.96E-08	4.11E-08	3.40E-08	2.82E-08	2.34E-08	1.93E-08	1.60E-08	1.33E-08
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 83

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cm242	2.77E-09	1.69E-09	1.45E-10	1.06E-12	5.73E-17	3.08E-21	1.65E-25	8.88E-30	4.77E-34	2.56E-38	1.36E-42
cm243	4.25E-18	3.73E-19	1.95E-24	5.34E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	1.43E-18	3.10E-20	1.50E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	1.17E-15	1.16E-15	1.12E-15	1.03E-15	8.73E-16	7.42E-16	6.30E-16	5.35E-16	4.55E-16	3.86E-16	3.28E-16
cm246	9.79E-19	9.65E-19	8.97E-19	7.74E-19	5.78E-19	4.31E-19	3.22E-19	2.40E-19	1.79E-19	1.33E-19	9.96E-20
cm247	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23
cm248	2.10E-27	2.10E-27	2.10E-27	2.10E-27	2.09E-27	2.08E-27	2.07E-27	2.06E-27	2.05E-27	2.05E-27	2.04E-27
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	1.48E-32	1.21E-32	4.51E-33	6.24E-34	1.19E-35	2.29E-37	4.38E-39	8.37E-41	1.74E-42	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	8.36E-39	7.74E-39	5.26E-39	2.43E-39	5.19E-40	1.11E-40	2.36E-41	4.92E-42	1.06E-42	3.52E-43	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 84

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	5.37E-08	6.11E-08	1.06E-07	2.11E-07	4.69E-07	7.56E-07	1.05E-06	1.34E-06	1.63E-06	1.92E-06	2.19E-06

tl207	1.06E-02	1.14E-02	1.54E-02	2.27E-02	3.70E-02	5.06E-02	6.37E-02	7.63E-02	8.84E-02	9.99E-02	1.11E-01
tl208	8.79E-06	3.31E-06	1.37E-07	1.62E-07	2.57E-07	3.51E-07	4.46E-07	5.41E-07	6.36E-07	7.31E-07	8.26E-07
tl209	5.30E-05	6.06E-05	1.06E-04	2.32E-04	6.08E-04	1.13E-03	1.76E-03	2.49E-03	3.30E-03	4.18E-03	5.11E-03
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	2.52E-03	2.89E-03	5.06E-03	1.10E-02	2.90E-02	5.36E-02	8.39E-02	1.19E-01	1.57E-01	1.99E-01	2.43E-01
pb210	4.07E-02	4.63E-02	8.03E-02	1.60E-01	3.56E-01	5.73E-01	7.96E-01	1.02E+00	1.24E+00	1.45E+00	1.66E+00
pb211	1.07E-02	1.14E-02	1.54E-02	2.28E-02	3.71E-02	5.08E-02	6.39E-02	7.65E-02	8.86E-02	1.00E-01	1.11E-01
pb212	2.45E-05	9.22E-06	3.80E-07	4.50E-07	7.14E-07	9.78E-07	1.24E-06	1.51E-06	1.77E-06	2.03E-06	2.30E-06
pb214	4.25E-02	4.81E-02	8.03E-02	1.60E-01	3.56E-01	5.73E-01	7.96E-01	1.02E+00	1.24E+00	1.45E+00	1.66E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	4.07E-02	4.63E-02	8.03E-02	1.60E-01	3.56E-01	5.73E-01	7.96E-01	1.02E+00	1.24E+00	1.45E+00	1.66E+00
bi211	1.07E-02	1.14E-02	1.54E-02	2.28E-02	3.71E-02	5.08E-02	6.39E-02	7.65E-02	8.86E-02	1.00E-01	1.11E-01
bi212	2.45E-05	9.22E-06	3.80E-07	4.50E-07	7.14E-07	9.78E-07	1.24E-06	1.51E-06	1.77E-06	2.03E-06	2.30E-06
bi213	2.52E-03	2.89E-03	5.06E-03	1.10E-02	2.90E-02	5.36E-02	8.39E-02	1.19E-01	1.57E-01	1.99E-01	2.43E-01
bi214	4.25E-02	4.81E-02	8.03E-02	1.60E-01	3.56E-01	5.73E-01	7.96E-01	1.02E+00	1.24E+00	1.45E+00	1.66E+00
po210	4.07E-02	4.63E-02	8.03E-02	1.60E-01	3.56E-01	5.73E-01	7.96E-01	1.02E+00	1.24E+00	1.45E+00	1.66E+00
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.93E-05	3.14E-05	4.24E-05	6.26E-05	1.02E-04	1.40E-04	1.76E-04	2.10E-04	2.44E-04	2.76E-04	3.06E-04
po212	1.57E-05	5.91E-06	2.44E-07	2.88E-07	4.57E-07	6.26E-07	7.95E-07	9.64E-07	1.13E-06	1.30E-06	1.47E-06
po213	2.47E-03	2.83E-03	4.95E-03	1.08E-02	2.84E-02	5.25E-02	8.21E-02	1.16E-01	1.54E-01	1.95E-01	2.38E-01
po214	4.25E-02	4.81E-02	8.03E-02	1.60E-01	3.56E-01	5.73E-01	7.96E-01	1.02E+00	1.24E+00	1.45E+00	1.66E+00
po215	1.07E-02	1.14E-02	1.54E-02	2.28E-02	3.71E-02	5.08E-02	6.39E-02	7.65E-02	8.86E-02	1.00E-01	1.11E-01
po216	2.45E-05	9.22E-06	3.80E-07	4.50E-07	7.14E-07	9.78E-07	1.24E-06	1.51E-06	1.77E-06	2.03E-06	2.30E-06
po218	4.25E-02	4.81E-02	8.03E-02	1.60E-01	3.56E-01	5.73E-01	7.96E-01	1.02E+00	1.24E+00	1.45E+00	1.66E+00
at217	2.52E-03	2.89E-03	5.06E-03	1.11E-02	2.90E-02	5.36E-02	8.39E-02	1.19E-01	1.57E-01	1.99E-01	2.43E-01
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	1.07E-02	1.14E-02	1.54E-02	2.28E-02	3.71E-02	5.08E-02	6.39E-02	7.65E-02	8.86E-02	1.00E-01	1.11E-01
rn220	2.45E-05	9.22E-06	3.80E-07	4.50E-07	7.14E-07	9.78E-07	1.24E-06	1.51E-06	1.77E-06	2.03E-06	2.30E-06
rn222	4.25E-02	4.81E-02	8.03E-02	1.60E-01	3.56E-01	5.73E-01	7.96E-01	1.02E+00	1.24E+00	1.45E+00	1.66E+00
fr221	2.52E-03	2.89E-03	5.06E-03	1.11E-02	2.90E-02	5.36E-02	8.39E-02	1.19E-01	1.57E-01	1.99E-01	2.43E-01
fr223	1.47E-04	1.58E-04	2.13E-04	3.14E-04	5.12E-04	7.01E-04	8.82E-04	1.06E-03	1.22E-03	1.38E-03	1.54E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	1.07E-02	1.14E-02	1.54E-02	2.28E-02	3.71E-02	5.08E-02	6.39E-02	7.65E-02	8.86E-02	1.00E-01	1.11E-01
ra224	2.45E-05	9.22E-06	3.80E-07	4.50E-07	7.14E-07	9.78E-07	1.24E-06	1.51E-06	1.77E-06	2.03E-06	2.30E-06
ra225	2.52E-03	2.89E-03	5.06E-03	1.11E-02	2.90E-02	5.36E-02	8.39E-02	1.19E-01	1.57E-01	1.99E-01	2.43E-01
ra226	4.25E-02	4.81E-02	8.03E-02	1.60E-01	3.56E-01	5.73E-01	7.96E-01	1.02E+00	1.24E+00	1.45E+00	1.66E+00
ra228	1.85E-07	1.98E-07	2.64E-07	3.96E-07	6.61E-07	9.25E-07	1.19E-06	1.45E-06	1.72E-06	1.98E-06	2.25E-06
ac225	2.52E-03	2.89E-03	5.06E-03	1.11E-02	2.90E-02	5.36E-02	8.39E-02	1.19E-01	1.57E-01	1.99E-01	2.43E-01
ac227	1.07E-02	1.14E-02	1.54E-02	2.28E-02	3.71E-02	5.08E-02	6.39E-02	7.65E-02	8.86E-02	1.00E-01	1.11E-01
ac228	1.85E-07	1.98E-07	2.64E-07	3.96E-07	6.61E-07	9.25E-07	1.19E-06	1.45E-06	1.72E-06	1.98E-06	2.25E-06
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	1.05E-02	1.13E-02	1.52E-02	2.25E-02	3.66E-02	5.01E-02	6.30E-02	7.55E-02	8.74E-02	9.88E-02	1.10E-01
th228	2.45E-05	9.22E-06	3.80E-07	4.50E-07	7.14E-07	9.78E-07	1.24E-06	1.51E-06	1.77E-06	2.03E-06	2.30E-06
th229	2.52E-03	2.89E-03	5.06E-03	1.11E-02	2.90E-02	5.36E-02	8.39E-02	1.19E-01	1.57E-01	1.99E-01	2.43E-01
th230	1.70E-01	1.82E-01	2.43E-01	3.62E-01	5.98E-01	8.29E-01	1.05E+00	1.27E+00	1.49E+00	1.70E+00	1.90E+00
th231	3.67E-01	3.67E-01	3.67E-01	3.68E-01	3.68E-01	3.68E-01	3.68E-01	3.68E-01	3.68E-01	3.68E-01	3.68E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 85

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
th232	1.85E-07	1.98E-07	2.64E-07	3.96E-07	6.61E-07	9.25E-07	1.19E-06	1.45E-06	1.72E-06	1.98E-06	2.25E-06
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	1.09E-02	1.17E-02	1.54E-02	2.28E-02	3.71E-02	5.08E-02	6.39E-02	7.65E-02	8.86E-02	1.00E-01	1.11E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pa233	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.02E+00	7.02E+00	7.01E+00	7.01E+00	7.00E+00	7.00E+00	6.99E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	2.36E-05	8.78E-06	1.14E-07	5.35E-08	5.29E-08	5.23E-08	5.16E-08	5.10E-08	5.04E-08	4.98E-08	4.92E-08
u233	4.26E-02	4.57E-02	6.09E-02	9.11E-02	1.51E-01	2.11E-01	2.70E-01	3.28E-01	3.86E-01	4.43E-01	5.00E-01
u234	1.34E+01	1.34E+01	1.34E+01	1.33E+01	1.33E+01	1.32E+01	1.32E+01	1.31E+01	1.30E+01	1.30E+01	1.29E+01
u235	3.67E-01	3.67E-01	3.67E-01	3.68E-01	3.68E-01	3.68E-01	3.68E-01	3.68E-01	3.68E-01	3.68E-01	3.68E-01
u236	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00
u237	2.18E-14	1.74E-16	4.59E-21	4.23E-21	3.59E-21	3.05E-21	2.59E-21	2.20E-21	1.87E-21	1.59E-21	1.35E-21
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	6.07E-07	6.07E-07	6.05E-07	6.02E-07	5.94E-07	5.87E-07	5.80E-07	5.73E-07	5.66E-07	5.60E-07	5.53E-07
np237	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.02E+00	7.02E+00	7.01E+00	7.01E+00	7.00E+00	7.00E+00	6.99E+00
np238	5.01E-08	3.07E-08	2.63E-09	1.92E-11	1.03E-15	5.55E-20	2.98E-24	1.60E-28	.00E+00	.00E+00	.00E+00
np239	1.15E-08	1.14E-08	1.09E-08	9.89E-09	8.20E-09	6.79E-09	5.63E-09	4.66E-09	3.86E-09	3.20E-09	2.65E-09
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	5.41E-08	5.40E-08	5.39E-08	5.35E-08	5.29E-08	5.23E-08	5.16E-08	5.10E-08	5.04E-08	4.98E-08	4.92E-08
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	4.04E+00	1.83E+00	3.53E-02	1.30E-05	2.28E-12	2.74E-17	1.46E-21	7.82E-26	4.20E-30	.00E+00	.00E+00
pu239	7.07E+01	7.05E+01	6.95E+01	6.75E+01	6.37E+01	6.02E+01	5.68E+01	5.36E+01	5.06E+01	4.78E+01	4.51E+01
pu240	1.19E+00	1.18E+00	1.12E+00	1.01E+00	8.17E-01	6.61E-01	5.35E-01	4.33E-01	3.51E-01	2.84E-01	2.30E-01
pu241	9.11E-10	7.26E-12	1.92E-16	1.77E-16	1.50E-16	1.28E-16	1.08E-16	9.21E-17	7.83E-17	6.65E-17	5.65E-17
pu242	9.14E-08	9.17E-08	9.20E-08	9.18E-08	9.15E-08	9.12E-08	9.08E-08	9.05E-08	9.02E-08	8.98E-08	8.95E-08
pu243	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27
pu244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	4.83E-02	4.12E-02	1.85E-02	3.72E-03	1.51E-04	6.11E-06	2.48E-07	1.01E-08	4.08E-10	1.65E-11	6.70E-13
am242m	1.11E-05	6.82E-06	5.84E-07	4.28E-09	2.30E-13	1.23E-17	6.63E-22	3.56E-26	1.92E-30	.00E+00	.00E+00
am242	1.11E-05	6.79E-06	5.81E-07	4.26E-09	2.29E-13	1.23E-17	6.60E-22	3.54E-26	1.89E-30	.00E+00	.00E+00
am243	1.15E-08	1.14E-08	1.09E-08	9.89E-09	8.20E-09	6.79E-09	5.63E-09	4.66E-09	3.86E-09	3.20E-09	2.65E-09
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 86

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cm242	9.17E-06	5.61E-06	4.80E-07	3.52E-09	1.90E-13	1.02E-17	5.47E-22	2.94E-26	1.57E-30	.00E+00	.00E+00
cm243	2.20E-16	1.93E-17	1.01E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	1.16E-16	2.51E-18	1.21E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	2.01E-16	2.00E-16	1.92E-16	1.77E-16	1.50E-16	1.27E-16	1.08E-16	9.20E-17	7.81E-17	6.64E-17	5.64E-17
cm246	3.01E-19	2.96E-19	2.76E-19	2.38E-19	1.78E-19	1.32E-19	9.88E-20	7.37E-20	5.50E-20	4.10E-20	3.06E-20
cm247	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27
cm248	8.92E-30	8.92E-30	8.92E-30	8.90E-30	8.85E-30	8.83E-30	8.78E-30	8.74E-30	8.72E-30	8.67E-30	8.65E-30
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	6.85E-32	4.56E-32	2.28E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	1.16E+02	1.14E+02	1.11E+02	1.10E+02	1.09E+02	1.07E+02	1.06E+02	1.06E+02	1.05E+02	1.05E+02	1.05E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 87

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
h 3	6.58E-15	2.38E-17	1.47E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05
li 7	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07
be 9	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07
be 10	5.90E-06	5.90E-06	5.90E-06	5.89E-06	5.89E-06	5.88E-06	5.88E-06	5.87E-06	5.87E-06	5.86E-06	5.86E-06
c 14	1.07E-06	1.06E-06	9.96E-07	8.82E-07	6.93E-07	5.44E-07	4.27E-07	3.35E-07	2.63E-07	2.07E-07	1.62E-07
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09
zn 68	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09
zn 70	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 88

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	2.27E-01	2.27E-01	2.27E-01	2.27E-01	2.26E-01	2.25E-01	2.24E-01	2.23E-01	2.22E-01	2.21E-01	2.20E-01
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	4.30E-04	4.78E-04	7.17E-04	1.19E-03	2.14E-03	3.09E-03	4.03E-03	4.97E-03	5.90E-03	6.84E-03	7.76E-03
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07

cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00
kr 81	2.01E-08	2.01E-08	2.01E-08	2.00E-08	1.99E-08	1.98E-08	1.96E-08	1.95E-08	1.94E-08	1.93E-08	1.91E-08
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 89

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	1.31E-13	2.03E-16	1.85E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01
rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01
sr 87	2.49E-05	2.49E-05	2.50E-05	2.52E-05	2.56E-05	2.60E-05	2.65E-05	2.69E-05	2.73E-05	2.77E-05	2.81E-05
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 90

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	7.28E-05	6.20E-06	2.79E-11	5.62E-22	2.52E-43	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	1.89E-08	1.61E-09	7.24E-15	1.46E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01
nb 91	6.97E-12	6.30E-12	3.78E-12	1.36E-12	1.78E-13	2.31E-14	3.01E-15	3.92E-16	5.10E-17	6.65E-18	8.65E-19
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01
nb 92	2.25E-09	2.25E-09	2.25E-09	2.25E-09	2.24E-09	2.24E-09	2.24E-09	2.24E-09	2.24E-09	2.24E-09	2.24E-09
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.53E+01	2.53E+01
nb 93	1.01E-02	1.13E-02	1.71E-02	2.86E-02	5.17E-02	7.47E-02	9.78E-02	1.21E-01	1.44E-01	1.67E-01	1.90E-01
nb 93m	2.69E-04	2.69E-04	2.69E-04	2.69E-04	2.68E-04	2.68E-04	2.68E-04	2.68E-04	2.67E-04	2.67E-04	2.67E-04
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 91

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01
nb 94	1.01E-05	1.00E-05	9.88E-06	9.55E-06	8.92E-06	8.33E-06	7.78E-06	7.26E-06	6.78E-06	6.34E-06	5.92E-06
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01
tc 98	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.86E-06	4.86E-06	4.86E-06	4.86E-06	4.86E-06
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	3.95E+01	3.94E+01	3.94E+01	3.93E+01	3.90E+01	3.87E+01	3.85E+01	3.82E+01	3.80E+01	3.77E+01	3.75E+01
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	1.18E-01	1.31E-01	1.96E-01	3.25E-01	5.82E-01	8.37E-01	1.09E+00	1.34E+00	1.59E+00	1.84E+00	2.09E+00

rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 92

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 93
nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	1.31E-04	1.46E-04	2.20E-04	3.69E-04	6.67E-04	9.64E-04	1.26E-03	1.56E-03	1.86E-03	2.15E-03	2.45E-03
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01
ag108	1.29E-19	7.50E-20	4.90E-21	2.09E-23	3.79E-28	6.89E-33	1.25E-37	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	4.20E-11	2.43E-11	1.59E-12	6.76E-15	1.23E-19	2.23E-24	4.05E-29	7.36E-34	1.34E-38	3.03E-43	.00E+00
cd108	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01
ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 94
nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cd110	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02
cd113m	1.29E-13	9.45E-16	2.00E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 95

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sn115	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03

tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 96

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	1.61E-11	4.58E-12	8.40E-15	2.83E-20	3.21E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	3.70E-07	1.05E-07	1.93E-10	6.49E-16	7.36E-27	8.35E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01
te123	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	3.64E-01	3.63E-01	3.62E-01	3.60E-01	3.55E-01	3.50E-01	3.45E-01	3.40E-01	3.36E-01	3.31E-01	3.26E-01

1

Part 8 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 97

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sb126	1.73E-08	1.73E-08	1.72E-08	1.71E-08	1.68E-08	1.66E-08	1.64E-08	1.62E-08	1.59E-08	1.57E-08	1.55E-08
sb126m	1.31E-10	1.31E-10	1.31E-10	1.30E-10	1.28E-10	1.26E-10	1.25E-10	1.23E-10	1.21E-10	1.20E-10	1.18E-10
te126	4.53E-03	4.79E-03	6.04E-03	8.55E-03	1.35E-02	1.84E-02	2.32E-02	2.79E-02	3.26E-02	3.72E-02	4.18E-02
xe126	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00
xe129	2.57E-04	2.85E-04	4.28E-04	7.13E-04	1.28E-03	1.85E-03	2.42E-03	3.00E-03	3.57E-03	4.14E-03	4.71E-03
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 98

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08

in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01
ba133	3.44E-23	4.72E-26	2.32E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.78E+01	5.78E+01	5.78E+01	5.77E+01	5.77E+01	5.77E+01
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	1.57E-02	1.75E-02	2.62E-02	4.36E-02	7.85E-02	1.13E-01	1.48E-01	1.83E-01	2.18E-01	2.53E-01	2.87E-01
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 99

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.36E-04	2.34E-05	2.25E-10	2.07E-20	1.76E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01
ba137m	3.61E-11	3.58E-12	3.44E-17	3.17E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01
la138	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01

i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01
pm145	1.04E-17	2.08E-19	6.51E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01
pm146	1.99E-32	7.16E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 101

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sm148	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00
eu150	1.44E-12	2.08E-13	1.30E-17	5.09E-26	8.41E-43	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	2.52E-02	1.17E-02	2.48E-04	1.12E-07	2.28E-14	4.65E-21	9.49E-28	1.94E-34	3.96E-41	.00E+00	.00E+00
eu151	4.02E+00	4.04E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00
eu152	4.25E-12	2.34E-14	1.19E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 102

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sm154	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01
eu154	1.33E-18	4.17E-22	1.25E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	4.73E-29	1.75E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 103

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
dy161	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	2.25E-08	2.13E-08	1.59E-08	8.95E-09	2.82E-09	8.88E-10	2.80E-10	8.80E-11	2.77E-11	8.73E-12	2.75E-12
er166	2.82E-06	2.82E-06	2.83E-06	2.84E-06	2.84E-06	2.84E-06	2.85E-06	2.85E-06	2.85E-06	2.85E-06	2.85E-06
er167	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09
total	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 104

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
h 3	6.36E-11	2.30E-13	1.42E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07
c 14	4.77E-06	4.72E-06	4.44E-06	3.93E-06	3.09E-06	2.42E-06	1.90E-06	1.49E-06	1.17E-06	9.21E-07	7.23E-07
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 105

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	3.12E-03	3.12E-03	3.12E-03	3.11E-03	3.10E-03	3.08E-03	3.07E-03	3.06E-03	3.04E-03	3.03E-03	3.02E-03
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	4.17E-10	4.17E-10	4.17E-10	4.15E-10	4.13E-10	4.10E-10	4.07E-10	4.05E-10	4.02E-10	3.99E-10	3.97E-10
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 106

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	5.13E-11	7.98E-14	7.25E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 107

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	1.03E-02	8.76E-04	3.93E-09	7.93E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	1.03E-02	8.76E-04	3.93E-09	7.94E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	4.03E-11	3.64E-11	2.19E-11	7.89E-12	1.03E-12	1.34E-13	1.74E-14	2.27E-15	2.95E-16	3.84E-17	5.00E-18
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	6.41E-02	6.41E-02	6.41E-02	6.40E-02	6.40E-02	6.39E-02	6.39E-02	6.38E-02	6.38E-02	6.37E-02	6.36E-02
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	6.41E-02	6.41E-02	6.41E-02	6.40E-02	6.40E-02	6.39E-02	6.39E-02	6.38E-02	6.38E-02	6.37E-02	6.36E-02
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 108

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	1.89E-06	1.88E-06	1.85E-06	1.79E-06	1.67E-06	1.56E-06	1.46E-06	1.36E-06	1.27E-06	1.19E-06	1.11E-06
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.22E-09	4.22E-09	4.22E-09
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	6.75E-01	6.75E-01	6.74E-01	6.72E-01	6.67E-01	6.63E-01	6.59E-01	6.54E-01	6.50E-01	6.46E-01	6.42E-01
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 109

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 110

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.16E-04	7.16E-04	7.16E-04	7.16E-04
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	9.52E-11	5.51E-11	3.60E-12	1.53E-14	2.79E-19	5.06E-24	9.19E-29	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	1.09E-09	6.34E-10	4.14E-11	1.76E-13	3.20E-18	5.82E-23	1.06E-27	2.28E-32	.00E+00	.00E+00	.00E+00
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 111

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14
cd113m	2.90E-11	2.12E-13	4.49E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 112

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 113

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	1.54E-05	4.38E-06	8.04E-09	2.71E-14	3.07E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	1.99E-05	5.65E-06	1.04E-08	3.49E-14	3.96E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	1.03E-02	1.03E-02	1.03E-02	1.02E-02	1.01E-02	9.93E-03	9.79E-03	9.66E-03	9.52E-03	9.39E-03	9.26E-03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 114

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sb126	1.44E-03	1.44E-03	1.44E-03	1.43E-03	1.41E-03	1.39E-03	1.37E-03	1.35E-03	1.33E-03	1.31E-03	1.30E-03
sb126m	1.03E-02	1.03E-02	1.03E-02	1.02E-02	1.01E-02	9.93E-03	9.79E-03	9.66E-03	9.52E-03	9.39E-03	9.26E-03

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 115

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	8.78E-21	1.21E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.66E-02	6.66E-02	6.65E-02	6.65E-02	6.65E-02	6.64E-02
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 116

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.06E-02	2.04E-03	1.96E-08	1.80E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	1.94E-02	1.93E-03	1.85E-08	1.70E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 117

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11
i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	1.45E-15	2.89E-17	9.07E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	8.83E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 118

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sm148	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	9.59E-11	1.38E-11	8.66E-16	3.39E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	6.63E-01	3.07E-01	6.52E-03	2.95E-06	6.01E-13	1.22E-19	2.50E-26	.00E+00	.00E+00	.00E+00	.00E+00
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	7.51E-10	4.14E-12	2.10E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 119

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	3.60E-16	1.13E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	2.33E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 120

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	4.05E-08	3.82E-08	2.86E-08	1.61E-08	5.06E-09	1.59E-09	5.02E-10	1.58E-10	4.98E-11	1.57E-11	4.94E-12
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	1.62E+00	1.21E+00	9.02E-01	8.93E-01	8.88E-01	8.84E-01	8.79E-01	8.74E-01	8.69E-01	8.65E-01	8.60E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 121

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
he 4	1.24E+01	1.37E+01	1.50E+01	1.63E+01	1.75E+01	1.87E+01	2.00E+01	2.12E+01	2.24E+01	2.49E+01	2.61E+01
tl206	1.01E-14	1.13E-14	1.26E-14	1.38E-14	1.49E-14	1.61E-14	1.72E-14	1.83E-14	1.93E-14	2.14E-14	2.23E-14
tl207	5.83E-10	6.39E-10	6.92E-10	7.43E-10	7.93E-10	8.40E-10	8.85E-10	9.28E-10	9.70E-10	1.05E-09	1.08E-09
tl208	2.79E-15	3.11E-15	3.43E-15	3.75E-15	4.07E-15	4.39E-15	4.71E-15	5.03E-15	5.35E-15	5.99E-15	6.31E-15
tl209	1.25E-11	1.49E-11	1.73E-11	1.98E-11	2.24E-11	2.50E-11	2.76E-11	3.03E-11	3.29E-11	3.82E-11	4.09E-11
pb206	5.15E+00	6.57E+00	8.15E+00	9.89E+00	1.18E+01	1.38E+01	1.60E+01	1.84E+01	2.09E+01	2.62E+01	2.91E+01
pb207	4.02E-01	4.95E-01	5.97E-01	7.07E-01	8.25E-01	9.50E-01	1.08E+00	1.22E+00	1.37E+00	1.68E+00	1.84E+00
pb208	3.16E-04	3.18E-04	3.20E-04	3.23E-04	3.25E-04	3.28E-04	3.31E-04	3.34E-04	3.38E-04	3.45E-04	3.49E-04
pb209	5.27E-08	6.27E-08	7.31E-08	8.37E-08	9.45E-08	1.06E-07	1.17E-07	1.28E-07	1.39E-07	1.62E-07	1.73E-07
pb210	2.18E-02	2.45E-02	2.71E-02	2.97E-02	3.22E-02	3.46E-02	3.70E-02	3.94E-02	4.16E-02	4.60E-02	4.82E-02
pb211	4.51E-09	4.94E-09	5.35E-09	5.75E-09	6.13E-09	6.50E-09	6.85E-09	7.18E-09	7.50E-09	8.11E-09	8.39E-09
pb212	1.65E-12	1.84E-12	2.03E-12	2.22E-12	2.41E-12	2.60E-12	2.79E-12	2.98E-12	3.17E-12	3.55E-12	3.74E-12
pb214	5.07E-08	5.70E-08	6.31E-08	6.91E-08	7.49E-08	8.07E-08	8.62E-08	9.17E-08	9.70E-08	1.07E-07	1.12E-07
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	6.25E-01	8.41E-01	1.09E+00	1.39E+00	1.72E+00	2.09E+00	2.51E+00	2.97E+00	3.46E+00	4.59E+00	5.21E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.34E-05	1.51E-05	1.67E-05	1.83E-05	1.98E-05	2.13E-05	2.28E-05	2.42E-05	2.56E-05	2.83E-05	2.96E-05
bi211	2.67E-10	2.93E-10	3.17E-10	3.41E-10	3.63E-10	3.85E-10	4.06E-10	4.26E-10	4.45E-10	4.81E-10	4.97E-10
bi212	1.57E-13	1.75E-13	1.93E-13	2.11E-13	2.29E-13	2.47E-13	2.65E-13	2.83E-13	3.01E-13	3.37E-13	3.55E-13
bi213	1.26E-08	1.49E-08	1.74E-08	1.99E-08	2.25E-08	2.51E-08	2.78E-08	3.04E-08	3.31E-08	3.85E-08	4.11E-08
bi214	3.77E-08	4.23E-08	4.69E-08	5.13E-08	5.56E-08	5.99E-08	6.40E-08	6.81E-08	7.20E-08	7.96E-08	8.33E-08
po210	3.70E-04	4.16E-04	4.61E-04	5.04E-04	5.47E-04	5.89E-04	6.29E-04	6.69E-04	7.08E-04	7.83E-04	8.19E-04
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.95E-15	3.24E-15	3.51E-15	3.77E-15	4.02E-15	4.26E-15	4.48E-15	4.70E-15	4.91E-15	5.31E-15	5.50E-15
po212	8.24E-24	9.18E-24	1.01E-23	1.11E-23	1.20E-23	1.30E-23	1.39E-23	1.49E-23	1.58E-23	1.77E-23	1.86E-23
po213	1.89E-17	2.25E-17	2.62E-17	3.00E-17	3.38E-17	3.78E-17	4.17E-17	4.57E-17	4.98E-17	5.78E-17	6.18E-17
po214	5.18E-15	5.82E-15	6.45E-15	7.06E-15	7.66E-15	8.24E-15	8.81E-15	9.37E-15	9.91E-15	1.10E-14	1.15E-14

po215	3.77E-15	4.14E-15	4.48E-15	4.81E-15	5.13E-15	5.44E-15	5.73E-15	6.01E-15	6.28E-15	6.79E-15	7.03E-15
po216	6.37E-18	7.11E-18	7.84E-18	8.57E-18	9.30E-18	1.00E-17	1.08E-17	1.15E-17	1.22E-17	1.37E-17	1.44E-17
po218	5.98E-09	6.72E-09	7.44E-09	8.14E-09	8.83E-09	9.51E-09	1.02E-08	1.08E-08	1.14E-08	1.26E-08	1.32E-08
at217	1.51E-13	1.80E-13	2.09E-13	2.40E-13	2.71E-13	3.02E-13	3.34E-13	3.66E-13	3.98E-13	4.63E-13	4.95E-13
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	8.55E-12	9.37E-12	1.02E-11	1.09E-11	1.16E-11	1.23E-11	1.30E-11	1.36E-11	1.42E-11	1.54E-11	1.59E-11
rn220	2.49E-15	2.78E-15	3.06E-15	3.35E-15	3.63E-15	3.92E-15	4.20E-15	4.49E-15	4.78E-15	5.35E-15	5.63E-15
rn222	1.08E-05	1.21E-05	1.35E-05	1.47E-05	1.60E-05	1.72E-05	1.84E-05	1.95E-05	2.07E-05	2.29E-05	2.39E-05
fr221	1.40E-09	1.67E-09	1.94E-09	2.22E-09	2.51E-09	2.80E-09	3.10E-09	3.39E-09	3.69E-09	4.29E-09	4.59E-09
fr223	3.97E-11	4.35E-11	4.71E-11	5.06E-11	5.40E-11	5.72E-11	6.03E-11	6.32E-11	6.61E-11	7.14E-11	7.39E-11
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	2.17E-06	2.38E-06	2.58E-06	2.77E-06	2.96E-06	3.13E-06	3.30E-06	3.46E-06	3.62E-06	3.91E-06	4.04E-06
ra224	1.44E-11	1.61E-11	1.77E-11	1.94E-11	2.10E-11	2.27E-11	2.43E-11	2.60E-11	2.77E-11	3.10E-11	3.26E-11
ra225	6.20E-06	7.38E-06	8.60E-06	9.84E-06	1.11E-05	1.24E-05	1.37E-05	1.50E-05	1.64E-05	1.90E-05	2.03E-05
ra226	1.68E+00	1.89E+00	2.09E+00	2.29E+00	2.49E+00	2.68E+00	2.86E+00	3.04E+00	3.22E+00	3.56E+00	3.72E+00
ra228	8.24E-09	9.21E-09	1.02E-08	1.11E-08	1.21E-08	1.31E-08	1.40E-08	1.50E-08	1.60E-08	1.79E-08	1.89E-08
ac225	4.19E-06	4.98E-06	5.81E-06	6.65E-06	7.51E-06	8.38E-06	9.27E-06	1.02E-05	1.10E-05	1.28E-05	1.37E-05
ac227	1.54E-03	1.69E-03	1.83E-03	1.96E-03	2.09E-03	2.22E-03	2.34E-03	2.45E-03	2.56E-03	2.77E-03	2.86E-03
ac228	1.01E-12	1.12E-12	1.24E-12	1.36E-12	1.48E-12	1.60E-12	1.71E-12	1.83E-12	1.95E-12	2.19E-12	2.31E-12
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	3.57E-06	3.91E-06	4.24E-06	4.55E-06	4.86E-06	5.14E-06	5.42E-06	5.69E-06	5.94E-06	6.42E-06	6.65E-06
th228	2.80E-09	3.12E-09	3.44E-09	3.77E-09	4.09E-09	4.41E-09	4.73E-09	5.05E-09	5.37E-09	6.02E-09	6.34E-09
th229	1.23E+00	1.46E+00	1.70E+00	1.95E+00	2.20E+00	2.46E+00	2.71E+00	2.97E+00	3.24E+00	3.76E+00	4.02E+00
th230	9.23E+01	1.02E+02	1.11E+02	1.21E+02	1.30E+02	1.39E+02	1.47E+02	1.56E+02	1.64E+02	1.80E+02	1.87E+02
th231	6.92E-07	6.93E-07	6.93E-07	6.93E-07	6.93E-07	6.93E-07	6.93E-07	6.93E-07	6.94E-07	6.94E-07	6.94E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 122

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
th232	2.05E+01	2.29E+01	2.53E+01	2.77E+01	3.01E+01	3.25E+01	3.49E+01	3.74E+01	3.98E+01	4.46E+01	4.70E+01
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	2.35E+00	2.58E+00	2.80E+00	3.00E+00	3.20E+00	3.39E+00	3.58E+00	3.75E+00	3.92E+00	4.23E+00	4.38E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.37E-04	3.37E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.35E-04	3.35E-04	3.35E-04	3.34E-04
pa234m	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	2.23E-09	2.20E-09	2.18E-09	2.15E-09	2.12E-09	2.10E-09	2.07E-09	2.05E-09	2.02E-09	1.98E-09	1.95E-09
u233	5.19E+01	5.77E+01	6.35E+01	6.92E+01	7.49E+01	8.05E+01	8.61E+01	9.16E+01	9.71E+01	1.08E+02	1.13E+02
u234	2.08E+03	2.07E+03	2.06E+03	2.05E+03	2.04E+03	2.03E+03	2.02E+03	2.02E+03	2.01E+03	1.99E+03	1.98E+03
u235	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.71E+05	1.71E+05	1.71E+05	1.71E+05	1.71E+05
u236	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04
u237	1.65E-26	1.40E-26	1.19E-26	1.01E-26	8.61E-27	7.31E-27	6.21E-27	5.28E-27	4.48E-27	3.23E-27	2.75E-27
u238	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	4.20E-05	4.15E-05	4.10E-05	4.05E-05	4.00E-05	3.95E-05	3.90E-05	3.86E-05	3.81E-05	3.72E-05	3.67E-05
np237	9.92E+03	9.91E+03	9.91E+03	9.90E+03	9.89E+03	9.89E+03	9.88E+03	9.87E+03	9.87E+03	9.85E+03	9.85E+03
np238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np239	1.14E-14	9.47E-15	7.84E-15	6.50E-15	5.39E-15	4.46E-15	3.70E-15	3.06E-15	2.54E-15	1.74E-15	1.44E-15
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	9.42E-11	9.30E-11	9.19E-11	9.08E-11	8.97E-11	8.87E-11	8.76E-11	8.66E-11	8.55E-11	8.35E-11	8.25E-11
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	7.07E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu239	7.27E+02	6.86E+02	6.48E+02	6.12E+02	5.78E+02	5.45E+02	5.15E+02	4.86E+02	4.59E+02	4.09E+02	3.86E+02
pu240	1.01E+00	8.20E-01	6.64E-01	5.37E-01	4.35E-01	3.52E-01	2.85E-01	2.31E-01	1.87E-01	1.22E-01	9.91E-02
pu241	5.46E-19	4.64E-19	3.94E-19	3.35E-19	2.84E-19	2.42E-19	2.05E-19	1.74E-19	1.48E-19	1.07E-19	9.08E-20
pu242	2.26E-05	2.25E-05	2.25E-05	2.24E-05	2.23E-05	2.22E-05	2.21E-05	2.20E-05	2.20E-05	2.18E-05	2.17E-05
pu243	5.08E-34	5.08E-34	5.08E-34	5.08E-34	5.08E-34	5.08E-34	5.08E-34	5.08E-34	5.08E-34	5.08E-34	5.08E-34
pu244	6.14E-29	6.89E-29	7.63E-29	8.37E-29	9.11E-29	9.85E-29	1.06E-28	1.13E-28	1.20E-28	1.35E-28	1.42E-28
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	1.95E-13	7.94E-15	3.34E-16	2.36E-17	9.47E-18	7.62E-18	6.45E-18	5.48E-18	4.66E-18	3.37E-18	2.86E-18
am242m	5.26E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am243	1.33E-08	1.10E-08	9.12E-09	7.55E-09	6.26E-09	5.19E-09	4.30E-09	3.56E-09	2.95E-09	2.02E-09	1.68E-09
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 123

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cm242	1.36E-42	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	3.28E-16	2.79E-16	2.37E-16	2.01E-16	1.71E-16	1.45E-16	1.23E-16	1.05E-16	8.90E-17	6.42E-17	5.46E-17
cm246	9.96E-20	7.43E-20	5.54E-20	4.13E-20	3.08E-20	2.30E-20	1.72E-20	1.28E-20	9.55E-21	5.31E-21	3.96E-21
cm247	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23
cm248	2.04E-27	2.03E-27	2.02E-27	2.01E-27	2.00E-27	2.00E-27	1.99E-27	1.98E-27	1.97E-27	1.96E-27	1.95E-27
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 124

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	2.19E-06	2.47E-06	2.73E-06	2.99E-06	3.24E-06	3.49E-06	3.73E-06	3.97E-06	4.20E-06	4.64E-06	4.86E-06

tl207	1.11E-01	1.22E-01	1.32E-01	1.42E-01	1.51E-01	1.60E-01	1.69E-01	1.77E-01	1.85E-01	2.00E-01	2.07E-01
tl208	8.26E-07	9.20E-07	1.02E-06	1.11E-06	1.20E-06	1.30E-06	1.39E-06	1.49E-06	1.58E-06	1.77E-06	1.87E-06
tl209	5.11E-03	6.08E-03	7.08E-03	8.11E-03	9.16E-03	1.02E-02	1.13E-02	1.24E-02	1.35E-02	1.56E-02	1.67E-02
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	2.43E-01	2.89E-01	3.37E-01	3.86E-01	4.36E-01	4.87E-01	5.38E-01	5.89E-01	6.41E-01	7.45E-01	7.97E-01
pb210	1.66E+00	1.87E+00	2.07E+00	2.27E+00	2.46E+00	2.64E+00	2.83E+00	3.01E+00	3.18E+00	3.52E+00	3.68E+00
pb211	1.11E-01	1.22E-01	1.32E-01	1.42E-01	1.51E-01	1.60E-01	1.69E-01	1.77E-01	1.85E-01	2.00E-01	2.07E-01
pb212	2.30E-06	2.56E-06	2.82E-06	3.09E-06	3.35E-06	3.62E-06	3.88E-06	4.14E-06	4.41E-06	4.93E-06	5.20E-06
pb214	1.66E+00	1.87E+00	2.07E+00	2.27E+00	2.46E+00	2.65E+00	2.83E+00	3.01E+00	3.18E+00	3.52E+00	3.68E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.66E+00	1.87E+00	2.07E+00	2.27E+00	2.46E+00	2.64E+00	2.83E+00	3.01E+00	3.18E+00	3.52E+00	3.68E+00
bi211	1.11E-01	1.22E-01	1.32E-01	1.42E-01	1.51E-01	1.60E-01	1.69E-01	1.77E-01	1.85E-01	2.00E-01	2.07E-01
bi212	2.30E-06	2.56E-06	2.82E-06	3.09E-06	3.35E-06	3.62E-06	3.88E-06	4.14E-06	4.41E-06	4.93E-06	5.20E-06
bi213	2.43E-01	2.89E-01	3.37E-01	3.86E-01	4.36E-01	4.87E-01	5.38E-01	5.89E-01	6.41E-01	7.45E-01	7.97E-01
bi214	1.66E+00	1.87E+00	2.07E+00	2.27E+00	2.46E+00	2.65E+00	2.83E+00	3.01E+00	3.18E+00	3.52E+00	3.68E+00
po210	1.66E+00	1.87E+00	2.07E+00	2.27E+00	2.46E+00	2.64E+00	2.83E+00	3.01E+00	3.18E+00	3.52E+00	3.68E+00
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.06E-04	3.35E-04	3.64E-04	3.90E-04	4.16E-04	4.41E-04	4.65E-04	4.88E-04	5.09E-04	5.50E-04	5.70E-04
po212	1.47E-06	1.64E-06	1.81E-06	1.98E-06	2.15E-06	2.32E-06	2.49E-06	2.65E-06	2.82E-06	3.16E-06	3.33E-06
po213	2.38E-01	2.83E-01	3.30E-01	3.78E-01	4.27E-01	4.76E-01	5.27E-01	5.77E-01	6.28E-01	7.29E-01	7.80E-01
po214	1.66E+00	1.87E+00	2.07E+00	2.27E+00	2.46E+00	2.64E+00	2.83E+00	3.01E+00	3.18E+00	3.52E+00	3.68E+00
po215	1.11E-01	1.22E-01	1.32E-01	1.42E-01	1.51E-01	1.60E-01	1.69E-01	1.77E-01	1.85E-01	2.00E-01	2.07E-01
po216	2.30E-06	2.56E-06	2.82E-06	3.09E-06	3.35E-06	3.62E-06	3.88E-06	4.14E-06	4.41E-06	4.93E-06	5.20E-06
po218	1.66E+00	1.87E+00	2.07E+00	2.27E+00	2.46E+00	2.65E+00	2.83E+00	3.01E+00	3.18E+00	3.52E+00	3.68E+00
at217	2.43E-01	2.89E-01	3.37E-01	3.86E-01	4.36E-01	4.87E-01	5.38E-01	5.90E-01	6.41E-01	7.45E-01	7.97E-01
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	1.11E-01	1.22E-01	1.32E-01	1.42E-01	1.51E-01	1.60E-01	1.69E-01	1.77E-01	1.85E-01	2.00E-01	2.07E-01
rn220	2.30E-06	2.56E-06	2.82E-06	3.09E-06	3.35E-06	3.62E-06	3.88E-06	4.14E-06	4.41E-06	4.93E-06	5.20E-06
rn222	1.66E+00	1.87E+00	2.07E+00	2.27E+00	2.46E+00	2.65E+00	2.83E+00	3.01E+00	3.18E+00	3.52E+00	3.68E+00
fr221	2.43E-01	2.89E-01	3.37E-01	3.86E-01	4.36E-01	4.87E-01	5.38E-01	5.90E-01	6.41E-01	7.45E-01	7.97E-01
fr223	1.54E-03	1.68E-03	1.82E-03	1.96E-03	2.09E-03	2.21E-03	2.33E-03	2.45E-03	2.56E-03	2.76E-03	2.86E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	1.11E-01	1.22E-01	1.32E-01	1.42E-01	1.51E-01	1.60E-01	1.69E-01	1.77E-01	1.85E-01	2.00E-01	2.07E-01
ra224	2.30E-06	2.56E-06	2.82E-06	3.09E-06	3.35E-06	3.62E-06	3.88E-06	4.14E-06	4.41E-06	4.93E-06	5.20E-06
ra225	2.43E-01	2.89E-01	3.37E-01	3.86E-01	4.36E-01	4.87E-01	5.38E-01	5.90E-01	6.41E-01	7.45E-01	7.97E-01
ra226	1.66E+00	1.87E+00	2.07E+00	2.27E+00	2.46E+00	2.65E+00	2.83E+00	3.01E+00	3.18E+00	3.52E+00	3.68E+00
ra228	2.25E-06	2.51E-06	2.78E-06	3.04E-06	3.31E-06	3.57E-06	3.83E-06	4.10E-06	4.36E-06	4.89E-06	5.16E-06
ac225	2.43E-01	2.89E-01	3.37E-01	3.86E-01	4.36E-01	4.87E-01	5.38E-01	5.90E-01	6.41E-01	7.45E-01	7.97E-01
ac227	1.11E-01	1.22E-01	1.32E-01	1.42E-01	1.51E-01	1.60E-01	1.69E-01	1.77E-01	1.85E-01	2.00E-01	2.07E-01
ac228	2.25E-06	2.51E-06	2.78E-06	3.04E-06	3.31E-06	3.57E-06	3.83E-06	4.10E-06	4.36E-06	4.89E-06	5.16E-06
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	1.10E-01	1.20E-01	1.30E-01	1.40E-01	1.49E-01	1.58E-01	1.67E-01	1.75E-01	1.83E-01	1.97E-01	2.04E-01
th228	2.30E-06	2.56E-06	2.82E-06	3.09E-06	3.35E-06	3.62E-06	3.88E-06	4.14E-06	4.41E-06	4.93E-06	5.20E-06
th229	2.43E-01	2.89E-01	3.37E-01	3.86E-01	4.36E-01	4.87E-01	5.38E-01	5.90E-01	6.41E-01	7.45E-01	7.97E-01
th230	1.90E+00	2.10E+00	2.30E+00	2.49E+00	2.68E+00	2.86E+00	3.04E+00	3.21E+00	3.38E+00	3.71E+00	3.86E+00
th231	3.68E-01	3.68E-01	3.68E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01

1

Part 8 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 125

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
th232	2.25E-06	2.51E-06	2.78E-06	3.04E-06	3.31E-06	3.57E-06	3.83E-06	4.10E-06	4.36E-06	4.89E-06	5.16E-06
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	1.11E-01	1.22E-01	1.32E-01	1.42E-01	1.51E-01	1.60E-01	1.69E-01	1.77E-01	1.85E-01	2.00E-01	2.07E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.99E+00	6.99E+00	6.99E+00	6.98E+00	6.98E+00	6.97E+00	6.97E+00	6.96E+00	6.96E+00	6.95E+00	6.94E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	4.92E-08	4.86E-08	4.80E-08	4.75E-08	4.69E-08	4.63E-08	4.58E-08	4.52E-08	4.47E-08	4.36E-08	4.31E-08
u233	5.00E-01	5.57E-01	6.12E-01	6.68E-01	7.22E-01	7.77E-01	8.30E-01	8.83E-01	9.36E-01	1.04E+00	1.09E+00
u234	1.29E+01	1.29E+01	1.28E+01	1.28E+01	1.27E+01	1.26E+01	1.26E+01	1.25E+01	1.25E+01	1.24E+01	1.23E+01
u235	3.68E-01	3.68E-01	3.68E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01
u236	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00
u237	1.35E-21	1.15E-21	9.74E-22	8.27E-22	7.03E-22	5.97E-22	5.07E-22	4.31E-22	3.66E-22	2.64E-22	2.24E-22
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	5.53E-07	5.46E-07	5.40E-07	5.33E-07	5.27E-07	5.21E-07	5.14E-07	5.08E-07	5.02E-07	4.90E-07	4.84E-07
np237	6.99E+00	6.99E+00	6.99E+00	6.98E+00	6.98E+00	6.97E+00	6.97E+00	6.96E+00	6.96E+00	6.95E+00	6.94E+00
np238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np239	2.65E-09	2.20E-09	1.82E-09	1.51E-09	1.25E-09	1.04E-09	8.58E-10	7.11E-10	5.89E-10	4.04E-10	3.35E-10
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	4.92E-08	4.86E-08	4.80E-08	4.75E-08	4.69E-08	4.63E-08	4.58E-08	4.52E-08	4.47E-08	4.36E-08	4.31E-08
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu239	4.51E+01	4.26E+01	4.02E+01	3.80E+01	3.59E+01	3.39E+01	3.20E+01	3.02E+01	2.85E+01	2.54E+01	2.40E+01
pu240	2.30E-01	1.86E-01	1.51E-01	1.22E-01	9.88E-02	8.00E-02	6.47E-02	5.24E-02	4.24E-02	2.78E-02	2.25E-02
pu241	5.65E-17	4.80E-17	4.07E-17	3.46E-17	2.94E-17	2.50E-17	2.12E-17	1.80E-17	1.53E-17	1.10E-17	9.39E-18
pu242	8.95E-08	8.92E-08	8.88E-08	8.85E-08	8.82E-08	8.78E-08	8.75E-08	8.72E-08	8.69E-08	8.62E-08	8.59E-08
pu243	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27
pu244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	6.70E-13	2.72E-14	1.14E-15	8.08E-17	3.25E-17	2.61E-17	2.21E-17	1.88E-17	1.60E-17	1.16E-17	9.80E-18
am242m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am243	2.65E-09	2.20E-09	1.82E-09	1.51E-09	1.25E-09	1.04E-09	8.58E-10	7.11E-10	5.89E-10	4.04E-10	3.35E-10
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 126

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
cm242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cm243	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cm244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cm245	5.64E-17	4.79E-17	4.07E-17	3.46E-17	2.94E-17	2.49E-17	2.12E-17	1.80E-17	1.53E-17	1.10E-17	9.37E-18	
cm246	3.06E-20	2.28E-20	1.70E-20	1.27E-20	9.48E-21	7.07E-21	5.27E-21	3.93E-21	2.93E-21	1.63E-21	1.22E-21	
cm247	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	
cm248	8.65E-30	8.60E-30	8.58E-30	8.53E-30	8.51E-30	8.47E-30	8.44E-30	8.40E-30	8.37E-30	8.31E-30	8.26E-30	
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	1.05E+02	1.05E+02	1.05E+02	1.05E+02	1.05E+02	1.05E+02	1.06E+02	1.06E+02	1.07E+02	1.08E+02	1.09E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 127

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05
li 7	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07
be 9	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07
be 10	5.86E-06	5.85E-06	5.85E-06	5.84E-06	5.84E-06	5.83E-06	5.83E-06	5.82E-06	5.82E-06	5.81E-06	5.80E-06
c 14	1.62E-07	1.27E-07	9.99E-08	7.85E-08	6.16E-08	4.84E-08	3.80E-08	2.98E-08	2.34E-08	1.44E-08	1.13E-08
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09
zn 68	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09
zn 70	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 128

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	2.20E-01	2.19E-01	2.18E-01	2.17E-01	2.16E-01	2.15E-01	2.15E-01	2.14E-01	2.13E-01	2.11E-01	2.10E-01
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	7.76E-03	8.68E-03	9.60E-03	1.05E-02	1.14E-02	1.23E-02	1.32E-02	1.41E-02	1.50E-02	1.68E-02	1.77E-02
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07

cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00
kr 81	1.91E-08	1.90E-08	1.89E-08	1.88E-08	1.86E-08	1.85E-08	1.84E-08	1.83E-08	1.82E-08	1.79E-08	1.78E-08
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 129

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01
rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01
sr 87	2.81E-05	2.85E-05	2.89E-05	2.93E-05	2.98E-05	3.02E-05	3.06E-05	3.10E-05	3.14E-05	3.22E-05	3.27E-05
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 130

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01
nb 91	8.65E-19	1.13E-19	1.47E-20	1.91E-21	2.49E-22	3.24E-23	4.21E-24	5.48E-25	7.14E-26	1.21E-27	1.58E-28
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01
nb 92	2.24E-09	2.24E-09	2.24E-09	2.24E-09	2.24E-09	2.24E-09	2.24E-09	2.24E-09	2.24E-09	2.24E-09	2.24E-09
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	2.53E+01	2.53E+01	2.53E+01	2.52E+01	2.52E+01	2.52E+01	2.52E+01	2.52E+01	2.51E+01	2.51E+01	2.51E+01
nb 93	1.90E-01	2.13E-01	2.36E-01	2.58E-01	2.81E-01	3.04E-01	3.27E-01	3.50E-01	3.73E-01	4.18E-01	4.41E-01
nb 93m	2.67E-04	2.67E-04	2.66E-04	2.66E-04	2.66E-04	2.66E-04	2.65E-04	2.65E-04	2.65E-04	2.64E-04	2.64E-04
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 131

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01
nb 94	5.92E-06	5.53E-06	5.16E-06	4.82E-06	4.50E-06	4.21E-06	3.93E-06	3.67E-06	3.43E-06	2.99E-06	2.79E-06
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01
tc 98	4.86E-06	4.86E-06	4.85E-06	4.85E-06	4.85E-06	4.85E-06	4.85E-06	4.85E-06	4.84E-06	4.84E-06	4.84E-06
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	3.75E+01	3.72E+01	3.70E+01	3.68E+01	3.65E+01	3.63E+01	3.60E+01	3.58E+01	3.56E+01	3.51E+01	3.49E+01
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	2.09E+00	2.33E+00	2.58E+00	2.82E+00	3.06E+00	3.30E+00	3.54E+00	3.77E+00	4.01E+00	4.47E+00	4.70E+00

rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 132

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 133

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	2.45E-03	2.75E-03	3.04E-03	3.34E-03	3.64E-03	3.93E-03	4.23E-03	4.53E-03	4.82E-03	5.42E-03	5.71E-03
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01
ag108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd108	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01
ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 134

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
cd110	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd111	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd112	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd113	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	
cd113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in113	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd114	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn114	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in115	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 135

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
sn115	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	

tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 136

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01
te123	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	3.26E-01	3.22E-01	3.17E-01	3.13E-01	3.09E-01	3.04E-01	3.00E-01	2.96E-01	2.92E-01	2.84E-01	2.80E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 137

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sb126	1.55E-08	1.53E-08	1.51E-08	1.49E-08	1.47E-08	1.45E-08	1.43E-08	1.41E-08	1.39E-08	1.35E-08	1.33E-08
sb126m	1.18E-10	1.16E-10	1.15E-10	1.13E-10	1.12E-10	1.10E-10	1.08E-10	1.07E-10	1.06E-10	1.03E-10	1.01E-10
te126	4.18E-02	4.63E-02	5.07E-02	5.51E-02	5.94E-02	6.37E-02	6.78E-02	7.20E-02	7.61E-02	8.40E-02	8.80E-02
xe126	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.45E+00	6.45E+00	6.45E+00	6.45E+00	6.45E+00	6.45E+00
xe129	4.71E-03	5.28E-03	5.85E-03	6.42E-03	6.99E-03	7.56E-03	8.13E-03	8.70E-03	9.27E-03	1.04E-02	1.10E-02
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 138

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08

in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01
ba133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	5.77E+01	5.76E+01	5.76E+01	5.76E+01	5.75E+01	5.75E+01	5.74E+01	5.74E+01	5.74E+01	5.73E+01	5.73E+01
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	2.87E-01	3.22E-01	3.57E-01	3.92E-01	4.26E-01	4.61E-01	4.96E-01	5.30E-01	5.65E-01	6.34E-01	6.68E-01
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 139
0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01
ba137m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01
la138	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01

i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01
pm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01
pm146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 141

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sm148	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00
eu150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu151	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00
eu152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 142

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sm154	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01
eu154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 143

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
dy161	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	2.75E-12	8.66E-13	2.73E-13	8.60E-14	2.71E-14	8.53E-15	2.69E-15	8.46E-16	2.66E-16	2.64E-17	8.32E-18
er166	2.85E-06	2.85E-06	2.85E-06	2.85E-06	2.85E-06	2.85E-06	2.85E-06	2.85E-06	2.85E-06	2.85E-06	2.85E-06
er167	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09
total	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 144

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07
c 14	7.23E-07	5.68E-07	4.46E-07	3.50E-07	2.75E-07	2.16E-07	1.69E-07	1.33E-07	1.04E-07	6.43E-08	5.05E-08
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 145

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	3.02E-03	3.01E-03	2.99E-03	2.98E-03	2.97E-03	2.96E-03	2.94E-03	2.93E-03	2.92E-03	2.89E-03	2.88E-03
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	3.97E-10	3.94E-10	3.92E-10	3.89E-10	3.87E-10	3.84E-10	3.82E-10	3.79E-10	3.77E-10	3.72E-10	3.69E-10
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 146

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 147
0
nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	5.00E-18	6.51E-19	8.47E-20	1.10E-20	1.44E-21	1.87E-22	2.43E-23	3.17E-24	4.13E-25	6.99E-27	9.11E-28
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	6.36E-02	6.36E-02	6.35E-02	6.35E-02	6.34E-02	6.33E-02	6.33E-02	6.32E-02	6.32E-02	6.31E-02	6.30E-02
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	6.36E-02	6.36E-02	6.35E-02	6.35E-02	6.34E-02	6.34E-02	6.33E-02	6.32E-02	6.32E-02	6.31E-02	6.30E-02
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 148

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	1.11E-06	1.04E-06	9.68E-07	9.04E-07	8.44E-07	7.88E-07	7.36E-07	6.88E-07	6.42E-07	5.60E-07	5.23E-07
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	4.22E-09	4.22E-09	4.22E-09	4.22E-09	4.22E-09	4.22E-09	4.21E-09	4.21E-09	4.21E-09	4.21E-09	4.21E-09
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	6.42E-01	6.37E-01	6.33E-01	6.29E-01	6.25E-01	6.21E-01	6.17E-01	6.13E-01	6.09E-01	6.01E-01	5.97E-01
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 149

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 150

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	7.16E-04	7.16E-04	7.16E-04	7.16E-04	7.15E-04	7.15E-04	7.15E-04	7.15E-04	7.15E-04	7.14E-04	7.14E-04
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 151

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14
cd113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 152

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 153

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	9.26E-03	9.14E-03	9.01E-03	8.89E-03	8.76E-03	8.64E-03	8.52E-03	8.41E-03	8.29E-03	8.06E-03	7.95E-03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 154

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sb126	1.30E-03	1.28E-03	1.26E-03	1.24E-03	1.23E-03	1.21E-03	1.19E-03	1.18E-03	1.16E-03	1.13E-03	1.11E-03
sb126m	9.26E-03	9.14E-03	9.01E-03	8.89E-03	8.76E-03	8.64E-03	8.52E-03	8.41E-03	8.29E-03	8.06E-03	7.95E-03

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 155

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	6.64E-02	6.64E-02	6.63E-02	6.63E-02	6.63E-02	6.62E-02	6.62E-02	6.61E-02	6.61E-02	6.60E-02	6.60E-02
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 156
0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 157

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11
l145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 158

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sm148	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 159

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 160

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	4.94E-12	1.56E-12	4.90E-13	1.54E-13	4.86E-14	1.53E-14	4.82E-15	1.52E-15	4.78E-16	4.74E-17	1.49E-17
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.60E-01	8.55E-01	8.51E-01	8.46E-01	8.42E-01	8.37E-01	8.33E-01	8.28E-01	8.24E-01	8.15E-01	8.11E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 161

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
he 4	2.61E+01	2.73E+01	3.03E+01	3.33E+01	3.63E+01	3.94E+01	4.24E+01	4.55E+01	6.49E+01	1.38E+02	1.77E+02
tl206	2.23E-14	2.33E-14	2.56E-14	2.78E-14	2.98E-14	3.17E-14	3.35E-14	3.51E-14	4.41E-14	5.29E-14	5.28E-14
tl207	1.08E-09	1.12E-09	1.20E-09	1.27E-09	1.34E-09	1.40E-09	1.45E-09	1.50E-09	1.71E-09	1.91E-09	1.93E-09
tl208	6.31E-15	6.63E-15	7.43E-15	8.23E-15	9.03E-15	9.83E-15	1.06E-14	1.14E-14	1.62E-14	3.22E-14	4.01E-14
tl209	4.09E-11	4.36E-11	5.01E-11	5.66E-11	6.30E-11	6.93E-11	7.54E-11	8.14E-11	1.15E-10	2.07E-10	2.23E-10
pb206	2.91E+01	3.21E+01	4.02E+01	4.90E+01	5.85E+01	6.87E+01	7.94E+01	9.08E+01	1.70E+02	4.98E+02	6.72E+02
pb207	1.84E+00	2.01E+00	2.45E+00	2.93E+00	3.43E+00	3.95E+00	4.50E+00	5.07E+00	8.78E+00	2.29E+01	3.02E+01
pb208	3.49E-04	3.54E-04	3.65E-04	3.78E-04	3.93E-04	4.08E-04	4.25E-04	4.44E-04	5.82E-04	1.39E-03	1.99E-03
pb209	1.73E-07	1.84E-07	2.12E-07	2.39E-07	2.66E-07	2.93E-07	3.18E-07	3.44E-07	4.84E-07	8.75E-07	9.44E-07
pb210	4.82E-02	5.02E-02	5.52E-02	5.98E-02	6.42E-02	6.83E-02	7.22E-02	7.58E-02	9.51E-02	1.14E-01	1.14E-01
pb211	8.39E-09	8.66E-09	9.29E-09	9.86E-09	1.04E-08	1.08E-08	1.12E-08	1.16E-08	1.32E-08	1.48E-08	1.49E-08
pb212	3.74E-12	3.93E-12	4.40E-12	4.88E-12	5.35E-12	5.83E-12	6.30E-12	6.77E-12	9.62E-12	1.91E-11	2.38E-11
pb214	1.12E-07	1.17E-07	1.29E-07	1.39E-07	1.50E-07	1.59E-07	1.68E-07	1.76E-07	2.22E-07	2.66E-07	2.65E-07
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	5.21E+00	5.88E+00	7.73E+00	9.83E+00	1.22E+01	1.48E+01	1.77E+01	2.08E+01	4.40E+01	1.74E+02	2.58E+02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.96E-05	3.09E-05	3.40E-05	3.68E-05	3.95E-05	4.20E-05	4.44E-05	4.66E-05	5.86E-05	7.03E-05	7.01E-05
bi211	4.97E-10	5.13E-10	5.51E-10	5.85E-10	6.15E-10	6.42E-10	6.67E-10	6.89E-10	7.82E-10	8.75E-10	8.83E-10
bi212	3.55E-13	3.73E-13	4.18E-13	4.63E-13	5.08E-13	5.53E-13	5.98E-13	6.43E-13	9.12E-13	1.81E-12	2.26E-12
bi213	4.11E-08	4.38E-08	5.04E-08	5.69E-08	6.34E-08	6.96E-08	7.58E-08	8.18E-08	1.15E-07	2.08E-07	2.25E-07
bi214	8.33E-08	8.69E-08	9.54E-08	1.03E-07	1.11E-07	1.18E-07	1.25E-07	1.31E-07	1.65E-07	1.97E-07	1.97E-07
po210	8.19E-04	8.54E-04	9.38E-04	1.02E-03	1.09E-03	1.16E-03	1.23E-03	1.29E-03	1.62E-03	1.94E-03	1.93E-03
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	5.50E-15	5.67E-15	6.09E-15	6.46E-15	6.80E-15	7.10E-15	7.37E-15	7.61E-15	8.64E-15	9.67E-15	9.76E-15
po212	1.86E-23	1.96E-23	2.20E-23	2.43E-23	2.67E-23	2.90E-23	3.14E-23	3.38E-23	4.79E-23	9.51E-23	1.19E-22
po213	6.18E-17	6.58E-17	7.58E-17	8.56E-17	9.53E-17	1.05E-16	1.14E-16	1.23E-16	1.73E-16	3.13E-16	3.38E-16
po214	1.15E-14	1.20E-14	1.31E-14	1.42E-14	1.53E-14	1.63E-14	1.72E-14	1.80E-14	2.26E-14	2.72E-14	2.71E-14

po215	7.03E-15	7.25E-15	7.78E-15	8.26E-15	8.69E-15	9.07E-15	9.42E-15	9.73E-15	1.10E-14	1.24E-14	1.25E-14
po216	1.44E-17	1.52E-17	1.70E-17	1.88E-17	2.06E-17	2.25E-17	2.43E-17	2.61E-17	3.71E-17	7.36E-17	9.18E-17
po218	1.32E-08	1.38E-08	1.51E-08	1.64E-08	1.76E-08	1.88E-08	1.98E-08	2.08E-08	2.61E-08	3.13E-08	3.12E-08
at217	4.95E-13	5.27E-13	6.07E-13	6.85E-13	7.62E-13	8.38E-13	9.12E-13	9.85E-13	1.39E-12	2.51E-12	2.70E-12
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	1.59E-11	1.64E-11	1.76E-11	1.87E-11	1.97E-11	2.06E-11	2.13E-11	2.21E-11	2.50E-11	2.80E-11	2.83E-11
rn220	5.63E-15	5.92E-15	6.63E-15	7.35E-15	8.06E-15	8.78E-15	9.49E-15	1.02E-14	1.45E-14	2.87E-14	3.59E-14
rn222	2.39E-05	2.49E-05	2.74E-05	2.97E-05	3.19E-05	3.39E-05	3.58E-05	3.76E-05	4.72E-05	5.67E-05	5.65E-05
fr221	4.59E-09	4.89E-09	5.62E-09	6.35E-09	7.07E-09	7.77E-09	8.46E-09	9.13E-09	1.28E-08	2.32E-08	2.51E-08
fr223	7.39E-11	7.63E-11	8.18E-11	8.69E-11	9.14E-11	9.54E-11	9.91E-11	1.02E-10	1.16E-10	1.30E-10	1.31E-10
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	4.04E-06	4.18E-06	4.48E-06	4.75E-06	5.00E-06	5.22E-06	5.42E-06	5.60E-06	6.36E-06	7.11E-06	7.18E-06
ra224	3.26E-11	3.43E-11	3.84E-11	4.26E-11	4.67E-11	5.08E-11	5.50E-11	5.91E-11	8.39E-11	1.66E-10	2.08E-10
ra225	2.03E-05	2.16E-05	2.49E-05	2.81E-05	3.13E-05	3.44E-05	3.75E-05	4.04E-05	5.69E-05	1.03E-04	1.11E-04
ra226	3.72E+00	3.88E+00	4.26E+00	4.62E+00	4.96E+00	5.28E+00	5.57E+00	5.85E+00	7.35E+00	8.82E+00	8.79E+00
ra228	1.89E-08	1.99E-08	2.23E-08	2.47E-08	2.71E-08	2.95E-08	3.20E-08	3.44E-08	4.89E-08	9.71E-08	1.21E-07
ac225	1.37E-05	1.46E-05	1.68E-05	1.90E-05	2.11E-05	2.32E-05	2.53E-05	2.73E-05	3.84E-05	6.95E-05	7.50E-05
ac227	2.86E-03	2.96E-03	3.17E-03	3.37E-03	3.54E-03	3.70E-03	3.84E-03	3.97E-03	4.50E-03	5.04E-03	5.08E-03
ac228	2.31E-12	2.42E-12	2.72E-12	3.01E-12	3.31E-12	3.61E-12	3.90E-12	4.20E-12	5.97E-12	1.19E-11	1.48E-11
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	6.65E-06	6.86E-06	7.36E-06	7.81E-06	8.22E-06	8.58E-06	8.91E-06	9.21E-06	1.05E-05	1.17E-05	1.18E-05
th228	6.34E-09	6.66E-09	7.47E-09	8.27E-09	9.07E-09	9.88E-09	1.07E-08	1.15E-08	1.63E-08	3.23E-08	4.04E-08
th229	4.02E+00	4.28E+00	4.93E+00	5.57E+00	6.19E+00	6.81E+00	7.41E+00	8.00E+00	1.13E+01	2.04E+01	2.20E+01
th230	1.87E+02	1.95E+02	2.13E+02	2.29E+02	2.45E+02	2.60E+02	2.74E+02	2.87E+02	3.48E+02	4.20E+02	4.16E+02
th231	6.94E-07	6.94E-07	6.94E-07	6.94E-07	6.94E-07	6.95E-07	6.95E-07	6.95E-07	6.95E-07	6.95E-07	6.95E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 162

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
th232	4.70E+01	4.94E+01	5.54E+01	6.14E+01	6.75E+01	7.35E+01	7.95E+01	8.55E+01	1.22E+02	2.42E+02	3.01E+02
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	4.38E+00	4.52E+00	4.85E+00	5.15E+00	5.42E+00	5.66E+00	5.88E+00	6.07E+00	6.89E+00	7.71E+00	7.79E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.34E-04	3.34E-04	3.34E-04	3.33E-04	3.33E-04	3.32E-04	3.32E-04	3.31E-04	3.28E-04	3.17E-04	3.12E-04
pa234m	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09	4.24E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	1.95E-09	1.93E-09	1.87E-09	1.82E-09	1.76E-09	1.71E-09	1.66E-09	1.61E-09	1.34E-09	7.35E-10	5.44E-10
u233	1.13E+02	1.18E+02	1.31E+02	1.44E+02	1.56E+02	1.68E+02	1.80E+02	1.92E+02	2.55E+02	4.10E+02	4.62E+02
u234	1.98E+03	1.97E+03	1.95E+03	1.93E+03	1.91E+03	1.89E+03	1.87E+03	1.85E+03	1.74E+03	1.43E+03	1.30E+03
u235	1.71E+05	1.71E+05	1.71E+05	1.71E+05	1.71E+05	1.71E+05	1.71E+05	1.71E+05	1.71E+05	1.71E+05	1.71E+05
u236	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.13E+04	4.12E+04	4.11E+04
u237	2.75E-27	2.33E-27	1.55E-27	1.03E-27	6.87E-28	4.57E-28	3.04E-28	2.02E-28	1.75E-29	5.02E-33	8.49E-35
u238	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	2.46E-38	2.46E-38
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	3.67E-05	3.63E-05	3.52E-05	3.42E-05	3.32E-05	3.22E-05	3.12E-05	3.03E-05	2.53E-05	1.38E-05	1.02E-05
np237	9.85E+03	9.84E+03	9.83E+03	9.81E+03	9.79E+03	9.78E+03	9.76E+03	9.75E+03	9.65E+03	9.34E+03	9.19E+03
np238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np239	1.44E-15	1.20E-15	7.47E-16	4.67E-16	2.92E-16	1.82E-16	1.14E-16	7.12E-17	4.24E-18	3.49E-22	3.16E-24
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	2.10E-40	2.10E-40
np240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	8.25E-11	8.15E-11	7.91E-11	7.67E-11	7.44E-11	7.22E-11	7.01E-11	6.80E-11	5.68E-11	3.11E-11	2.30E-11
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu239	3.86E+02	3.65E+02	3.16E+02	2.74E+02	2.37E+02	2.05E+02	1.78E+02	1.54E+02	6.50E+01	3.66E+00	8.70E-01
pu240	9.91E-02	8.03E-02	4.73E-02	2.79E-02	1.65E-02	9.70E-03	5.72E-03	3.37E-03	1.42E-04	3.67E-09	1.87E-11
pu241	9.08E-20	7.71E-20	5.13E-20	3.41E-20	2.27E-20	1.51E-20	1.00E-20	6.67E-21	5.78E-22	1.66E-25	2.81E-27
pu242	2.17E-05	2.16E-05	2.14E-05	2.12E-05	2.10E-05	2.08E-05	2.07E-05	2.05E-05	1.94E-05	1.61E-05	1.47E-05
pu243	5.08E-34	5.08E-34	5.08E-34	5.08E-34	5.07E-34	5.07E-34	5.07E-34	5.07E-34	5.07E-34	5.04E-34	5.03E-34
pu244	1.42E-28	1.49E-28	1.67E-28	1.85E-28	2.02E-28	2.19E-28	2.36E-28	2.53E-28	3.51E-28	6.36E-28	7.58E-28
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	2.86E-18	2.43E-18	1.55E-18	1.03E-18	6.84E-19	4.55E-19	3.03E-19	2.01E-19	1.74E-20	5.26E-24	8.46E-26
am242m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am243	1.68E-09	1.39E-09	8.68E-10	5.43E-10	3.39E-10	2.12E-10	1.32E-10	8.27E-11	4.92E-12	4.05E-16	3.68E-18
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 163

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cm242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	5.46E-17	4.63E-17	3.08E-17	2.05E-17	1.36E-17	9.07E-18	6.03E-18	4.01E-18	3.47E-19	9.96E-23	1.69E-24
cm246	3.96E-21	2.96E-21	1.42E-21	6.83E-22	3.28E-22	1.58E-22	7.59E-23	3.65E-23	4.50E-25	1.95E-31	1.28E-34
cm247	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.46E-23	1.45E-23	1.45E-23
cm248	1.95E-27	1.94E-27	1.92E-27	1.90E-27	1.88E-27	1.86E-27	1.84E-27	1.83E-27	1.72E-27	1.40E-27	1.26E-27
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 164

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	4.86E-06	5.06E-06	5.56E-06	6.03E-06	6.47E-06	6.89E-06	7.27E-06	7.64E-06	9.59E-06	1.15E-05	1.15E-05

tl207	2.07E-01	2.13E-01	2.29E-01	2.43E-01	2.55E-01	2.67E-01	2.77E-01	2.86E-01	3.25E-01	3.63E-01	3.67E-01
tl208	1.87E-06	1.96E-06	2.20E-06	2.44E-06	2.67E-06	2.91E-06	3.15E-06	3.38E-06	4.81E-06	9.53E-06	1.19E-05
tl209	1.67E-02	1.78E-02	2.05E-02	2.32E-02	2.58E-02	2.83E-02	3.08E-02	3.33E-02	4.69E-02	8.47E-02	9.14E-02
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	7.97E-01	8.49E-01	9.77E-01	1.10E+00	1.23E+00	1.35E+00	1.47E+00	1.59E+00	2.23E+00	4.04E+00	4.35E+00
pb210	3.68E+00	3.84E+00	4.22E+00	4.57E+00	4.90E+00	5.22E+00	5.51E+00	5.79E+00	7.27E+00	8.72E+00	8.69E+00
pb211	2.07E-01	2.14E-01	2.29E-01	2.44E-01	2.56E-01	2.68E-01	2.78E-01	2.87E-01	3.26E-01	3.64E-01	3.68E-01
pb212	5.20E-06	5.46E-06	6.12E-06	6.78E-06	7.44E-06	8.10E-06	8.76E-06	9.42E-06	1.34E-05	2.65E-05	3.31E-05
pb214	3.68E+00	3.84E+00	4.22E+00	4.57E+00	4.91E+00	5.22E+00	5.51E+00	5.79E+00	7.27E+00	8.72E+00	8.70E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	3.68E+00	3.84E+00	4.22E+00	4.57E+00	4.90E+00	5.22E+00	5.51E+00	5.79E+00	7.27E+00	8.72E+00	8.69E+00
bi211	2.07E-01	2.14E-01	2.29E-01	2.44E-01	2.56E-01	2.68E-01	2.78E-01	2.87E-01	3.26E-01	3.64E-01	3.68E-01
bi212	5.20E-06	5.46E-06	6.12E-06	6.78E-06	7.44E-06	8.10E-06	8.76E-06	9.42E-06	1.34E-05	2.65E-05	3.31E-05
bi213	7.97E-01	8.49E-01	9.77E-01	1.10E+00	1.23E+00	1.35E+00	1.47E+00	1.59E+00	2.23E+00	4.04E+00	4.35E+00
bi214	3.68E+00	3.84E+00	4.22E+00	4.57E+00	4.91E+00	5.22E+00	5.51E+00	5.79E+00	7.27E+00	8.72E+00	8.70E+00
po210	3.68E+00	3.84E+00	4.22E+00	4.57E+00	4.90E+00	5.22E+00	5.51E+00	5.79E+00	7.27E+00	8.72E+00	8.69E+00
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	5.70E-04	5.88E-04	6.31E-04	6.70E-04	7.05E-04	7.36E-04	7.64E-04	7.89E-04	8.96E-04	1.00E-03	1.01E-03
po212	3.33E-06	3.50E-06	3.92E-06	4.34E-06	4.77E-06	5.19E-06	5.61E-06	6.03E-06	8.56E-06	1.70E-05	2.12E-05
po213	7.80E-01	8.31E-01	9.56E-01	1.08E+00	1.20E+00	1.32E+00	1.44E+00	1.55E+00	2.18E+00	3.95E+00	4.26E+00
po214	3.68E+00	3.84E+00	4.22E+00	4.57E+00	4.90E+00	5.22E+00	5.51E+00	5.79E+00	7.27E+00	8.72E+00	8.69E+00
po215	2.07E-01	2.14E-01	2.29E-01	2.44E-01	2.56E-01	2.68E-01	2.78E-01	2.87E-01	3.26E-01	3.64E-01	3.68E-01
po216	5.20E-06	5.46E-06	6.12E-06	6.78E-06	7.44E-06	8.10E-06	8.76E-06	9.42E-06	1.34E-05	2.65E-05	3.31E-05
po218	3.68E+00	3.84E+00	4.22E+00	4.57E+00	4.91E+00	5.22E+00	5.51E+00	5.79E+00	7.27E+00	8.72E+00	8.70E+00
at217	7.97E-01	8.49E-01	9.77E-01	1.10E+00	1.23E+00	1.35E+00	1.47E+00	1.59E+00	2.23E+00	4.04E+00	4.35E+00
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	2.07E-01	2.14E-01	2.29E-01	2.44E-01	2.56E-01	2.68E-01	2.78E-01	2.87E-01	3.26E-01	3.64E-01	3.68E-01
rn220	5.20E-06	5.46E-06	6.12E-06	6.78E-06	7.44E-06	8.10E-06	8.76E-06	9.42E-06	1.34E-05	2.65E-05	3.31E-05
rn222	3.68E+00	3.84E+00	4.22E+00	4.57E+00	4.91E+00	5.22E+00	5.51E+00	5.79E+00	7.27E+00	8.72E+00	8.70E+00
fr221	7.97E-01	8.49E-01	9.77E-01	1.10E+00	1.23E+00	1.35E+00	1.47E+00	1.59E+00	2.23E+00	4.04E+00	4.35E+00
fr223	2.86E-03	2.95E-03	3.17E-03	3.36E-03	3.54E-03	3.69E-03	3.83E-03	3.96E-03	4.50E-03	5.03E-03	5.08E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	2.07E-01	2.14E-01	2.29E-01	2.44E-01	2.56E-01	2.68E-01	2.78E-01	2.87E-01	3.26E-01	3.64E-01	3.68E-01
ra224	5.20E-06	5.46E-06	6.12E-06	6.78E-06	7.44E-06	8.10E-06	8.76E-06	9.42E-06	1.34E-05	2.65E-05	3.31E-05
ra225	7.97E-01	8.49E-01	9.77E-01	1.10E+00	1.23E+00	1.35E+00	1.47E+00	1.59E+00	2.23E+00	4.04E+00	4.35E+00
ra226	3.68E+00	3.84E+00	4.22E+00	4.57E+00	4.91E+00	5.22E+00	5.51E+00	5.79E+00	7.27E+00	8.72E+00	8.70E+00
ra228	5.16E-06	5.42E-06	6.08E-06	6.74E-06	7.40E-06	8.06E-06	8.72E-06	9.38E-06	1.33E-05	2.65E-05	3.31E-05
ac225	7.97E-01	8.49E-01	9.77E-01	1.10E+00	1.23E+00	1.35E+00	1.47E+00	1.59E+00	2.23E+00	4.04E+00	4.35E+00
ac227	2.07E-01	2.14E-01	2.29E-01	2.44E-01	2.56E-01	2.68E-01	2.78E-01	2.87E-01	3.26E-01	3.64E-01	3.68E-01
ac228	5.16E-06	5.42E-06	6.08E-06	6.74E-06	7.40E-06	8.06E-06	8.72E-06	9.38E-06	1.33E-05	2.65E-05	3.31E-05
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	2.04E-01	2.11E-01	2.26E-01	2.40E-01	2.53E-01	2.64E-01	2.74E-01	2.83E-01	3.21E-01	3.59E-01	3.63E-01
th228	5.20E-06	5.46E-06	6.12E-06	6.78E-06	7.44E-06	8.10E-06	8.76E-06	9.42E-06	1.34E-05	2.65E-05	3.31E-05
th229	7.97E-01	8.49E-01	9.77E-01	1.10E+00	1.23E+00	1.35E+00	1.47E+00	1.59E+00	2.23E+00	4.04E+00	4.35E+00
th230	3.86E+00	4.02E+00	4.39E+00	4.73E+00	5.06E+00	5.36E+00	5.64E+00	5.91E+00	7.17E+00	8.66E+00	8.58E+00
th231	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.70E-01	3.70E-01	3.70E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 165

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
th232	5.16E-06	5.42E-06	6.08E-06	6.74E-06	7.40E-06	8.06E-06	8.72E-06	9.38E-06	1.33E-05	2.65E-05	3.31E-05
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	2.07E-01	2.14E-01	2.29E-01	2.43E-01	2.56E-01	2.67E-01	2.78E-01	2.87E-01	3.26E-01	3.64E-01	3.68E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.94E+00	6.94E+00	6.93E+00	6.92E+00	6.91E+00	6.90E+00	6.88E+00	6.87E+00	6.81E+00	6.59E+00	6.48E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	4.31E-08	4.26E-08	4.13E-08	4.01E-08	3.89E-08	3.77E-08	3.66E-08	3.55E-08	2.97E-08	1.62E-08	1.20E-08
u233	1.09E+00	1.14E+00	1.27E+00	1.39E+00	1.51E+00	1.62E+00	1.74E+00	1.85E+00	2.46E+00	3.95E+00	4.46E+00
u234	1.23E+01	1.23E+01	1.21E+01	1.20E+01	1.19E+01	1.18E+01	1.16E+01	1.15E+01	1.08E+01	8.87E+00	8.09E+00
u235	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.69E-01	3.70E-01	3.70E-01	3.70E-01
u236	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.67E+00	2.67E+00	2.66E+00
u237	2.24E-22	1.91E-22	1.27E-22	8.43E-23	5.61E-23	3.73E-23	2.48E-23	1.65E-23	1.43E-24	4.10E-28	6.94E-30
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	2.28E-32	2.28E-32
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	4.84E-07	4.78E-07	4.64E-07	4.50E-07	4.37E-07	4.24E-07	4.12E-07	3.99E-07	3.33E-07	1.82E-07	1.35E-07
np237	6.94E+00	6.94E+00	6.93E+00	6.92E+00	6.91E+00	6.90E+00	6.88E+00	6.87E+00	6.81E+00	6.59E+00	6.48E+00
np238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np239	3.35E-10	2.78E-10	1.73E-10	1.08E-10	6.77E-11	4.23E-11	2.64E-11	1.65E-11	9.83E-13	8.09E-17	7.34E-19
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	2.28E-32	2.28E-32
np240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	4.31E-08	4.26E-08	4.13E-08	4.01E-08	3.89E-08	3.77E-08	3.66E-08	3.55E-08	2.97E-08	1.62E-08	1.20E-08
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu239	2.40E+01	2.26E+01	1.96E+01	1.70E+01	1.47E+01	1.27E+01	1.10E+01	9.55E+00	4.03E+00	2.27E-01	5.40E-02
pu240	2.25E-02	1.82E-02	1.07E-02	6.34E-03	3.74E-03	2.20E-03	1.30E-03	7.66E-04	3.22E-05	8.33E-10	4.24E-12
pu241	9.39E-18	7.97E-18	5.30E-18	3.53E-18	2.35E-18	1.56E-18	1.04E-18	6.90E-19	5.97E-20	1.71E-23	2.90E-25
pu242	8.59E-08	8.56E-08	8.48E-08	8.40E-08	8.32E-08	8.25E-08	8.17E-08	8.10E-08	7.66E-08	6.36E-08	5.80E-08
pu243	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.31E-27	1.31E-27
pu244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	2.28E-32	2.28E-32
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	9.80E-18	8.32E-18	5.31E-18	3.53E-18	2.35E-18	1.56E-18	1.04E-18	6.91E-19	5.97E-20	1.81E-23	2.90E-25
am242m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am243	3.35E-10	2.78E-10	1.73E-10	1.08E-10	6.77E-11	4.23E-11	2.64E-11	1.65E-11	9.83E-13	8.09E-17	7.34E-19
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 166

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cm242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	9.37E-18	7.96E-18	5.29E-18	3.52E-18	2.34E-18	1.56E-18	1.04E-18	6.89E-19	5.96E-20	1.71E-23	2.90E-25
cm246	1.22E-21	9.09E-22	4.37E-22	2.10E-22	1.01E-22	4.85E-23	2.33E-23	1.12E-23	1.38E-25	6.85E-32	.00E+00
cm247	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.32E-27	1.31E-27	1.31E-27
cm248	8.26E-30	8.24E-30	8.15E-30	8.05E-30	7.99E-30	7.89E-30	7.83E-30	7.74E-30	7.28E-30	5.93E-30	5.36E-30
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	1.09E+02	1.09E+02	1.11E+02	1.13E+02	1.15E+02	1.18E+02	1.20E+02	1.22E+02	1.36E+02	1.61E+02	1.63E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 167

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05
li 7	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07	4.59E-07
be 9	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07
be 10	5.80E-06	5.80E-06	5.78E-06	5.77E-06	5.76E-06	5.75E-06	5.73E-06	5.72E-06	5.65E-06	5.41E-06	5.29E-06
c 14	1.13E-08	8.89E-09	4.85E-09	2.65E-09	1.45E-09	7.90E-10	4.32E-10	2.36E-10	6.25E-12	3.48E-17	8.20E-20
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09
zn 68	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10	1.16E-10
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09	3.46E-09
zn 70	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08	8.16E-08
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11	6.07E-11
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 168

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	2.10E-01	2.09E-01	2.07E-01	2.05E-01	2.03E-01	2.01E-01	1.98E-01	1.96E-01	1.84E-01	1.49E-01	1.35E-01
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	1.77E-02	1.86E-02	2.08E-02	2.29E-02	2.51E-02	2.72E-02	2.93E-02	3.14E-02	4.34E-02	7.83E-02	9.32E-02
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07	4.33E-07

cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00
kr 81	1.78E-08	1.77E-08	1.74E-08	1.71E-08	1.69E-08	1.66E-08	1.63E-08	1.61E-08	1.46E-08	1.05E-08	8.94E-09
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 169

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00	6.76E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01
rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01
sr 87	3.27E-05	3.31E-05	3.41E-05	3.51E-05	3.62E-05	3.72E-05	3.82E-05	3.93E-05	4.55E-05	6.61E-05	7.65E-05
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 170

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01	3.41E+01
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01
nb 91	1.58E-28	2.05E-29	1.25E-31	7.67E-34	4.69E-36	2.87E-38	1.76E-40	1.02E-42	.00E+00	.00E+00	.00E+00
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01
nb 92	2.24E-09	2.24E-09	2.24E-09	2.24E-09	2.24E-09	2.24E-09	2.24E-09	2.24E-09	2.24E-09	2.24E-09	2.23E-09
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	2.51E+01	2.50E+01	2.50E+01	2.49E+01	2.49E+01	2.48E+01	2.48E+01	2.47E+01	2.44E+01	2.33E+01	2.28E+01
nb 93	4.41E-01	4.64E-01	5.20E-01	5.77E-01	6.33E-01	6.89E-01	7.46E-01	8.02E-01	1.14E+00	2.21E+00	2.74E+00
nb 93m	2.64E-04	2.64E-04	2.63E-04	2.63E-04	2.62E-04	2.62E-04	2.61E-04	2.60E-04	2.57E-04	2.46E-04	2.40E-04
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 171

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01
nb 94	2.79E-06	2.61E-06	2.20E-06	1.85E-06	1.56E-06	1.32E-06	1.11E-06	9.36E-07	3.36E-07	1.10E-08	2.00E-09
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01
tc 98	4.84E-06	4.84E-06	4.83E-06	4.83E-06	4.83E-06	4.82E-06	4.82E-06	4.81E-06	4.79E-06	4.71E-06	4.67E-06
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	3.49E+01	3.46E+01	3.41E+01	3.35E+01	3.30E+01	3.24E+01	3.19E+01	3.14E+01	2.85E+01	2.05E+01	1.74E+01
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	4.70E+00	4.93E+00	5.49E+00	6.05E+00	6.59E+00	7.13E+00	7.66E+00	8.18E+00	1.11E+01	1.91E+01	2.22E+01

rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 172

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 173

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.38E+00	1.38E+00	1.38E+00	1.37E+00	1.36E+00
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	5.71E-03	6.01E-03	6.75E-03	7.49E-03	8.23E-03	8.97E-03	9.71E-03	1.04E-02	1.49E-02	2.95E-02	3.68E-02
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01
ag108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd108	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08	2.81E-08
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01
ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 174

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cd110	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02
cd113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03	2.16E-03
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 175

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sn115	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03

tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 176

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01
te123	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09	1.72E-09
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01	2.52E-01
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	2.80E-01	2.76E-01	2.67E-01	2.58E-01	2.49E-01	2.41E-01	2.32E-01	2.24E-01	1.82E-01	9.12E-02	6.45E-02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 177

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sb126	1.33E-08	1.31E-08	1.27E-08	1.22E-08	1.18E-08	1.14E-08	1.10E-08	1.07E-08	8.66E-09	4.33E-09	3.06E-09
sb126m	1.01E-10	9.98E-11	9.64E-11	9.31E-11	9.00E-11	8.69E-11	8.39E-11	8.11E-11	6.59E-11	3.29E-11	2.33E-11
te126	8.80E-02	9.18E-02	1.01E-01	1.10E-01	1.19E-01	1.28E-01	1.36E-01	1.44E-01	1.86E-01	2.77E-01	3.04E-01
xe126	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11	4.86E-11
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	6.45E+00	6.45E+00	6.45E+00	6.45E+00	6.45E+00	6.44E+00	6.44E+00	6.44E+00	6.43E+00	6.41E+00	6.39E+00
xe129	1.10E-02	1.15E-02	1.30E-02	1.44E-02	1.58E-02	1.72E-02	1.87E-02	2.01E-02	2.86E-02	5.70E-02	7.11E-02
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 178

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08	2.56E-08

in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01
ba133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	5.73E+01	5.72E+01	5.72E+01	5.71E+01	5.70E+01	5.69E+01	5.68E+01	5.67E+01	5.62E+01	5.45E+01	5.37E+01
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	6.68E-01	7.03E-01	7.89E-01	8.75E-01	9.61E-01	1.05E+00	1.13E+00	1.22E+00	1.73E+00	3.40E+00	4.21E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 179

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01	5.64E+01
ba137m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01
la138	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01

i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01
pm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01
pm146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01	2.18E+01
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 181

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sm148	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00
eu150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu151	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00	4.05E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00
eu152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02	7.42E-02
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 182

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sm154	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01
eu154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03	5.67E-03
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01	2.82E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 183

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
dy161	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	8.32E-18	2.62E-18	1.46E-19	8.13E-21	4.52E-22	2.52E-23	1.40E-24	7.81E-26	2.32E-33	.00E+00	.00E+00
er166	2.85E-06	2.85E-06	2.85E-06	2.85E-06	2.85E-06	2.85E-06	2.85E-06	2.85E-06	2.85E-06	2.85E-06	2.85E-06
er167	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09	1.79E-09
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11	1.96E-11
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09	8.52E-09
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09	7.04E-09
total	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 184

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	1.30E-07	1.30E-07	1.29E-07	1.29E-07	1.29E-07	1.28E-07	1.28E-07	1.28E-07	1.26E-07	1.21E-07	1.18E-07
c 14	5.05E-08	3.96E-08	2.16E-08	1.18E-08	6.45E-09	3.52E-09	1.92E-09	1.05E-09	2.79E-11	1.55E-16	3.66E-19
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 185

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	2.88E-03	2.87E-03	2.84E-03	2.81E-03	2.78E-03	2.75E-03	2.72E-03	2.70E-03	2.53E-03	2.05E-03	1.85E-03
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	3.69E-10	3.67E-10	3.61E-10	3.55E-10	3.49E-10	3.44E-10	3.38E-10	3.33E-10	3.02E-10	2.18E-10	1.85E-10
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 186

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 187

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	9.11E-28	1.19E-28	7.30E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.49E-13	2.48E-13	2.48E-13
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	6.30E-02	6.29E-02	6.28E-02	6.27E-02	6.25E-02	6.24E-02	6.22E-02	6.21E-02	6.13E-02	5.85E-02	5.72E-02
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	6.30E-02	6.29E-02	6.28E-02	6.27E-02	6.25E-02	6.24E-02	6.22E-02	6.21E-02	6.13E-02	5.85E-02	5.72E-02
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 188

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	5.23E-07	4.89E-07	4.12E-07	3.47E-07	2.93E-07	2.47E-07	2.08E-07	1.75E-07	6.30E-08	2.07E-09	3.76E-10
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	4.21E-09	4.21E-09	4.20E-09	4.20E-09	4.20E-09	4.19E-09	4.19E-09	4.18E-09	4.16E-09	4.10E-09	4.06E-09
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	5.97E-01	5.93E-01	5.83E-01	5.74E-01	5.64E-01	5.55E-01	5.46E-01	5.37E-01	4.87E-01	3.51E-01	2.98E-01
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 189

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 190

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	7.14E-04	7.14E-04	7.14E-04	7.13E-04	7.13E-04	7.13E-04	7.12E-04	7.12E-04	7.10E-04	7.02E-04	6.98E-04
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 191

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14	3.11E-14
cd113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 192

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 193
0
nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19	4.04E-19
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	7.95E-03	7.84E-03	7.58E-03	7.32E-03	7.07E-03	6.83E-03	6.60E-03	6.37E-03	5.17E-03	2.59E-03	1.83E-03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 194

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sb126	1.11E-03	1.10E-03	1.06E-03	1.02E-03	9.90E-04	9.56E-04	9.23E-04	8.92E-04	7.24E-04	3.62E-04	2.56E-04
sb126m	7.95E-03	7.84E-03	7.58E-03	7.32E-03	7.07E-03	6.83E-03	6.60E-03	6.37E-03	5.17E-03	2.59E-03	1.83E-03

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.13E-03	1.13E-03
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 195

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	6.60E-02	6.59E-02	6.58E-02	6.57E-02	6.56E-02	6.55E-02	6.54E-02	6.53E-02	6.48E-02	6.28E-02	6.19E-02
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 196

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12	7.53E-12
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 197

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11	6.11E-11
1145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.97E-11	5.96E-11	5.96E-11
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07	5.00E-07
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 198

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sm148	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15	8.07E-15
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12	1.39E-12
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12	1.62E-12
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 199

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 200

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	1.49E-17	4.71E-18	2.62E-19	1.46E-20	8.12E-22	4.52E-23	2.52E-24	1.40E-25	.00E+00	.00E+00	.00E+00
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.11E-01	8.06E-01	7.96E-01	7.85E-01	7.75E-01	7.65E-01	7.55E-01	7.45E-01	6.90E-01	5.40E-01	4.81E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 201

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
he 4	1.77E+02	2.16E+02	3.67E+02	6.82E+02
tl206	5.28E-14	5.08E-14	3.91E-14	2.31E-14
tl207	1.93E-09	1.93E-09	1.94E-09	1.93E-09
tl208	4.01E-14	4.81E-14	7.98E-14	1.58E-13
tl209	2.23E-10	2.44E-10	2.93E-10	2.79E-10
pb206	6.72E+02	8.42E+02	1.43E+03	2.41E+03
pb207	3.02E+01	3.76E+01	6.73E+01	1.41E+02
pb208	1.99E-03	2.72E-03	6.97E-03	2.68E-02
pb209	9.44E-07	1.03E-06	1.24E-06	1.18E-06
pb210	1.14E-01	1.10E-01	8.44E-02	4.99E-02
pb211	1.49E-08	1.49E-08	1.50E-08	1.50E-08
pb212	2.38E-11	2.85E-11	4.73E-11	9.39E-11
pb214	2.65E-07	2.55E-07	1.97E-07	1.16E-07
bi208	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.58E+02	3.50E+02	7.86E+02	1.94E+03
bi210m	.00E+00	.00E+00	.00E+00	.00E+00
bi210	7.01E-05	6.75E-05	5.19E-05	3.07E-05
bi211	8.83E-10	8.86E-10	8.87E-10	8.87E-10
bi212	2.26E-12	2.71E-12	4.49E-12	8.90E-12
bi213	2.25E-07	2.46E-07	2.95E-07	2.80E-07
bi214	1.97E-07	1.90E-07	1.46E-07	8.62E-08
po210	1.93E-03	1.86E-03	1.43E-03	8.47E-04
po211m	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.76E-15	9.79E-15	9.81E-15	9.80E-15
po212	1.19E-22	1.42E-22	2.36E-22	4.68E-22
po213	3.38E-16	3.70E-16	4.43E-16	4.21E-16
po214	2.71E-14	2.61E-14	2.01E-14	1.19E-14

po215	1.25E-14	1.25E-14	1.25E-14	1.25E-14
po216	9.18E-17	1.10E-16	1.83E-16	3.62E-16
po218	3.12E-08	3.01E-08	2.32E-08	1.37E-08
at217	2.70E-12	2.96E-12	3.54E-12	3.37E-12
rn218	.00E+00	.00E+00	.00E+00	.00E+00
rn219	2.83E-11	2.84E-11	2.84E-11	2.84E-11
rn220	3.59E-14	4.30E-14	7.13E-14	1.41E-13
rn222	5.65E-05	5.44E-05	4.19E-05	2.48E-05
fr221	2.51E-08	2.74E-08	3.29E-08	3.13E-08
fr223	1.31E-10	1.32E-10	1.32E-10	1.32E-10
ra222	.00E+00	.00E+00	.00E+00	.00E+00
ra223	7.18E-06	7.21E-06	7.22E-06	7.21E-06
ra224	2.08E-10	2.49E-10	4.13E-10	8.19E-10
ra225	1.11E-04	1.21E-04	1.46E-04	1.38E-04
ra226	8.79E+00	8.47E+00	6.52E+00	3.85E+00
ra228	1.21E-07	1.45E-07	2.41E-07	4.78E-07
ac225	7.50E-05	8.20E-05	9.83E-05	9.35E-05
ac227	5.08E-03	5.10E-03	5.11E-03	5.11E-03
ac228	1.48E-11	1.77E-11	2.94E-11	5.84E-11
th226	.00E+00	.00E+00	.00E+00	.00E+00
th227	1.18E-05	1.18E-05	1.19E-05	1.19E-05
th228	4.04E-08	4.84E-08	8.02E-08	1.59E-07
th229	2.20E+01	2.40E+01	2.88E+01	2.74E+01
th230	4.16E+02	4.00E+02	3.11E+02	1.85E+02
th231	6.95E-07	6.95E-07	6.95E-07	6.95E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 202

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
th232	3.01E+02	3.61E+02	6.00E+02	1.19E+03
th233	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	7.79E+00	7.81E+00	7.82E+00	7.82E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.12E-04	3.07E-04	2.88E-04	2.45E-04
pa234m	4.24E-09	4.24E-09	4.24E-09	4.24E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00
u232	5.44E-10	4.02E-10	1.20E-10	5.91E-12
u233	4.62E+02	5.02E+02	5.81E+02	5.60E+02
u234	1.30E+03	1.19E+03	8.79E+02	5.68E+02
u235	1.71E+05	1.71E+05	1.71E+05	1.71E+05
u236	4.11E+04	4.11E+04	4.08E+04	4.02E+04
u237	8.49E-35	1.40E-36	.00E+00	.00E+00
u238	8.65E+06	8.65E+06	8.65E+06	8.65E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00
u240	2.46E-38	2.46E-38	2.46E-38	2.46E-38
u241	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00
np236	1.02E-05	7.57E-06	2.27E-06	1.11E-07
np237	9.19E+03	9.05E+03	8.48E+03	7.21E+03
np238	.00E+00	.00E+00	.00E+00	.00E+00
np239	3.16E-24	2.87E-26	5.78E-33	5.47E-33
np240m	2.10E-40	2.10E-40	2.10E-40	2.10E-40
np240	.00E+00	.00E+00	.00E+00	.00E+00
np241	.00E+00	.00E+00	.00E+00	.00E+00

pu236	2.30E-11	1.70E-11	5.09E-12	2.50E-13
pu237	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00
pu239	8.70E-01	2.07E-01	6.57E-04	3.75E-10
pu240	1.87E-11	9.49E-14	6.34E-23	1.00E-31
pu241	2.81E-27	4.75E-29	.00E+00	.00E+00
pu242	1.47E-05	1.34E-05	9.22E-06	3.64E-06
pu243	5.03E-34	5.02E-34	4.98E-34	4.87E-34
pu244	7.58E-28	8.69E-28	1.21E-27	1.64E-27
pu245	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00
am241	8.46E-26	1.43E-27	1.24E-34	.00E+00
am242m	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00
am243	3.68E-18	3.34E-20	6.72E-27	6.35E-27
am244m	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 203

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
cm242	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00
cm245	1.69E-24	2.86E-26	2.35E-33	.00E+00
cm246	1.28E-34	8.43E-38	.00E+00	.00E+00
cm247	1.45E-23	1.44E-23	1.43E-23	1.40E-23
cm248	1.26E-27	1.14E-27	7.60E-28	2.74E-28
cm249	.00E+00	.00E+00	.00E+00	.00E+00
cm250	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00
total	8.88E+06	8.88E+06	8.88E+06	8.88E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 204

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00
tl206	1.15E-05	1.11E-05	8.51E-06	5.03E-06

tl207	3.67E-01	3.68E-01	3.69E-01	3.68E-01
tl208	1.19E-05	1.42E-05	2.36E-05	4.69E-05
tl209	9.14E-02	1.00E-01	1.20E-01	1.14E-01
pb206	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00
pb209	4.35E+00	4.76E+00	5.71E+00	5.43E+00
pb210	8.69E+00	8.37E+00	6.44E+00	3.81E+00
pb211	3.68E-01	3.69E-01	3.70E-01	3.69E-01
pb212	3.31E-05	3.96E-05	6.58E-05	1.30E-04
pb214	8.70E+00	8.38E+00	6.45E+00	3.81E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00
bi210	8.69E+00	8.37E+00	6.44E+00	3.81E+00
bi211	3.68E-01	3.69E-01	3.70E-01	3.69E-01
bi212	3.31E-05	3.96E-05	6.58E-05	1.30E-04
bi213	4.35E+00	4.76E+00	5.71E+00	5.43E+00
bi214	8.70E+00	8.38E+00	6.45E+00	3.81E+00
po210	8.69E+00	8.37E+00	6.44E+00	3.81E+00
po211m	.00E+00	.00E+00	.00E+00	.00E+00
po211	1.01E-03	1.02E-03	1.02E-03	1.02E-03
po212	2.12E-05	2.54E-05	4.21E-05	8.36E-05
po213	4.26E+00	4.66E+00	5.59E+00	5.32E+00
po214	8.69E+00	8.37E+00	6.44E+00	3.81E+00
po215	3.68E-01	3.69E-01	3.70E-01	3.69E-01
po216	3.31E-05	3.96E-05	6.58E-05	1.30E-04
po218	8.70E+00	8.38E+00	6.45E+00	3.81E+00
at217	4.35E+00	4.76E+00	5.71E+00	5.43E+00
rn218	.00E+00	.00E+00	.00E+00	.00E+00
rn219	3.68E-01	3.69E-01	3.70E-01	3.69E-01
rn220	3.31E-05	3.96E-05	6.58E-05	1.30E-04
rn222	8.70E+00	8.38E+00	6.45E+00	3.81E+00
fr221	4.35E+00	4.76E+00	5.71E+00	5.43E+00
fr223	5.08E-03	5.09E-03	5.10E-03	5.10E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00
ra223	3.68E-01	3.69E-01	3.70E-01	3.69E-01
ra224	3.31E-05	3.96E-05	6.58E-05	1.30E-04
ra225	4.35E+00	4.76E+00	5.71E+00	5.43E+00
ra226	8.70E+00	8.38E+00	6.45E+00	3.81E+00
ra228	3.31E-05	3.96E-05	6.58E-05	1.30E-04
ac225	4.35E+00	4.76E+00	5.71E+00	5.43E+00
ac227	3.68E-01	3.69E-01	3.70E-01	3.69E-01
ac228	3.31E-05	3.96E-05	6.58E-05	1.30E-04
th226	.00E+00	.00E+00	.00E+00	.00E+00
th227	3.63E-01	3.64E-01	3.65E-01	3.64E-01
th228	3.31E-05	3.96E-05	6.58E-05	1.30E-04
th229	4.35E+00	4.76E+00	5.71E+00	5.43E+00
th230	8.58E+00	8.26E+00	6.42E+00	3.81E+00
th231	3.70E-01	3.70E-01	3.70E-01	3.69E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 205

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
th232	3.31E-05	3.96E-05	6.58E-05	1.30E-04
th233	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	3.68E-01	3.69E-01	3.70E-01	3.69E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.48E+00	6.38E+00	5.98E+00	5.09E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00
u232	1.20E-08	8.88E-09	2.66E-09	1.31E-10
u233	4.46E+00	4.84E+00	5.60E+00	5.40E+00
u234	8.09E+00	7.41E+00	5.47E+00	3.53E+00
u235	3.70E-01	3.70E-01	3.70E-01	3.69E-01
u236	2.66E+00	2.66E+00	2.64E+00	2.60E+00
u237	6.94E-30	1.14E-31	.00E+00	.00E+00
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00
u240	2.28E-32	2.28E-32	2.28E-32	2.28E-32
u241	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00
np236	1.35E-07	9.98E-08	2.99E-08	1.47E-09
np237	6.48E+00	6.38E+00	5.98E+00	5.09E+00
np238	.00E+00	.00E+00	.00E+00	.00E+00
np239	7.34E-19	6.66E-21	1.34E-27	1.27E-27
np240m	2.28E-32	2.28E-32	2.28E-32	2.28E-32
np240	.00E+00	.00E+00	.00E+00	.00E+00
np241	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.20E-08	8.88E-09	2.66E-09	1.31E-10
pu237	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00
pu239	5.40E-02	1.28E-02	4.08E-05	2.33E-11
pu240	4.24E-12	2.15E-14	1.44E-23	2.28E-32
pu241	2.90E-25	4.92E-27	.00E+00	.00E+00
pu242	5.80E-08	5.28E-08	3.65E-08	1.44E-08
pu243	1.31E-27	1.31E-27	1.30E-27	1.27E-27
pu244	2.28E-32	2.28E-32	2.28E-32	2.28E-32
pu245	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00
am241	2.90E-25	4.92E-27	.00E+00	.00E+00
am242m	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00
am243	7.34E-19	6.66E-21	1.34E-27	1.27E-27
am244m	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn actinides page 206

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
cm242	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00
cm245	2.90E-25	4.91E-27	.00E+00	.00E+00
cm246	.00E+00	.00E+00	.00E+00	.00E+00
cm247	1.31E-27	1.31E-27	1.30E-27	1.27E-27
cm248	5.36E-30	4.84E-30	3.22E-30	1.16E-30
cm249	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00
total	1.63E+02	1.62E+02	1.49E+02	1.16E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 207

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00
li 6	1.95E-05	1.95E-05	1.95E-05	1.95E-05
li 7	4.59E-07	4.59E-07	4.59E-07	4.59E-07
be 9	8.85E-07	8.85E-07	8.85E-07	8.85E-07
be 10	5.29E-06	5.18E-06	4.75E-06	3.82E-06
c 14	8.20E-20	1.93E-22	5.99E-33	.00E+00
ni 66	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	1.36E-08	1.36E-08	1.36E-08	1.36E-08
cu 67	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	2.43E-09	2.43E-09	2.43E-09	2.43E-09
zn 68	1.16E-10	1.16E-10	1.16E-10	1.16E-10
zn 69	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	3.46E-09	3.46E-09	3.46E-09	3.46E-09
zn 70	8.16E-08	8.16E-08	8.16E-08	8.16E-08
ga 70	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	6.07E-11	6.07E-11	6.07E-11	6.07E-11
zn 71	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	1.14E-06	1.14E-06	1.14E-06	1.14E-06
ge 71	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	1.28E-04	1.28E-04	1.28E-04	1.28E-04
co 73	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	5.57E-04	5.57E-04	5.57E-04	5.57E-04
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	4.86E-04	4.86E-04	4.86E-04	4.86E-04
co 75	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00
as 75	5.65E-03	5.65E-03	5.65E-03	5.65E-03
ni 76	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 208

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	1.87E-02	1.87E-02	1.87E-02	1.87E-02
as 76	.00E+00	.00E+00	.00E+00	.00E+00
se 76	1.21E-06	1.21E-06	1.21E-06	1.21E-06
ni 77	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00
se 77	4.17E-02	4.17E-02	4.17E-02	4.17E-02
se 77m	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00
se 78	1.10E-01	1.10E-01	1.10E-01	1.10E-01
cu 79	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00
se 79	1.35E-01	1.21E-01	7.96E-02	2.78E-02
se 79m	.00E+00	.00E+00	.00E+00	.00E+00
br 79	9.32E-02	1.07E-01	1.48E-01	2.00E-01
br 79m	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00
se 80	6.78E-01	6.78E-01	6.78E-01	6.78E-01
br 80	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	4.33E-07	4.33E-07	4.33E-07	4.33E-07

cu 81	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.01E+00	1.01E+00	1.01E+00	1.01E+00
kr 81	8.94E-09	7.60E-09	3.96E-09	7.78E-10
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 209

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00
se 82	1.74E+00	1.74E+00	1.74E+00	1.74E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	4.78E-04	4.78E-04	4.78E-04	4.78E-04
zn 83	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	2.89E+00	2.89E+00	2.89E+00	2.89E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	5.84E+00	5.84E+00	5.84E+00	5.84E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	6.76E+00	6.76E+00	6.76E+00	6.76E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.09E+01	1.09E+01	1.09E+01	1.09E+01
rb 86	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	8.20E-05	8.20E-05	8.20E-05	8.20E-05
ge 87	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.43E+01	1.43E+01	1.43E+01	1.43E+01
sr 87	7.65E-05	8.68E-05	1.28E-04	2.32E-04
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 210

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
br 88	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	2.07E+01	2.07E+01	2.07E+01	2.07E+01
as 89	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00
y 89	2.80E+01	2.80E+01	2.80E+01	2.80E+01
y 89m	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	3.41E+01	3.41E+01	3.41E+01	3.41E+01
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	3.49E+01	3.49E+01	3.49E+01	3.49E+01
nb 91	.00E+00	.00E+00	.00E+00	.00E+00
se 92	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	3.56E+01	3.56E+01	3.56E+01	3.56E+01
nb 92	2.23E-09	2.23E-09	2.22E-09	2.20E-09
se 93	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	2.28E+01	2.23E+01	2.03E+01	1.62E+01
nb 93	2.74E+00	3.25E+00	5.18E+00	9.30E+00
nb 93m	2.40E-04	2.35E-04	2.14E-04	1.71E-04
br 94	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 211

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	3.93E+01	3.93E+01	3.93E+01	3.93E+01
nb 94	2.00E-09	3.63E-10	3.93E-13	1.51E-20
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	4.01E+01	4.01E+01	4.01E+01	4.01E+01
br 96	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	3.93E+01	3.93E+01	3.93E+01	3.93E+01
nb 96	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	1.26E-02	1.26E-02	1.26E-02	1.26E-02
kr 97	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	3.57E+01	3.57E+01	3.57E+01	3.57E+01
kr 98	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	3.72E+01	3.72E+01	3.72E+01	3.72E+01
tc 98	4.67E-06	4.64E-06	4.48E-06	4.13E-06
rb 99	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	1.74E+01	1.48E+01	7.65E+00	1.48E+00
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	2.22E+01	2.48E+01	3.19E+01	3.81E+01

rb100	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 212

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
zr100	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00
mo100	4.10E+01	4.10E+01	4.10E+01	4.10E+01
tc100	.00E+00	.00E+00	.00E+00	.00E+00
ru100	1.77E-02	1.77E-02	1.77E-02	1.77E-02
rb101	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00
ru101	3.39E+01	3.39E+01	3.39E+01	3.39E+01
sr102	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00
ru102	2.88E+01	2.88E+01	2.88E+01	2.88E+01
rh102	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00
rh103	2.13E+01	2.13E+01	2.13E+01	2.13E+01
rh103m	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00
ru104	1.34E+01	1.34E+01	1.34E+01	1.34E+01
rh104	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00
pd104	4.68E-02	4.68E-02	4.68E-02	4.68E-02
y105	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00
pd105	7.53E+00	7.53E+00	7.53E+00	7.53E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 213
0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
y106	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00
pd106	3.44E+00	3.44E+00	3.44E+00	3.44E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00
pd107	1.36E+00	1.35E+00	1.32E+00	1.25E+00
pd107m	.00E+00	.00E+00	.00E+00	.00E+00
ag107	3.68E-02	4.40E-02	7.25E-02	1.41E-01
zr108	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00
pd108	6.96E-01	6.96E-01	6.96E-01	6.96E-01
ag108	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00
cd108	2.81E-08	2.81E-08	2.81E-08	2.81E-08
zr109	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00
ag109	3.89E-01	3.89E-01	3.89E-01	3.89E-01
ag109m	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00
pd110	2.71E-01	2.71E-01	2.71E-01	2.71E-01
ag110	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 214
0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
cd110	6.85E-04	6.85E-04	6.85E-04	6.85E-04
nb111	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00
cd111	1.74E-01	1.74E-01	1.74E-01	1.74E-01
cd111m	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00
cd112	1.35E-01	1.35E-01	1.35E-01	1.35E-01
mo113	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00
cd113	9.15E-02	9.15E-02	9.15E-02	9.15E-02
cd113m	.00E+00	.00E+00	.00E+00	.00E+00
in113	2.16E-03	2.16E-03	2.16E-03	2.16E-03
in113m	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00
cd114	1.52E-01	1.52E-01	1.52E-01	1.52E-01
in114	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00
sn114	2.83E-07	2.83E-07	2.83E-07	2.83E-07
mo115	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00
in115	8.63E-02	8.63E-02	8.63E-02	8.63E-02
in115m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 215

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sn115	4.35E-03	4.35E-03	4.35E-03	4.35E-03

tc116	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00
cd116	1.36E-01	1.36E-01	1.36E-01	1.36E-01
in116	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00
sn116	2.14E-04	2.14E-04	2.14E-04	2.14E-04
tc117	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00
sn117	9.16E-02	9.16E-02	9.16E-02	9.16E-02
sn117m	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00
sn118	9.29E-02	9.29E-02	9.29E-02	9.29E-02
ru119	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00
sn119	1.02E-01	1.02E-01	1.02E-01	1.02E-01
sn119m	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00
sn120	1.02E-01	1.02E-01	1.02E-01	1.02E-01
rh121	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 216

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
pd121	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00
sb121	1.12E-01	1.12E-01	1.12E-01	1.12E-01
rh122	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00
sn122	1.30E-01	1.30E-01	1.30E-01	1.30E-01
sb122	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00
te122	1.02E-05	1.02E-05	1.02E-05	1.02E-05
rh123	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00
sb123	1.36E-01	1.36E-01	1.36E-01	1.36E-01
te123	1.72E-09	1.72E-09	1.72E-09	1.72E-09
te123m	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00
sn124	2.19E-01	2.19E-01	2.19E-01	2.19E-01
sb124	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00
te124	1.10E-04	1.10E-04	1.10E-04	1.10E-04
pd125	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00
te125	2.52E-01	2.52E-01	2.52E-01	2.52E-01
te125m	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00
sn126	6.45E-02	4.56E-02	1.14E-02	3.56E-04

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 217

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sb126	3.06E-09	2.17E-09	5.41E-10	1.69E-11
sb126m	2.33E-11	1.65E-11	4.12E-12	1.29E-13
te126	3.04E-01	3.23E-01	3.57E-01	3.68E-01
xe126	4.86E-11	4.86E-11	4.86E-11	4.86E-11
ag127	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00
i127	1.06E+00	1.06E+00	1.06E+00	1.06E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00
te128	3.01E+00	3.01E+00	3.01E+00	3.01E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00
xe128	9.55E-05	9.55E-05	9.55E-05	9.55E-05
cd129	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00
i129	6.39E+00	6.38E+00	6.32E+00	6.18E+00
xe129	7.11E-02	8.52E-02	1.41E-01	2.79E-01
xe129m	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00
te130	1.50E+01	1.50E+01	1.50E+01	1.50E+01
i130	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00
xe130	3.44E-03	3.44E-03	3.44E-03	3.44E-03
cd131	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00
xe131	2.49E+01	2.49E+01	2.49E+01	2.49E+01
xe131m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 218

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00
xe132	3.75E+01	3.75E+01	3.75E+01	3.75E+01
cs132	.00E+00	.00E+00	.00E+00	.00E+00
ba132	2.56E-08	2.56E-08	2.56E-08	2.56E-08

in133	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00
cs133	5.84E+01	5.84E+01	5.84E+01	5.84E+01
ba133	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00
xe134	6.87E+01	6.87E+01	6.87E+01	6.87E+01
xe134m	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00
ba134	3.21E-02	3.21E-02	3.21E-02	3.21E-02
sn135	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00
cs135	5.37E+01	5.29E+01	4.98E+01	4.29E+01
cs135m	.00E+00	.00E+00	.00E+00	.00E+00
ba135	4.21E+00	5.02E+00	8.11E+00	1.51E+01
ba135m	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00
xe136	5.63E+01	5.63E+01	5.63E+01	5.63E+01
cs136	.00E+00	.00E+00	.00E+00	.00E+00
ba136	5.96E-02	5.96E-02	5.96E-02	5.96E-02
ba136m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 219

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sb137	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00
ba137	5.64E+01	5.64E+01	5.64E+01	5.64E+01
ba137m	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00

ba138	6.03E+01	6.03E+01	6.03E+01	6.03E+01
la138	3.05E-04	3.05E-04	3.05E-04	3.05E-04
sb139	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00
la139	5.77E+01	5.77E+01	5.77E+01	5.77E+01
ce139	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00
ce140	5.77E+01	5.77E+01	5.77E+01	5.77E+01
pr140	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00
pr141	5.34E+01	5.34E+01	5.34E+01	5.34E+01
nd141	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00
ce142	5.43E+01	5.43E+01	5.43E+01	5.43E+01
pr142	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00
nd142	5.71E-03	5.71E-03	5.71E-03	5.71E-03
i143	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 220

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
xe143	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00
nd143	5.50E+01	5.50E+01	5.50E+01	5.50E+01
i144	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00
nd144	5.14E+01	5.14E+01	5.14E+01	5.14E+01

i145	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00
nd145	3.71E+01	3.71E+01	3.71E+01	3.71E+01
pm145	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00
nd146	2.86E+01	2.86E+01	2.86E+01	2.86E+01
pm146	.00E+00	.00E+00	.00E+00	.00E+00
sm146	2.51E-06	2.51E-06	2.50E-06	2.49E-06
xe147	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00
sm147	2.18E+01	2.18E+01	2.18E+01	2.18E+01
cs148	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00
nd148	1.63E+01	1.63E+01	1.63E+01	1.63E+01
pm148	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 221

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sm148	2.65E-02	2.65E-02	2.65E-02	2.65E-02
cs149	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00
sm149	5.77E+00	5.77E+00	5.77E+00	5.77E+00
eu149	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00
nd150	6.59E+00	6.59E+00	6.59E+00	6.59E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00
sm150	4.85E+00	4.85E+00	4.85E+00	4.85E+00
eu150	.00E+00	.00E+00	.00E+00	.00E+00

ba151	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00
eu151	4.05E+00	4.05E+00	4.05E+00	4.05E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00
sm152	2.92E+00	2.92E+00	2.92E+00	2.92E+00
eu152	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00
gd152	7.42E-02	7.42E-02	7.42E-02	7.42E-02
la153	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00
eu153	1.72E+00	1.72E+00	1.72E+00	1.72E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 222

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sm154	7.99E-01	7.99E-01	7.99E-01	7.99E-01
eu154	.00E+00	.00E+00	.00E+00	.00E+00
gd154	5.67E-03	5.67E-03	5.67E-03	5.67E-03
la155	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00
gd155	2.82E-01	2.82E-01	2.82E-01	2.82E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00
gd156	2.46E-01	2.46E-01	2.46E-01	2.46E-01
ce157	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00
gd157	3.34E-02	3.34E-02	3.34E-02	3.34E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00
gd158	8.32E-02	8.32E-02	8.32E-02	8.32E-02
pr159	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00
tb159	1.42E-02	1.42E-02	1.42E-02	1.42E-02
nd160	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00
gd160	4.96E-03	4.96E-03	4.96E-03	4.96E-03
tb160	.00E+00	.00E+00	.00E+00	.00E+00
dy160	5.18E-06	5.18E-06	5.18E-06	5.18E-06
nd161	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 223

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
dy161	1.64E-03	1.64E-03	1.64E-03	1.64E-03
pm162	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00
dy162	5.41E-04	5.41E-04	5.41E-04	5.41E-04
sm163	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00
dy163	1.92E-04	1.92E-04	1.92E-04	1.92E-04
sm164	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00
dy164	6.45E-05	6.45E-05	6.45E-05	6.45E-05
sm165	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00

ho165	2.86E-05	2.86E-05	2.86E-05	2.86E-05
dy166	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	.00E+00	.00E+00	.00E+00	.00E+00
er166	2.85E-06	2.85E-06	2.85E-06	2.85E-06
er167	1.20E-09	1.20E-09	1.20E-09	1.20E-09
er167m	.00E+00	.00E+00	.00E+00	.00E+00
er168	1.79E-09	1.79E-09	1.79E-09	1.79E-09
yb168	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00
tm169	4.60E-09	4.60E-09	4.60E-09	4.60E-09
yb169	.00E+00	.00E+00	.00E+00	.00E+00
er170	5.40E-09	5.40E-09	5.40E-09	5.40E-09
tm170	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00
yb170	1.96E-11	1.96E-11	1.96E-11	1.96E-11
er171	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00
yb171	8.52E-09	8.52E-09	8.52E-09	8.52E-09
er172	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00
yb172	7.04E-09	7.04E-09	7.04E-09	7.04E-09
total	1.52E+03	1.52E+03	1.52E+03	1.52E+03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 224

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00
li 6	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00
be 10	1.18E-07	1.16E-07	1.06E-07	8.55E-08
c 14	3.66E-19	8.63E-22	2.28E-32	.00E+00
ni 66	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 225

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
zn 76	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00
se 79	1.85E-03	1.66E-03	1.09E-03	3.82E-04
se 79m	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	1.85E-10	1.57E-10	8.21E-11	1.61E-11
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 226

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.23E-06	1.23E-06	1.23E-06	1.23E-06
sr 87	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 227
0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	.00E+00	.00E+00	.00E+00	.00E+00
se 92	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	2.48E-13	2.48E-13	2.47E-13	2.45E-13
se 93	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	5.72E-02	5.60E-02	5.11E-02	4.07E-02
nb 93	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	5.72E-02	5.60E-02	5.11E-02	4.07E-02
br 94	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 228

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sr 94	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	3.76E-10	6.81E-11	7.36E-14	2.83E-21
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	4.06E-09	4.03E-09	3.90E-09	3.59E-09
rb 99	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	2.98E-01	2.52E-01	1.31E-01	2.53E-02
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 229
0
nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00
rh102	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 230

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
y106	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00
pd107	6.98E-04	6.95E-04	6.80E-04	6.45E-04
pd107m	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00
ag108	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00
cd108	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00

ag110	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 231

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00
cd113	3.11E-14	3.11E-14	3.11E-14	3.11E-14
cd113m	.00E+00	.00E+00	.00E+00	.00E+00
in113	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00
in115	6.08E-13	6.08E-13	6.08E-13	6.08E-13
in115m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 232

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 233

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00
sb121	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00
te123	4.04E-19	4.04E-19	4.04E-19	4.04E-19
te123m	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00
sn126	1.83E-03	1.29E-03	3.23E-04	1.01E-05

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 234

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sb126	2.56E-04	1.81E-04	4.53E-05	1.41E-06
sb126m	1.83E-03	1.29E-03	3.23E-04	1.01E-05

te126	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00
i129	1.13E-03	1.13E-03	1.12E-03	1.09E-03
xe129	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 235

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00
ba133	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00
cs135	6.19E-02	6.10E-02	5.74E-02	4.94E-02
cs135m	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 236

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sb137	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00
ba137	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00
la138	7.53E-12	7.53E-12	7.53E-12	7.53E-12
sb139	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00
ce139	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00
ce142	1.30E-06	1.30E-06	1.30E-06	1.30E-06
pr142	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 237

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
xe143	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00
nd144	6.11E-11	6.11E-11	6.11E-11	6.11E-11
i145	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00
pm145	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00
pm146	.00E+00	.00E+00	.00E+00	.00E+00
sm146	5.96E-11	5.96E-11	5.95E-11	5.93E-11
xe147	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00
sm147	5.00E-07	5.00E-07	5.00E-07	5.00E-07
cs148	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00
pm148	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 238

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sm148	8.07E-15	8.07E-15	8.07E-15	8.07E-15
cs149	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.39E-12	1.39E-12	1.39E-12	1.39E-12
eu149	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00
eu150	.00E+00	.00E+00	.00E+00	.00E+00
ba151	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00
eu151	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00
eu152	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00
gd152	1.62E-12	1.62E-12	1.62E-12	1.62E-12
la153	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 239

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sm154	.00E+00	.00E+00	.00E+00	.00E+00
eu154	.00E+00	.00E+00	.00E+00	.00E+00
gd154	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00
tb160	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 1K yr burn fission products page 240

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

initial300000. yr500000. yr999999. yr

dy161	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00

```
     eu165    .00E+00   .00E+00   .00E+00   .00E+00
     gd165    .00E+00   .00E+00   .00E+00   .00E+00
     tb165    .00E+00   .00E+00   .00E+00   .00E+00
     dy165    .00E+00   .00E+00   .00E+00   .00E+00
     dy165m   .00E+00   .00E+00   .00E+00   .00E+00
     ho165    .00E+00   .00E+00   .00E+00   .00E+00
     dy166    .00E+00   .00E+00   .00E+00   .00E+00
     ho166    .00E+00   .00E+00   .00E+00   .00E+00
     ho166m   .00E+00   .00E+00   .00E+00   .00E+00
     er166    .00E+00   .00E+00   .00E+00   .00E+00
     er167    .00E+00   .00E+00   .00E+00   .00E+00
     er167m   .00E+00   .00E+00   .00E+00   .00E+00
     er168    .00E+00   .00E+00   .00E+00   .00E+00
     yb168    .00E+00   .00E+00   .00E+00   .00E+00
     er169    .00E+00   .00E+00   .00E+00   .00E+00
     tm169    .00E+00   .00E+00   .00E+00   .00E+00
     yb169    .00E+00   .00E+00   .00E+00   .00E+00
     er170    .00E+00   .00E+00   .00E+00   .00E+00
     tm170    .00E+00   .00E+00   .00E+00   .00E+00
     tm170m   .00E+00   .00E+00   .00E+00   .00E+00
     yb170    .00E+00   .00E+00   .00E+00   .00E+00
     er171    .00E+00   .00E+00   .00E+00   .00E+00
     tm171    .00E+00   .00E+00   .00E+00   .00E+00
     yb171    .00E+00   .00E+00   .00E+00   .00E+00
     er172    .00E+00   .00E+00   .00E+00   .00E+00
     tm172    .00E+00   .00E+00   .00E+00   .00E+00
     yb172    .00E+00   .00E+00   .00E+00   .00E+00
   total     4.81E-01  4.32E-01  2.94E-01  1.58E-01
1  * normal termination of execution *
0                                        table of contents for material tables
0                                          case or subcase printed      page

                                                     1                   1
                                                     2                  41
                                                     3                  81
                                                     4                 121
                                                     5                 161
                                                     6                 201
0ndset          33
           21          4          1         27          6          0          0          0          0          0
            0          0          0          0          0          0         -1       1698        690        130
          880       7935          0          5         99          3         13         96         18         18
           18          0         71
0   35$ array      1 entries read
0    0t
   54$$ a8 1 e
    56$$ 0 7 a5 1 a13 -1 a15 3 0 4 e   5t
0   56$ array     20 entries read
0    5t
     l90   97344
     l116  60787
     l32   33663 nudata (library) storage size
     l44   33734
     l103  75921
   61** f1-20
   65$$ a4 1 2z 1 2z 1 5z 1 2z 1
    a25 1 2z 1 2z 1 5z 1 2z 1
    a46 1 2z 1 2z 1 5z 1 2z 1 e
0   60* array      7 entries read
0   65$ array     63 entries read
```

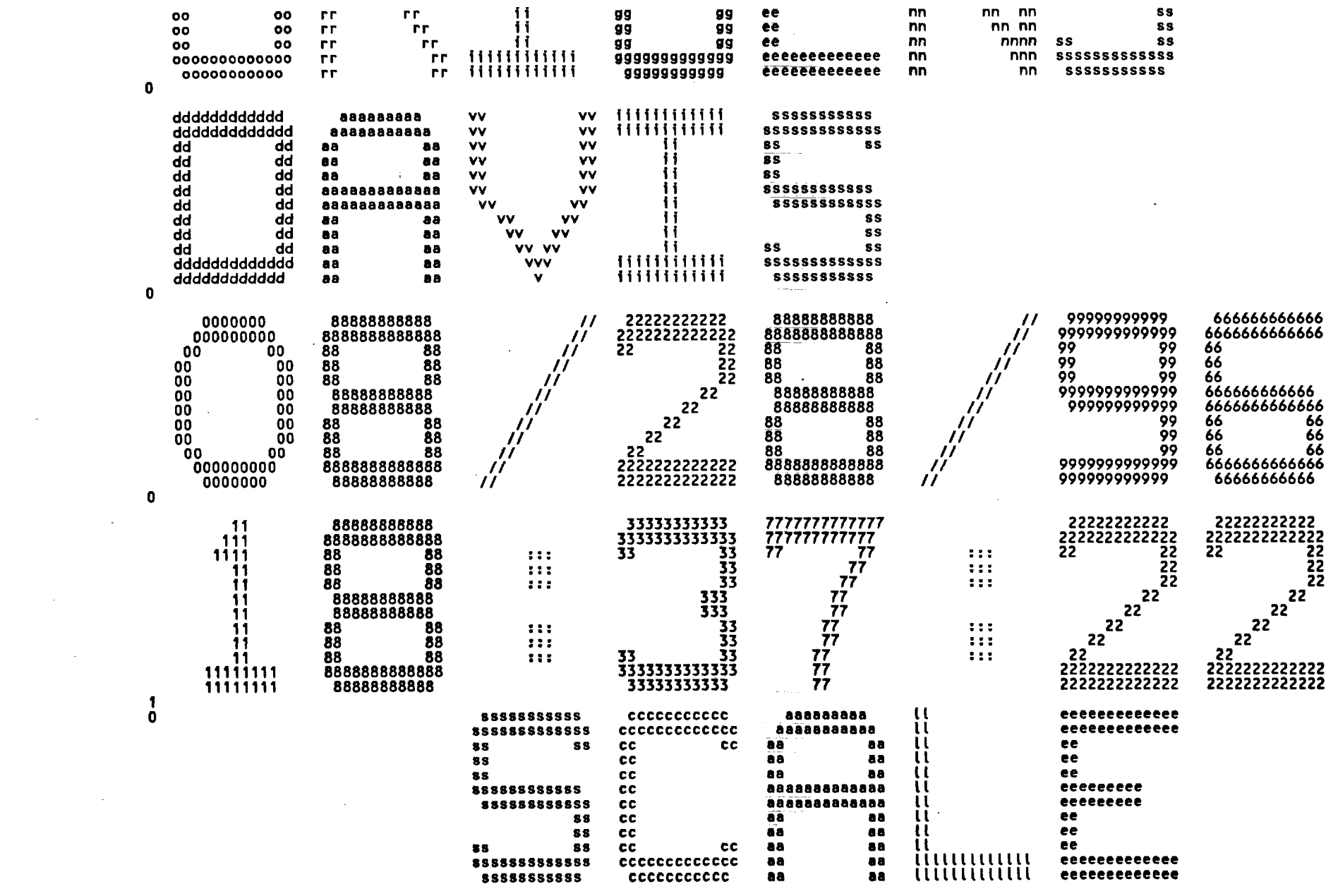
```
0    6t
     l140  66851
     used   100723 in size   150000
0jopt            12
              0            0            0            0            0            0            0            0            0            0
              0            0
0therm            4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non              5
          7935           20            6           18         1697
0mmn             19
              0            7            0            0            1            1            0            0            0            0
             21          100           -1            4            3            0            4            0            0
0tconst           5
  8.640000E+04  .000000E+00  .000000E+00  .000000E+00 5.000000E-02
0mzero            4
              0          689          129          879
0pow              3
   .000000E+00  .000000E+00  .000000E+00
0 linp            9
              6            0           51           26            2         3000         1000         1697            5
0 case or subcase    1  Part B 8% UO2 in Tuff (47% H2O) DBF Fuel  1K yr burn
    56$$ 0 -6 a10 1  e  t
0   56$ array     20 entries read
0   57* array      5 entries read
0    5t
     l90  102444
     l116  66199
     l32   33663 nudata (library) storage size
     l44   33734
     l103  81099
   61** f1-20
   65$$ a4 1 2z 1 2z 1 5z 1 2z 1
    a25 1 2z 1 2z 1 5z 1 2z 1
    a46 1 2z 1 2z 1 5z 1 2z 1 e
0   60* array     10 entries read
0   65$ array     63 entries read
0    6t
     l140  71957
     used   107068 in size   150000
0jopt            12
              0            0            0            0            0            0            0            0            0            0
              0            0
0therm            4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non              5
          7935           20            6           18         1697
0mmn             19
              0           10            0            0            1            1            0            0            0            7
             21          100            0            5            0            0            4            0            0
0tconst           5
  3.156000E+07 1.000000E+01 2.300000E+01  .000000E+00 5.000000E-02
0mzero            4
             18          689          129          879
0pow              3
   .000000E+00  .000000E+00  .000000E+00
0 linp            9
              6            0           51           26            2         3000         1000         1697            5
0 case or subcase    2  Part B 8% UO2 in Tuff (47% H2O) DBF Fuel  1K yr burn
0   56$ array     20 entries read
```

```
0   57* array      5 entries read
0    5t
     l90  102444
     l116  66199
     l32   33663 nudata (library) storage size
     l44   33734
     l103  81099
     61** f1-20
0   60* array     10 entries read
0   65$ array     63 entries read
0    6t
     l140  71957
     used   107068 in size   150000
0jopt            12
             0            0            0            0            0            0            0            0            0            0
             0            0
0therm           4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non             5
          7935           20            6           18         1697
0mmn            19
             0           10            0            0            1            1            0            0            0           10
            21          100            0            5            0            0            4            0            0
0tconst          5
  3.156000E+07 4.000000E+02 2.800000E+01  .000000E+00 5.000000E-02
0mzero           4
            21          689          129          879
0pow             3
   .000000E+00  .000000E+00  .000000E+00
0 linp           9
             6            0           51           26            2         3000         1000         1697            5
0 case or subcase    3  Part B 8% UO2 in Tuff (47% H2O) DBF Fuel  1K yr burn
0   56$ array     20 entries read
0   57* array      5 entries read
0    5t
     l90  102444
     l116  66199
     l32   33663 nudata (library) storage size
     l44   33734
     l103  81099
    61** f1-20
0   60* array     10 entries read
0   65$ array     63 entries read
0    6t
     l140  71957
     used   107068 in size   150000
0jopt            12
             0            0            0            0            0            0            0            0            0            0
             0            0
0therm           4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non             5
          7935           20            6           18         1697
0mmn            19
             0           10            0            0            1            1            0            0            0           10
            21          100            0            5            0            0            4            0            0
0tconst          5
  3.156000E+07 1.600000E+04 2.500000E+01  .000000E+00 5.000000E-02
0mzero           4
            21          689          129          879
```

```
0pow              3
   .000000E+00  .000000E+00  .000000E+00
0 linp            9
             6            0           51           26            2         3000         1000         1697            5
0 case or subcase    4  Part B 8% UO2 in Tuff (47% H2O) DBF Fuel  1K yr burn
0   56$ array     20 entries read
0   57* array      5 entries read
0    5t
     l90  102444
     l116  66199
     l32   33663 nudata (library) storage size
     l44   33734
     l103  81099
     61** f1-20
0   60* array     10 entries read
0   65$ array     63 entries read
0    6t
     l140  71957
     used   107068 in size   150000
0jopt            12
             0            0            0            0            0            0            0            0            0            0
             0            0
0therm            4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non              5
          7935           20            6           18         1697
0mmn             19
             0           10            0            0            1            1            0            0            0           10
            21          100            0            5            0            0            4            0            0
0tconst           5
  3.156000E+07 3.800000E+04 2.500000E+01  .000000E+00 5.000000E-02
0mzero            4
            21          689          129          879
0pow              3
   .000000E+00  .000000E+00  .000000E+00
0 linp            9
             6            0           51           26            2         3000         1000         1697            5
0 case or subcase    5  Part B 8% UO2 in Tuff (47% H2O) DBF Fuel  1K yr burn
0   56$ array     20 entries read
0   57* array      5 entries read
0    5t
     l90   90544
     l116  53571
     l32   33663 nudata (library) storage size
     l44   33734
     l103  69017
   61** f1-20
0   60* array      3 entries read
0   65$ array     63 entries read
0    6t
     l140  60057
     used    92263 in size   150000
0jopt            12
             0            0            0            0            0            0            0            0            0            0
             0            0
0therm            4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non              5
          7935           20            6           18         1697
0mmn             19
```

```
           0           3           0           0           1           1           0           0           0          10
          21         100           0           5           0           0           4           0           0
Otconst     5
  3.156000E+07 2.500000E+05 2.600000E+01  .000000E+00 5.000000E-02
Omzero      4
          21         689         129         879
Opow        3
   .000000E+00  .000000E+00  .000000E+00
0 linp      9
           6           0          51          26           2        3000        1000        1697           5
0 case or subcase    6  Part B 8% UO2 in Tuff (47% H2O) DBF Fuel  1K yr burn
    56$$ 0 -10 a10 1 e  t
0   56$ array     20 entries read
0    0t
```

```
1          primary module access and input record ( scale driver - 95/03/29 - 09:06:37 )
-   module origens  will be called
      0$$  a8 26 a11 71 e
      1$$ 1  1t
       DBF Fuel 8% UO2 in Tuff (47% water) 5K yr burn
      3$$ 21 0 1 e
      '   3$$ 21 0 1  a33  -88
      2t
      35$$ 0  t
      '  54$$ a8 1 e
      '   56$$ 0 7 a5 1 a13 -1 a15 3 0 4 e   5t
      56$$ 0 7 a13 -1 a15 3 0 4 e   5t
      Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel  5K yr burn
      per critical mass 10.1 MT UO2
      60**  0 1 90 365.25 730.5 1826.25  3652.5
      '  61** f1-20
      '  65$$ a4 1 2z 1 2z 1 5z 1 2z 1
      '   a25 1 2z 1 2z 1 5z 1 2z 1
      '   a46 1 2z 1 2z 1 5z 1 2z 1 e
      65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
      6t
      '   56$$ 0 -6 a10 1  e  t
      56$$ 0 10 a10 7 a14 5 a17 4 e  57** 10  e  5t
      60**  15 20 30 50 100 150 200 250 300 400
      '  61** f1-20
      '  65$$ a4 1 2z 1 2z 1 5z 1 2z 1
      '   a25 1 2z 1 2z 1 5z 1 2z 1
      '   a46 1 2z 1 2z 1 5z 1 2z 1 e
      65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
      6t
      56$$ 0 10 a10 10 a14 5 a17 4 e  57** 400  e  5t
      60**  500 1+3 2+3 4+3 6+3 8+3 1+4 1.2+4 1.4+4 1.6+4
      '    61** f1-20
      65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
      6t
      56$$ 0 10 a10 10 a14 5 a17 4 e  57** 1.6+4  e  5t
      60**  1.8+4 2.0+4 2.2+4 2.4+4 2.6+4 2.8+4 3+4 3.2+4 3.6+4 3.8+4
      '  61** f1-20
      65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
      6t
      56$$ 0 10 a10 10 a14 5 a17 4 e  57** 3.8+4  e  5t
      60**  4+4 4.5+4 5+4 5.5+4 6+4 6.5+4 7+4 1+5 2+5 2.5+5
      '    61** f1-20
      65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
      6t
      56$$ 0 3 a10 10 a14 5 a17 4 e  57** 2.5+5  e  5t
      60**  3+5 5+5 999999
      '  61** f1-20
      65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
      6t
      '   56$$ 0 -10 a10 1 e  t
      56$$ f0  t
0   module origens  is finished. completion code     0. cpu time used     7.00 (seconds).
1   ooooooooooo    rrrrrrrrrrrr    iiiiiiiiiiii    gggggggggggg    eeeeeeeeeeeeee   nn          nn   sssssssssss
   ooooooooooooo   rrrrrrrrrrrrr   iiiiiiiiiiii   gggggggggggg    eeeeeeeeeeeeee   nnn         nn  ssssssssssss
   oo         oo   rr         rr        ii        gg         gg   ee             nnnn        nn  ss          ss
   oo         oo   rr         rr        ii        gg              ee             nn nn       nn  ss
   oo         oo   rr         rr        ii        gg              ee             nn   nn     nn  ss
   oo         oo   rrrrrrrrrrrrr        ii        gg    ggggggg   eeeeeeeee      nn    nn    nn  ssssssssssss
   oo         oo   rrrrrrrrrrrr         ii        gg    ggggggg   eeeeeeeee      nn     nn   nn   ssssssssssss
```



```
*********************************************************************************
*********************************************************************************
*********************************************************************************
*****                                                                       *****
*****                  program verification information                  *****
*****                                                                       *****
*****                 code system:    scale  version:    4.3             *****
*****                                                                       *****
*********************************************************************************
*********************************************************************************
*****                                                                       *****
*****                                                                       *****
*****              program:  origen                                         *****
*****                                                                       *****
*****        creation date:  03/13/96                                       *****
*****                                                                       *****
*****              library:  /usr1/ornl/Scale/bin                           *****
*****                                                                       *****
*****                                                                       *****
*****            test code:  origens                                        *****
*****                                                                       *****
*****             version:  3.0                                             *****
*****                                                                       *****
*****              jobname:  davis                                          *****
*****                                                                       *****
*****    date of execution:  08/28/96                                       *****
*****                                                                       *****
*****    time of execution:  18:37:22                                       *****
*****                                                                       *****
*****                                                                       *****
*********************************************************************************
*********************************************************************************
*********************************************************************************
```

```
1
1            * input echo * (with break between col. 1-72 and 73-80)
0        note:  only comments are permitted after column 72.
0--------------------only this is used as input data.--------------------        comment or title end
0.............................columns 1-72.............................              ..73-80.

 0$$  a8 26 a11 71 e
 1$$ 1  1t
  DBF Fuel 8% UO2 in Tuff (47% water) 5K yr burn
 3$$ 21 0 1 e
 '   3$$ 21 0 1  a33  -88
 2t
 35$$ 0  t
 '  54$$ a8 1 e
 '   56$$ 0 7 a5 1 a13 -1 a15 3 0 4 e   5t
 56$$ 0 7 a13 -1 a15 3 0 4 e   5t
 Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel  5K yr burn
 per critical mass 10.1 MT UO2
 60**  0 1 90 365.25 730.5 1826.25  3652.5
 '  61** f1-20
 '  65$$ a4 1 2z 1 2z 1 5z 1 2z 1
 '   a25 1 2z 1 2z 1 5z 1 2z 1
```

```
'   a46 1 2z 1 2z 1 5z 1 2z 1 e
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
'   56$$ 0 -6 a10 1  e  t
56$$ 0 10 a10 7 a14 5 a17 4 e  57** 10  e  5t
60**  15 20 30 50 100 150 200 250 300 400
'  61** f1-20
'  65$$ a4 1 2z 1 2z 1 5z 1 2z 1
'   a25 1 2z 1 2z 1 5z 1 2z 1
'   a46 1 2z 1 2z 1 5z 1 2z 1 e
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
56$$ 0 10 a10 10 a14 5 a17 4 e  57** 400  e  5t
60**  500 1+3 2+3 4+3 6+3 8+3 1+4 1.2+4 1.4+4 1.6+4
'    61** f1-20
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
56$$ 0 10 a10 10 a14 5 a17 4 e  57** 1.6+4  e  5t
60**  1.8+4 2.0+4 2.2+4 2.4+4 2.6+4 2.8+4 3+4 3.2+4 3.6+4 3.8+4
'  61** f1-20
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
56$$ 0 10 a10 10 a14 5 a17 4 e  57** 3.8+4  e  5t
60**  4+4 4.5+4 5+4 5.5+4 6+4 6.5+4 7+4 1+5 2+5 2.5+5
'    61** f1-20
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
56$$ 0 3 a10 10 a14 5 a17 4 e  57** 2.5+5  e  5t
60**  3+5 5+5 999999
'  61** f1-20
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
'   56$$ 0 -10 a10 1 e  t
56$$ f0  t
0when job "fails", make sure no fido input.....................................is out here!

0    0$ array     12 entries read
0    1$ array      1 entries read
0    1t
0         dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0             short-lived split test fraction, qxn =    9.1188E-04
0             half-norm of matrix used, axn =    7.0000E+00
0             4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
    3$$ 21 0 1  a33  -88
0    3$ array     33 entries read
0    2t
1library information...

          cross-section data taken from position number  1 of library on unit 21.

          pass   1
          pass   0
          *scale-system control module bas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *          prelim lwr origen-s binary working library--id = 1143               *
```

```
          *        made from modified card-image origen-s libraries of scale 4.2        *
          *      data from the light element, actinide, and fission product libraries    *
          *        decay data, including gamma and total energy, are from endf/b-vi      *
          *                                                                              *
          *      neutron flux spectrum factors and cross sections were produced from     *
          *     the "presas2" case updating all nuclides on the scale "burnup" library   *
          *                                                                              *
          *                  fission product yields are from endf/b-v                    *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *        see information above this box (if present) for later updates         *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  /usr1/ornl/Scale/data/prlimlwr
0                 3/13/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
                        879    number of fission product nuclides
0                      7935    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
0obtaining data from position no.    1 on unit no.   71
1
     Part B 8% UO2 in Tuff (47% H2O) DBF Fuel  5K yr burn                                  actinides          page    1
0                                          nuclide concentrations, grams
                                           basis =per critical mass 10.1 MT UO2
            charge  discharge     .0 d     1.0 d    90.0 d   365.3 d   730.5 d  1826.3 d  3652.5 d
     he  4 1.17E+01  1.17E+01  1.17E+01  1.17E+01  1.17E+01  1.17E+01  1.17E+01  1.17E+01  1.17E+01
     tl206 2.19E-15  2.19E-15  2.19E-15  2.19E-15  2.19E-15  2.19E-15  2.19E-15  2.19E-15  2.19E-15
     tl207 2.08E-10  2.08E-10  2.08E-10  2.08E-10  2.08E-10  2.08E-10  2.08E-10  2.08E-10  2.08E-10
     tl208 7.46E-12  7.46E-12  7.46E-12  7.62E-12  7.50E-12  7.48E-12  7.44E-12  7.27E-12  6.94E-12
     tl209 1.46E-12  1.46E-12  1.46E-12  1.46E-12  1.46E-12  1.46E-12  1.46E-12  1.47E-12  1.47E-12
     pb206 2.75E-01  2.75E-01  2.75E-01  2.75E-01  2.75E-01  2.75E-01  2.75E-01  2.76E-01  2.76E-01
     pb207 3.94E-02  3.94E-02  3.94E-02  3.94E-02  3.94E-02  3.94E-02  3.95E-02  3.95E-02  3.96E-02
     pb208 6.26E-03  6.26E-03  6.26E-03  6.26E-03  6.26E-03  6.26E-03  6.27E-03  6.27E-03  6.29E-03
     pb209 6.18E-09  6.18E-09  6.18E-09  5.89E-09  6.18E-09  6.18E-09  6.19E-09  6.19E-09  6.20E-09
     pb210 4.73E-03  4.73E-03  4.73E-03  4.73E-03  4.73E-03  4.73E-03  4.73E-03  4.73E-03  4.73E-03
     pb211 1.61E-09  1.61E-09  1.61E-09  1.61E-09  1.61E-09  1.61E-09  1.61E-09  1.61E-09  1.61E-09
     pb212 4.42E-09  4.42E-09  4.42E-09  4.42E-09  4.44E-09  4.43E-09  4.41E-09  4.31E-09  4.11E-09
     pb214 1.10E-08  1.10E-08  1.10E-08  1.10E-08  1.10E-08  1.10E-08  1.10E-08  1.10E-08  1.10E-08
     bi208   .00E+00    .00E+00    .00E+00    .00E+00    .00E+00    .00E+00    .00E+00    .00E+00    .00E+00
     bi209 2.01E-02  2.01E-02  2.01E-02  2.01E-02  2.01E-02  2.01E-02  2.01E-02  2.01E-02  2.02E-02
     bi210m  .00E+00    .00E+00    .00E+00    .00E+00    .00E+00    .00E+00    .00E+00    .00E+00    .00E+00
     bi210 2.91E-06  2.91E-06  2.91E-06  2.91E-06  2.91E-06  2.91E-06  2.91E-06  2.91E-06  2.91E-06
     bi211 9.54E-11  9.54E-11  9.54E-11  9.54E-11  9.54E-11  9.56E-11  9.56E-11  9.56E-11  9.55E-11
     bi212 4.20E-10  4.20E-10  4.20E-10  4.29E-10  4.22E-10  4.20E-10  4.18E-10  4.09E-10  3.90E-10
     bi213 1.47E-09  1.47E-09  1.47E-09  1.47E-09  1.47E-09  1.47E-09  1.47E-09  1.47E-09  1.48E-09
     bi214 8.17E-09  8.17E-09  8.17E-09  8.18E-09  8.17E-09  8.18E-09  8.18E-09  8.19E-09  8.20E-09
     po210 8.04E-05  8.04E-05  8.04E-05  8.04E-05  8.00E-05  7.95E-05  7.94E-05  7.99E-05  8.04E-05
     po211m  .00E+00    .00E+00    .00E+00    .00E+00    .00E+00    .00E+00    .00E+00    .00E+00    .00E+00
     po211 1.05E-15  1.05E-15  1.05E-15  1.05E-15  1.05E-15  1.06E-15  1.06E-15  1.06E-15  1.06E-15
     po212 2.21E-20  2.21E-20  2.21E-20  2.25E-20  2.22E-20  2.21E-20  2.20E-20  2.15E-20  2.05E-20
     po213 2.21E-18  2.21E-18  2.21E-18  2.21E-18  2.21E-18  2.21E-18  2.21E-18  2.22E-18  2.22E-18
     po214 1.12E-15  1.12E-15  1.12E-15  1.12E-15  1.12E-15  1.12E-15  1.13E-15  1.13E-15  1.13E-15
```

po215	1.35E-15	1.35E-15	1.35E-15	1.35E-15	1.35E-15	1.35E-15	1.35E-15	1.35E-15	1.35E-15
po216	1.71E-14	1.71E-14	1.71E-14	1.71E-14	1.71E-14	1.71E-14	1.70E-14	1.66E-14	1.59E-14
po218	1.30E-09	1.30E-09	1.30E-09	1.30E-09	1.30E-09	1.30E-09	1.30E-09	1.30E-09	1.30E-09
at217	1.77E-14	1.77E-14	1.77E-14	1.77E-14	1.77E-14	1.77E-14	1.77E-14	1.77E-14	1.78E-14
rn218	6.64E-26	6.64E-26	6.64E-26	6.64E-26	6.43E-26	3.31E-27	3.44E-31	1.78E-36	.00E+00
rn219	3.05E-12	3.05E-12	3.05E-12	3.05E-12	3.05E-12	3.06E-12	3.06E-12	3.06E-12	3.06E-12
rn220	6.66E-12	6.66E-12	6.66E-12	6.67E-12	6.70E-12	6.68E-12	6.64E-12	6.49E-12	6.20E-12
rn222	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.35E-06
fr221	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.65E-10
fr223	1.42E-11	1.42E-11	1.42E-11	1.42E-11	1.42E-11	1.42E-11	1.42E-11	1.42E-11	1.42E-11
ra222	7.34E-23	7.34E-23	7.34E-23	7.11E-23	3.66E-24	3.80E-28	1.96E-33	.00E+00	.00E+00
ra223	7.75E-07	7.75E-07	7.75E-07	7.75E-07	7.75E-07	7.77E-07	7.77E-07	7.77E-07	7.77E-07
ra224	3.86E-08	3.86E-08	3.86E-08	3.86E-08	3.88E-08	3.87E-08	3.85E-08	3.76E-08	3.59E-08
ra225	7.27E-07	7.27E-07	7.27E-07	7.27E-07	7.27E-07	7.27E-07	7.27E-07	7.28E-07	7.30E-07
ra226	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.66E-01	3.66E-01
ra228	2.44E-09	2.44E-09	2.44E-09	2.44E-09	2.44E-09	2.44E-09	2.44E-09	2.45E-09	2.45E-09
ac225	4.91E-07	4.91E-07	4.91E-07	4.91E-07	4.91E-07	4.91E-07	4.91E-07	4.92E-07	4.93E-07
ac227	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04
ac228	2.98E-13	2.98E-13	2.98E-13	2.98E-13	2.98E-13	2.98E-13	2.98E-13	2.98E-13	2.99E-13
th226	3.65E-21	3.65E-21	3.65E-21	3.53E-21	1.82E-22	1.89E-26	9.76E-32	.00E+00	.00E+00
th227	1.27E-06	1.27E-06	1.27E-06	1.27E-06	1.27E-06	1.28E-06	1.28E-06	1.28E-06	1.28E-06
th228	7.50E-06	7.50E-06	7.50E-06	7.50E-06	7.50E-06	7.48E-06	7.45E-06	7.29E-06	6.97E-06
th229	1.44E-01	1.44E-01	1.44E-01	1.44E-01	1.44E-01	1.44E-01	1.44E-01	1.44E-01	1.44E-01
th230	2.97E+01	2.97E+01	2.97E+01	2.97E+01	2.97E+01	2.97E+01	2.97E+01	2.97E+01	2.98E+01
th231	8.00E-07	8.00E-07	8.00E-07	7.35E-07	6.65E-07	6.65E-07	6.65E-07	6.65E-07	6.65E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 2

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
th232	6.08E+00	6.08E+00	6.08E+00	6.08E+00	6.08E+00	6.08E+00	6.08E+00	6.09E+00	6.09E+00
th233	5.53E-11	5.53E-11	5.53E-11	2.01E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	8.40E-01	8.40E-01	8.40E-01	8.40E-01	8.40E-01	8.40E-01	8.40E-01	8.41E-01	8.41E-01
pa232	1.42E-08	1.42E-08	1.42E-08	8.39E-09	2.99E-29	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.24E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	3.60E-18	3.60E-18	3.60E-18	3.48E-18	1.79E-19	1.86E-23	9.61E-29	.00E+00	.00E+00
u231	1.16E-14	1.16E-14	1.16E-14	9.86E-15	4.14E-21	7.87E-41	.00E+00	.00E+00	.00E+00
u232	2.78E-04	2.78E-04	2.78E-04	2.78E-04	2.77E-04	2.75E-04	2.72E-04	2.65E-04	2.52E-04
u233	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.54E+01
u234	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03
u235	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05
u236	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04
u237	7.57E-04	7.57E-04	7.57E-04	6.83E-04	7.46E-08	1.29E-09	1.23E-09	1.06E-09	8.33E-10
u238	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06
u239	7.57E-05	7.57E-05	7.57E-05	2.55E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	2.90E-35	2.90E-35	2.90E-35	2.90E-35	2.90E-35	2.90E-35	2.91E-35	2.92E-35	2.95E-35
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	2.05E-09	2.05E-09	2.05E-09	2.05E-09	1.75E-09	1.08E-09	5.71E-10	8.39E-11	3.44E-12
np236m	4.89E-10	4.89E-10	4.89E-10	2.33E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	2.32E-04	2.32E-04	2.32E-04	2.32E-04	2.32E-04	2.32E-04	2.32E-04	2.32E-04	2.32E-04
np237	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03
np238	3.63E-04	3.63E-04	3.63E-04	2.61E-04	8.96E-11	8.92E-11	8.88E-11	8.75E-11	8.54E-11
np239	1.09E-02	1.09E-02	1.09E-02	8.21E-03	2.92E-11	2.91E-11	2.91E-11	2.91E-11	2.91E-11
np240m	2.47E-37	2.47E-37	2.47E-37	2.48E-37	2.47E-37	2.48E-37	2.48E-37	2.49E-37	2.51E-37
np240	2.20E-12	2.20E-12	2.20E-12	2.19E-19	1.80E-39	1.80E-39	1.80E-39	1.80E-39	1.80E-39
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	2.66E-07	2.66E-07	2.66E-07	2.66E-07	2.51E-07	2.09E-07	1.65E-07	8.08E-08	2.48E-08
pu237	9.87E-11	9.87E-11	9.87E-11	9.72E-11	2.48E-11	3.63E-13	1.34E-15	6.67E-23	4.51E-35
pu238	5.49E+00	5.49E+00	5.49E+00	5.49E+00	5.48E+00	5.44E+00	5.40E+00	5.27E+00	5.07E+00
pu239	5.18E+03	5.18E+03	5.18E+03	5.18E+03	5.18E+03	5.18E+03	5.18E+03	5.18E+03	5.18E+03
pu240	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02
pu241	4.45E-02	4.45E-02	4.45E-02	4.45E-02	4.40E-02	4.24E-02	4.04E-02	3.50E-02	2.75E-02
pu242	5.22E-03	5.22E-03	5.22E-03	5.22E-03	5.22E-03	5.22E-03	5.22E-03	5.22E-03	5.23E-03
pu243	1.11E-11	1.11E-11	1.11E-11	3.86E-13	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29
pu244	1.47E-24	1.47E-24	1.47E-24	1.47E-24	1.47E-24	1.47E-24	1.47E-24	1.48E-24	1.49E-24
pu245	5.92E-35	5.92E-35	5.92E-35	1.21E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	3.45E-43	.00E+00	.00E+00	.00E+00	.00E+00
am239	2.92E-16	2.92E-16	2.92E-16	7.21E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	1.34E-13	1.34E-13	1.34E-13	9.67E-14	2.24E-26	.00E+00	.00E+00	.00E+00	.00E+00
am241	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00
am242m	4.93E-04	4.93E-04	4.93E-04	4.93E-04	4.92E-04	4.91E-04	4.88E-04	4.81E-04	4.69E-04
am242	4.26E-08	4.26E-08	4.26E-08	1.92E-08	6.35E-09	6.33E-09	6.30E-09	6.21E-09	6.06E-09
am243	3.38E-05	3.38E-05	3.38E-05	3.38E-05	3.38E-05	3.38E-05	3.38E-05	3.38E-05	3.38E-05
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	2.58E-13	2.58E-13	2.58E-13	4.97E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	1.27E-35	1.27E-35	1.27E-35	4.13E-36	9.72E-37	5.37E-37	2.45E-37	2.19E-38	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	2.51E-18	2.51E-18	2.51E-18	2.46E-18	3.75E-19	1.12E-21	4.96E-25	4.36E-35	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 3

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cm242	8.60E-06	8.60E-06	8.60E-06	8.59E-06	6.30E-06	2.83E-06	1.60E-06	1.26E-06	1.22E-06
cm243	6.43E-15	6.43E-15	6.43E-15	6.43E-15	6.39E-15	6.27E-15	6.12E-15	5.69E-15	5.04E-15
cm244	4.05E-09	4.05E-09	4.05E-09	4.05E-09	4.01E-09	3.90E-09	3.75E-09	3.34E-09	2.76E-09
cm245	4.24E-12	4.24E-12	4.24E-12	4.24E-12	4.24E-12	4.24E-12	4.24E-12	4.24E-12	4.24E-12
cm246	1.99E-14	1.99E-14	1.99E-14	1.99E-14	1.99E-14	1.99E-14	1.99E-14	1.99E-14	1.99E-14
cm247	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18
cm248	1.37E-21	1.37E-21	1.37E-21	1.37E-21	1.37E-21	1.37E-21	1.37E-21	1.37E-21	1.37E-21
cm249	4.32E-32	4.32E-32	4.32E-32	7.56E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	1.01E-36	1.01E-36	1.01E-36	1.01E-36	1.01E-36	1.01E-36	1.01E-36	1.01E-36	1.01E-36
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	3.11E-28	3.11E-28	3.11E-28	3.10E-28	2.56E-28	1.41E-28	6.39E-29	5.95E-30	1.14E-31
bk250	3.63E-36	3.63E-36	3.63E-36	2.06E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	6.78E-26	6.78E-26	6.78E-26	6.78E-26	6.78E-26	6.78E-26	6.78E-26	6.74E-26	6.68E-26
cf250	8.66E-30	8.66E-30	8.66E-30	8.66E-30	8.55E-30	8.21E-30	7.79E-30	6.64E-30	5.10E-30
cf251	1.16E-31	1.16E-31	1.16E-31	1.16E-31	1.16E-31	1.16E-31	1.16E-31	1.16E-31	1.15E-31
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 4

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	4.77E-07	4.77E-07	4.77E-07	4.77E-07	4.77E-07	4.77E-07	4.77E-07	4.77E-07	4.77E-07

tl207	3.96E-02	3.96E-02	3.96E-02	3.96E-02	3.96E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02
tl208	2.21E-03	2.21E-03	2.21E-03	2.26E-03	2.22E-03	2.21E-03	2.20E-03	2.15E-03	2.06E-03
tl209	5.99E-04	5.99E-04	5.99E-04	5.99E-04	5.99E-04	5.99E-04	5.99E-04	6.00E-04	6.01E-04
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	2.85E-02	2.85E-02	2.85E-02	2.72E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02	2.86E-02
pb210	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01
pb211	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02
pb212	6.15E-03	6.15E-03	6.15E-03	6.15E-03	6.18E-03	6.16E-03	6.13E-03	5.99E-03	5.72E-03
pb214	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.62E-01	3.62E-01
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01
bi211	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02
bi212	6.15E-03	6.15E-03	6.15E-03	6.28E-03	6.18E-03	6.16E-03	6.13E-03	5.99E-03	5.72E-03
bi213	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02	2.86E-02
bi214	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.62E-01	3.62E-01
po210	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.59E-01	3.57E-01	3.57E-01	3.59E-01	3.61E-01
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.10E-04	1.09E-04	1.09E-04	1.09E-04
po212	3.94E-03	3.94E-03	3.94E-03	4.02E-03	3.96E-03	3.95E-03	3.93E-03	3.84E-03	3.66E-03
po213	2.79E-02	2.79E-02	2.79E-02	2.79E-02	2.79E-02	2.79E-02	2.79E-02	2.80E-02	2.80E-02
po214	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.62E-01
po215	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02
po216	6.15E-03	6.15E-03	6.15E-03	6.15E-03	6.18E-03	6.16E-03	6.13E-03	5.99E-03	5.72E-03
po218	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.62E-01	3.62E-01
at217	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02	2.86E-02
rn218	9.82E-14	9.82E-14	9.82E-14	9.51E-14	4.90E-15	5.08E-19	2.63E-24	.00E+00	.00E+00
rn219	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02
rn220	6.15E-03	6.15E-03	6.15E-03	6.15E-03	6.18E-03	6.16E-03	6.13E-03	5.99E-03	5.72E-03
rn222	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.62E-01	3.62E-01
fr221	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02	2.86E-02
fr223	5.48E-04	5.48E-04	5.48E-04	5.48E-04	5.48E-04	5.48E-04	5.48E-04	5.48E-04	5.48E-04
ra222	9.82E-14	9.82E-14	9.82E-14	9.51E-14	4.90E-15	5.08E-19	2.63E-24	.00E+00	.00E+00
ra223	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02
ra224	6.15E-03	6.15E-03	6.15E-03	6.15E-03	6.18E-03	6.16E-03	6.13E-03	5.99E-03	5.72E-03
ra225	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02	2.86E-02
ra226	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.62E-01	3.62E-01
ra228	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.68E-07
ac225	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02	2.86E-02
ac227	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02
ac228	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.68E-07
th226	9.82E-14	9.82E-14	9.82E-14	9.51E-14	4.90E-15	5.08E-19	2.63E-24	.00E+00	.00E+00
th227	3.92E-02	3.92E-02	3.92E-02	3.92E-02	3.92E-02	3.93E-02	3.93E-02	3.93E-02	3.93E-02
th228	6.15E-03	6.15E-03	6.15E-03	6.15E-03	6.15E-03	6.14E-03	6.11E-03	5.98E-03	5.71E-03
th229	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02	2.86E-02
th230	6.12E-01	6.12E-01	6.12E-01	6.12E-01	6.12E-01	6.13E-01	6.13E-01	6.13E-01	6.14E-01
th231	4.25E-01	4.25E-01	4.25E-01	3.91E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 5

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
th232	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.68E-07	6.69E-07
th233	2.00E-03	2.00E-03	2.00E-03	7.28E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.98E-02
pa232	6.12E-03	6.12E-03	6.12E-03	3.61E-03	1.28E-23	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.99E+00	6.98E+00	6.98E+00	6.98E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	9.82E-14	9.82E-14	9.82E-14	9.50E-14	4.89E-15	5.08E-19	2.63E-24	.00E+00	.00E+00
u231	1.57E-09	1.57E-09	1.57E-09	1.33E-09	5.57E-16	.00E+00	.00E+00	.00E+00	.00E+00
u232	6.14E-03	6.14E-03	6.14E-03	6.14E-03	6.12E-03	6.08E-03	6.02E-03	5.84E-03	5.56E-03
u233	1.48E-01	1.48E-01	1.48E-01	1.48E-01	1.48E-01	1.48E-01	1.48E-01	1.48E-01	1.48E-01
u234	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01
u235	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01
u236	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00
u237	6.18E+01	6.18E+01	6.18E+01	5.58E+01	6.10E-03	1.05E-04	1.00E-04	8.66E-05	6.80E-05
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	2.54E+03	2.54E+03	2.54E+03	8.56E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	2.68E-29	2.68E-29	2.68E-29	2.68E-29	2.68E-29	2.69E-29	2.69E-29	2.71E-29	2.73E-29
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	2.88E-06	2.88E-06	2.88E-06	2.87E-06	2.46E-06	1.52E-06	8.01E-07	1.18E-07	4.82E-09
np236m	2.89E-04	2.89E-04	2.89E-04	1.38E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.05E-06
np237	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00
np238	9.40E+01	9.40E+01	9.40E+01	6.78E+01	2.32E-05	2.31E-05	2.30E-05	2.27E-05	2.21E-05
np239	2.54E+03	2.54E+03	2.54E+03	1.91E+03	6.77E-06	6.76E-06	6.76E-06	6.76E-06	6.75E-06
np240m	2.68E-29	2.68E-29	2.68E-29	2.69E-29	2.68E-29	2.69E-29	2.69E-29	2.71E-29	2.73E-29
np240	2.79E-05	2.79E-05	2.79E-05	2.77E-12	2.28E-32	2.28E-32	2.28E-32	2.28E-32	2.28E-32
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.39E-04	1.39E-04	1.39E-04	1.39E-04	1.31E-04	1.09E-04	8.62E-05	4.22E-05	1.30E-05
pu237	1.20E-06	1.20E-06	1.20E-06	1.19E-06	3.03E-07	4.43E-09	1.63E-11	8.14E-19	5.48E-31
pu238	9.40E+01	9.40E+01	9.40E+01	9.40E+01	9.38E+01	9.33E+01	9.25E+01	9.04E+01	8.69E+01
pu239	3.22E+02	3.22E+02	3.22E+02	3.22E+02	3.22E+02	3.22E+02	3.22E+02	3.22E+02	3.21E+02
pu240	2.45E+01	2.45E+01	2.45E+01	2.45E+01	2.45E+01	2.45E+01	2.45E+01	2.45E+01	2.45E+01
pu241	4.61E+00	4.61E+00	4.61E+00	4.61E+00	4.55E+00	4.39E+00	4.18E+00	3.62E+00	2.84E+00
pu242	2.07E-05	2.07E-05	2.07E-05	2.07E-05	2.07E-05	2.07E-05	2.07E-05	2.07E-05	2.07E-05
pu243	2.88E-05	2.88E-05	2.88E-05	1.00E-06	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22
pu244	2.69E-29	2.69E-29	2.69E-29	2.69E-29	2.69E-29	2.69E-29	2.69E-29	2.71E-29	2.73E-29
pu245	7.21E-29	7.21E-29	7.21E-29	1.48E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	3.22E-10	3.22E-10	3.22E-10	7.95E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	3.44E-08	3.44E-08	3.44E-08	2.48E-08	5.75E-21	.00E+00	.00E+00	.00E+00	.00E+00
am241	3.62E+00	3.62E+00	3.62E+00	3.62E+00	3.62E+00	3.62E+00	3.62E+00	3.63E+00	3.62E+00
am242m	5.17E-03	5.17E-03	5.17E-03	5.17E-03	5.16E-03	5.14E-03	5.12E-03	5.04E-03	4.92E-03
am242	3.45E-02	3.45E-02	3.45E-02	1.55E-02	5.14E-03	5.12E-03	5.09E-03	5.02E-03	4.90E-03
am243	6.76E-06	6.76E-06	6.76E-06	6.76E-06	6.76E-06	6.76E-06	6.76E-06	6.76E-06	6.75E-06
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	3.28E-07	3.28E-07	3.28E-07	6.32E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	7.95E-29	7.95E-29	7.95E-29	2.58E-29	6.07E-30	3.35E-30	1.53E-30	1.37E-31	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	4.15E-14	4.15E-14	4.15E-14	4.06E-14	6.19E-15	1.84E-17	8.20E-21	7.30E-31	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 6

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cm242	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.09E-02	9.39E-03	5.31E-03	4.17E-03	4.05E-03
cm243	3.32E-13	3.32E-13	3.32E-13	3.32E-13	3.30E-13	3.24E-13	3.16E-13	2.94E-13	2.60E-13
cm244	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.25E-07	3.16E-07	3.04E-07	2.71E-07	2.24E-07
cm245	7.28E-13	7.28E-13	7.28E-13	7.28E-13	7.28E-13	7.28E-13	7.28E-13	7.28E-13	7.28E-13
cm246	6.12E-15	6.12E-15	6.12E-15	6.12E-15	6.12E-15	6.12E-15	6.12E-15	6.12E-15	6.11E-15
cm247	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22
cm248	5.82E-24	5.82E-24	5.82E-24	5.82E-24	5.82E-24	5.82E-24	5.82E-24	5.82E-24	5.82E-24
cm249	5.09E-25	5.09E-25	5.09E-25	9.13E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	5.09E-25	5.09E-25	5.09E-25	5.08E-25	4.19E-25	2.31E-25	1.05E-25	9.75E-27	1.87E-28
bk250	1.42E-29	1.42E-29	1.42E-29	9.13E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	2.78E-25	2.78E-25	2.78E-25	2.78E-25	2.78E-25	2.78E-25	2.78E-25	2.76E-25	2.74E-25
cf250	9.47E-28	9.47E-28	9.47E-28	9.47E-28	9.35E-28	8.98E-28	8.52E-28	7.26E-28	5.57E-28
cf251	1.83E-31	1.83E-31	1.83E-31	1.83E-31	1.83E-31	1.83E-31	1.83E-31	1.83E-31	1.83E-31
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	5.73E+03	5.73E+03	5.73E+03	2.52E+03	4.93E+02	4.92E+02	4.91E+02	4.89E+02	4.84E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 7

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
h 3	3.90E-05	3.90E-05	3.90E-05	3.89E-05	3.84E-05	3.68E-05	3.48E-05	2.94E-05	2.22E-05
li 6	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05
li 7	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06
be 9	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06
be 10	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05
c 14	4.47E-06	4.47E-06	4.47E-06	4.47E-06	4.47E-06	4.47E-06	4.47E-06	4.47E-06	4.46E-06
ni 66	1.50E-13	1.50E-13	1.50E-13	1.11E-13	1.86E-25	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	2.34E-16	2.34E-16	2.34E-16	1.72E-16	2.90E-28	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08
cu 67	2.78E-14	2.78E-14	2.78E-14	2.12E-14	8.46E-25	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08
zn 68	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10
zn 69	8.27E-16	8.27E-16	8.27E-16	2.15E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	9.82E-15	9.82E-15	9.82E-15	2.93E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08
zn 70	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07
ga 70	8.35E-18	8.35E-18	8.35E-18	2.57E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10
zn 71	2.03E-15	2.03E-15	2.03E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	8.40E-13	8.40E-13	8.40E-13	1.26E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06
ge 71	6.85E-17	6.85E-17	6.85E-17	6.44E-17	2.93E-19	1.66E-26	4.03E-36	.00E+00	.00E+00
ge 71m	7.07E-25	7.07E-25	7.07E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	5.62E-18	5.62E-18	5.62E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	9.04E-15	9.04E-15	9.04E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	3.56E-14	3.56E-14	3.56E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	1.11E-09	1.11E-09	1.11E-09	7.79E-10	1.16E-23	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	3.38E-10	3.38E-10	3.38E-10	2.94E-10	5.03E-24	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04
co 73	3.72E-18	3.72E-18	3.72E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	1.66E-15	1.66E-15	1.66E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	8.58E-14	8.58E-14	8.58E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	6.22E-13	6.22E-13	6.22E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	4.68E-10	4.68E-10	4.68E-10	1.53E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03
ge 73m	1.32E-14	1.32E-14	1.32E-14	4.30E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	5.56E-19	5.56E-19	5.56E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	2.32E-15	2.32E-15	2.32E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	1.67E-14	1.67E-14	1.67E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	7.54E-12	7.54E-12	7.54E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	1.12E-11	1.12E-11	1.12E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03
co 75	9.48E-20	9.48E-20	9.48E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	2.84E-16	2.84E-16	2.84E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	3.63E-14	3.63E-14	3.63E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	2.25E-12	2.25E-12	2.25E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	3.24E-11	3.24E-11	3.24E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	1.28E-09	1.28E-09	1.28E-09	7.66E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	6.34E-13	6.34E-13	6.34E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02
ni 76	1.44E-16	1.44E-16	1.44E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	9.34E-15	9.34E-15	9.34E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 8

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
zn 76	3.27E-12	3.27E-12	3.27E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	2.67E-11	2.67E-11	2.67E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02
as 76	1.62E-11	1.62E-11	1.62E-11	8.61E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05
ni 77	7.95E-18	7.95E-18	7.95E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	5.75E-15	5.75E-15	5.75E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	1.45E-12	1.45E-12	1.45E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	2.13E-11	2.13E-11	2.13E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	2.38E-08	2.38E-08	2.38E-08	5.46E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	8.72E-11	8.72E-11	8.72E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	2.64E-07	2.64E-07	2.64E-07	1.86E-07	5.37E-24	.00E+00	.00E+00	.00E+00	.00E+00
se 77	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01
se 77m	1.05E-13	1.05E-13	1.05E-13	7.44E-14	2.14E-30	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	1.54E-18	1.54E-18	1.54E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	7.28E-16	7.28E-16	7.28E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	1.19E-12	1.19E-12	1.19E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	1.68E-11	1.68E-11	1.68E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	2.67E-08	2.67E-08	2.67E-08	3.17E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	2.78E-08	2.78E-08	2.78E-08	4.74E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01
cu 79	1.70E-16	1.70E-16	1.70E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	4.10E-13	4.10E-13	4.10E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	1.28E-11	1.28E-11	1.28E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	1.86E-10	1.86E-10	1.86E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	5.63E-09	5.63E-09	5.63E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
se 79m	2.42E-09	2.42E-09	2.42E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	5.96E-03	5.96E-03	5.96E-03	5.96E-03	5.96E-03	5.96E-03	5.96E-03	5.97E-03	5.98E-03
br 79m	5.74E-18	5.74E-18	5.74E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	3.08E-18	3.08E-18	3.08E-18	1.92E-18	8.42E-37	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	9.64E-18	9.64E-18	9.64E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	5.94E-14	5.94E-14	5.94E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	4.44E-12	4.44E-12	4.44E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	8.19E-10	8.19E-10	8.19E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	4.64E-10	4.64E-10	4.64E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00
br 80	1.11E-13	1.11E-13	1.11E-13	1.21E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	7.32E-13	7.32E-13	7.32E-13	1.70E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06

cu 81	6.93E-19	6.93E-19	6.93E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	2.69E-15	2.69E-15	2.69E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	2.20E-12	2.20E-12	2.20E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	2.29E-10	2.29E-10	2.29E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	1.46E-09	1.46E-09	1.46E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	5.07E-08	5.07E-08	5.07E-08	1.31E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	1.02E-08	1.02E-08	1.02E-08	2.76E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00
kr 81	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07
kr 81m	2.48E-18	2.48E-18	2.48E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	8.44E-16	8.44E-16	8.44E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	9.74E-13	9.74E-13	9.74E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 9

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
ge 82	1.46E-10	1.46E-10	1.46E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	9.69E-10	9.69E-10	9.69E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	2.57E-10	2.57E-10	2.57E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00
br 82	9.87E-09	9.87E-09	9.87E-09	6.17E-09	3.78E-27	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	1.22E-11	1.22E-11	1.22E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03
zn 83	1.52E-17	1.52E-17	1.52E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	3.45E-14	3.45E-14	3.45E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	2.49E-11	2.49E-11	2.49E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	1.13E-09	1.13E-09	1.13E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	7.76E-08	7.76E-08	7.76E-08	2.84E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	4.66E-09	4.66E-09	4.66E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	1.11E-06	1.11E-06	1.11E-06	1.18E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01
kr 83m	8.49E-07	8.49E-07	8.49E-07	3.89E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	2.07E-13	2.07E-13	2.07E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	9.44E-12	9.44E-12	9.44E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	3.34E-10	3.34E-10	3.34E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	4.73E-08	4.73E-08	4.73E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	4.81E-07	4.81E-07	4.81E-07	1.25E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	2.16E-09	2.16E-09	2.16E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01
ga 85	1.13E-16	1.13E-16	1.13E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	3.18E-13	3.18E-13	3.18E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	7.82E-11	7.82E-11	7.82E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	3.97E-09	3.97E-09	3.97E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	2.11E-09	2.11E-09	2.11E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	5.12E-08	5.12E-08	5.12E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.14E-02	2.04E-02	1.91E-02	1.58E-02	1.14E-02
kr 85m	4.79E-06	4.79E-06	4.79E-06	1.18E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	3.32E+01	3.32E+01	3.32E+01	3.32E+01	3.32E+01	3.32E+01	3.32E+01	3.32E+01	3.32E+01
ge 86	6.36E-14	6.36E-14	6.36E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	2.07E-11	2.07E-11	2.07E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	4.83E-09	4.83E-09	4.83E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	2.10E-08	2.10E-08	2.10E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	2.90E-10	2.90E-10	2.90E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01
rb 86	3.00E-08	3.00E-08	3.00E-08	2.89E-08	1.06E-09	3.77E-14	4.75E-20	9.44E-38	.00E+00
rb 86m	7.68E-14	7.68E-14	7.68E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03
ge 87	6.24E-13	6.24E-13	6.24E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	4.83E-12	4.83E-12	4.83E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	1.06E-09	1.06E-09	1.06E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	2.78E-08	2.78E-08	2.78E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	2.85E-06	2.85E-06	2.85E-06	6.01E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01
sr 87	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
sr 87m	2.34E-12	2.34E-12	2.34E-12	6.31E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	8.03E-16	8.03E-16	8.03E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	1.06E-12	1.06E-12	1.06E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	1.41E-10	1.41E-10	1.41E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 10

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
br 88	8.40E-09	8.40E-09	8.40E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	9.10E-06	9.10E-06	9.10E-06	2.60E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	9.71E-07	9.71E-07	9.71E-07	3.03E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02
as 89	6.92E-15	6.92E-15	6.92E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	1.33E-11	1.33E-11	1.33E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	1.48E-09	1.48E-09	1.48E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	2.21E-07	2.21E-07	2.21E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	1.12E-06	1.12E-06	1.12E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	5.38E-03	5.38E-03	5.38E-03	5.31E-03	1.57E-03	3.60E-05	2.40E-07	7.18E-14	9.60E-25
y 89	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02
y 89m	2.00E-12	2.00E-12	2.00E-12	1.81E-12	5.36E-13	1.23E-14	8.22E-17	2.46E-23	3.28E-34
as 90	3.69E-17	3.69E-17	3.69E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	2.86E-12	2.86E-12	2.86E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	3.42E-10	3.42E-10	3.42E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	4.13E-08	4.13E-08	4.13E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	1.79E-07	1.79E-07	1.79E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	8.59E-08	8.59E-08	8.59E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.33E+00	1.30E+00	1.27E+00	1.18E+00	1.04E+00
y 90	3.47E-04	3.47E-04	3.47E-04	3.47E-04	3.45E-04	3.39E-04	3.30E-04	3.07E-04	2.71E-04
y 90m	1.53E-12	1.53E-12	1.53E-12	8.32E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	1.66E+02	1.66E+02	1.66E+02	1.66E+02	1.66E+02	1.66E+02	1.66E+02	1.66E+02	1.67E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	1.43E-13	1.43E-13	1.43E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	3.90E-11	3.90E-11	3.90E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	7.57E-09	7.57E-09	7.57E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	8.60E-08	8.60E-08	8.60E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	5.29E-05	5.29E-05	5.29E-05	9.23E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	7.80E-03	7.80E-03	7.80E-03	7.75E-03	2.70E-03	1.04E-04	1.37E-06	3.15E-12	1.27E-21
y 91m	2.67E-06	2.67E-06	2.67E-06	5.10E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02
nb 91	2.11E-11	2.11E-11	2.11E-11	2.11E-11	2.11E-11	2.11E-11	2.11E-11	2.10E-11	2.09E-11
se 92	5.87E-15	5.87E-15	5.87E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	3.66E-12	3.66E-12	3.66E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	8.46E-10	8.46E-10	8.46E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	5.77E-09	5.77E-09	5.77E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	1.53E-05	1.53E-05	1.53E-05	3.30E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	2.01E-05	2.01E-05	2.01E-05	6.35E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02
nb 92	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08
se 93	1.52E-17	1.52E-17	1.52E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	2.02E-13	2.02E-13	2.02E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	1.89E-10	1.89E-10	1.89E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	5.57E-09	5.57E-09	5.57E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	7.51E-07	7.51E-07	7.51E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	4.14E-05	4.14E-05	4.14E-05	8.08E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02
nb 93	1.43E-01	1.43E-01	1.43E-01	1.43E-01	1.43E-01	1.43E-01	1.43E-01	1.43E-01	1.43E-01
nb 93m	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03
br 94	8.10E-15	8.10E-15	8.10E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	1.34E-11	1.34E-11	1.34E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	1.33E-09	1.33E-09	1.33E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 11

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sr 94	1.24E-07	1.24E-07	1.24E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	1.97E-06	1.97E-06	1.97E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02
nb 94	5.78E-05	5.78E-05	5.78E-05	5.78E-05	5.78E-05	5.78E-05	5.78E-05	5.78E-05	5.78E-05
nb 94m	1.45E-13	1.45E-13	1.45E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	6.48E-17	6.48E-17	6.48E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	2.42E-12	2.42E-12	2.42E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	8.92E-11	8.92E-11	8.92E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	3.74E-08	3.74E-08	3.74E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	1.12E-06	1.12E-06	1.12E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	9.99E-03	9.99E-03	9.99E-03	9.88E-03	3.77E-03	1.91E-04	3.67E-06	2.58E-11	6.67E-20
nb 95	5.45E-03	5.45E-03	5.45E-03	5.45E-03	3.43E-03	2.25E-04	4.55E-06	3.11E-11	8.02E-20
nb 95m	6.25E-06	6.25E-06	6.25E-06	6.25E-06	2.50E-06	1.27E-07	2.43E-09	1.71E-14	4.42E-23
mo 95	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02
br 96	1.28E-17	1.28E-17	1.28E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	1.85E-13	1.85E-13	1.85E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	1.19E-11	1.19E-11	1.19E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	1.16E-09	1.16E-09	1.16E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	1.00E-08	1.00E-08	1.00E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02
nb 96	1.76E-08	1.76E-08	1.76E-08	8.62E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01
kr 97	5.81E-16	5.81E-16	5.81E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	3.69E-12	3.69E-12	3.69E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	2.43E-10	2.43E-10	2.43E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	4.90E-09	4.90E-09	4.90E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	9.86E-05	9.86E-05	9.86E-05	3.68E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	7.03E-06	7.03E-06	7.03E-06	2.63E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	9.22E-08	9.22E-08	9.22E-08	3.45E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02
kr 98	3.00E-16	3.00E-16	3.00E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	1.13E-13	1.13E-13	1.13E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	1.36E-10	1.36E-10	1.36E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	6.68E-10	6.68E-10	6.68E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	5.16E-08	5.16E-08	5.16E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	4.83E-09	4.83E-09	4.83E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	2.19E-08	2.19E-08	2.19E-08	7.76E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02
tc 98	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05
rb 99	1.37E-15	1.37E-15	1.37E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	2.81E-11	2.81E-11	2.81E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	1.02E-09	1.02E-09	1.02E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	3.49E-09	3.49E-09	3.49E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	1.61E-08	1.61E-08	1.61E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	1.11E-07	1.11E-07	1.11E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	4.29E-04	4.29E-04	4.29E-04	3.33E-04	5.92E-14	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02
tc 99m	3.44E-05	3.44E-05	3.44E-05	2.92E-05	5.22E-15	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00

rb100	6.12E-16	6.12E-16	6.12E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	1.34E-12	1.34E-12	1.34E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	1.26E-10	1.26E-10	1.26E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 12

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
zr100	1.22E-08	1.22E-08	1.22E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	2.69E-09	2.69E-09	2.69E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	2.11E-10	2.11E-10	2.11E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02
tc100	1.25E-10	1.25E-10	1.25E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01
rb101	4.21E-18	4.21E-18	4.21E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	2.47E-13	2.47E-13	2.47E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	6.07E-11	6.07E-11	6.07E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	1.87E-09	1.87E-09	1.87E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	1.07E-08	1.07E-08	1.07E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	1.37E-06	1.37E-06	1.37E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	1.33E-06	1.33E-06	1.33E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02
sr102	8.34E-14	8.34E-14	8.34E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	6.73E-11	6.73E-11	6.73E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	2.08E-09	2.08E-09	2.08E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	1.59E-09	1.59E-09	1.59E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	9.09E-07	9.09E-07	9.09E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	7.08E-09	7.08E-09	7.08E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	1.97E-10	1.97E-10	1.97E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02
rh102	9.76E-09	9.76E-09	9.76E-09	9.76E-09	9.20E-09	7.69E-09	6.05E-09	2.95E-09	8.94E-10
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	1.02E-16	1.02E-16	1.02E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	6.06E-12	6.06E-12	6.06E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	2.72E-10	2.72E-10	2.72E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	1.12E-09	1.12E-09	1.12E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	6.85E-08	6.85E-08	6.85E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	5.63E-08	5.63E-08	5.63E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	3.52E-03	3.52E-03	3.52E-03	3.46E-03	7.19E-04	5.58E-06	8.82E-09	3.50E-17	3.47E-31
rh103	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02
rh103m	3.49E-06	3.49E-06	3.49E-06	3.43E-06	7.13E-07	5.53E-09	8.74E-12	3.47E-20	3.44E-34
sr104	4.35E-17	4.35E-17	4.35E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	2.40E-14	2.40E-14	2.40E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	1.20E-10	1.20E-10	1.20E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	1.31E-09	1.31E-09	1.31E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	3.92E-08	3.92E-08	3.92E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	7.44E-07	7.44E-07	7.44E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01
rh104	9.24E-10	9.24E-10	9.24E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	4.15E-10	4.15E-10	4.15E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00
y105	2.62E-16	2.62E-16	2.62E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	1.37E-11	1.37E-11	1.37E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	2.96E-10	2.96E-10	2.96E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	1.37E-08	1.37E-08	1.37E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	1.90E-07	1.90E-07	1.90E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	6.67E-06	6.67E-06	6.67E-06	1.62E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	5.32E-05	5.32E-05	5.32E-05	3.79E-05	2.50E-23	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	5.34E-09	5.34E-09	5.34E-09	1.30E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 13
0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
y106	2.69E-18	2.69E-18	2.69E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	2.91E-13	2.91E-13	2.91E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	9.77E-12	9.77E-12	9.77E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	1.42E-09	1.42E-09	1.42E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	7.55E-09	7.55E-09	7.55E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	7.16E-03	7.16E-03	7.16E-03	7.14E-03	6.05E-03	3.62E-03	1.83E-03	2.37E-04	7.87E-06
rh106	6.64E-09	6.64E-09	6.64E-09	6.63E-09	5.62E-09	3.36E-09	1.70E-09	2.20E-10	7.31E-12
rh106m	5.66E-11	5.66E-11	5.66E-11	2.62E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01
ag106	1.36E-18	1.36E-18	1.36E-18	1.18E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	2.53E-20	2.53E-20	2.53E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	7.48E-16	7.48E-16	7.48E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	1.20E-12	1.20E-12	1.20E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	1.89E-10	1.89E-10	1.89E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	2.09E-09	2.09E-09	2.09E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	2.67E-08	2.67E-08	2.67E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	1.55E-07	1.55E-07	1.55E-07	2.00E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00
pd107m	1.62E-13	1.62E-13	1.62E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	2.32E-03	2.32E-03	2.32E-03	2.32E-03	2.32E-03	2.32E-03	2.32E-03	2.32E-03	2.33E-03
zr108	4.58E-17	4.58E-17	4.58E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	9.67E-15	9.67E-15	9.67E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	7.70E-12	7.70E-12	7.70E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	1.49E-10	1.49E-10	1.49E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	1.80E-08	1.80E-08	1.80E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	1.13E-09	1.13E-09	1.13E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	3.80E-10	3.80E-10	3.80E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00
ag108	9.74E-15	9.74E-15	9.74E-15	1.29E-17	1.28E-17	1.28E-17	1.27E-17	1.25E-17	1.22E-17
ag108m	4.17E-09	4.17E-09	4.17E-09	4.17E-09	4.16E-09	4.15E-09	4.12E-09	4.06E-09	3.95E-09
cd108	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06
zr109	1.27E-20	1.27E-20	1.27E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	5.41E-16	5.41E-16	5.41E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	7.35E-13	7.35E-13	7.35E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	1.27E-11	1.27E-11	1.27E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	1.49E-09	1.49E-09	1.49E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	3.98E-09	3.98E-09	3.98E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	1.24E-09	1.24E-09	1.24E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	2.47E-06	2.47E-06	2.47E-06	7.35E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	3.74E-11	3.74E-11	3.74E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00
ag109m	1.98E-09	1.98E-09	1.98E-09	5.91E-10	5.29E-19	3.50E-19	2.03E-19	3.92E-20	2.54E-21
cd109	6.11E-13	6.11E-13	6.11E-13	6.10E-13	5.34E-13	3.54E-13	2.05E-13	3.96E-14	2.57E-15
nb110	1.07E-17	1.07E-17	1.07E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	1.96E-13	1.96E-13	1.96E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	1.41E-12	1.41E-12	1.41E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	2.50E-10	2.50E-10	2.50E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	8.40E-12	8.40E-12	8.40E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	5.51E-10	5.51E-10	5.51E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00
ag110	1.47E-11	1.47E-11	1.47E-11	8.04E-15	6.28E-15	2.93E-15	1.06E-15	5.08E-17	3.20E-19
ag110m	5.20E-07	5.20E-07	5.20E-07	5.19E-07	4.05E-07	1.89E-07	6.85E-08	3.27E-09	2.06E-11

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 14
0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cd110	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02
nb111	1.25E-19	1.25E-19	1.25E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	3.62E-15	3.62E-15	3.62E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	8.32E-13	8.32E-13	8.32E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	1.06E-11	1.06E-11	1.06E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	1.34E-10	1.34E-10	1.34E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	1.80E-08	1.80E-08	1.80E-08	2.69E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	9.94E-09	9.94E-09	9.94E-09	4.83E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	8.29E-06	8.29E-06	8.29E-06	7.58E-06	1.92E-09	1.45E-20	2.53E-35	.00E+00	.00E+00
ag111m	8.31E-10	8.31E-10	8.31E-10	1.54E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
cd111m	2.74E-14	2.74E-14	2.74E-14	3.30E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	2.37E-21	2.37E-21	2.37E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	1.21E-15	1.21E-15	1.21E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	4.07E-14	4.07E-14	4.07E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	1.16E-11	1.16E-11	1.16E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	1.04E-11	1.04E-11	1.04E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	6.25E-07	6.25E-07	6.25E-07	2.84E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	9.33E-08	9.33E-08	9.33E-08	4.96E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01
mo113	5.64E-18	5.64E-18	5.64E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	1.70E-14	1.70E-14	1.70E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	4.18E-12	4.18E-12	4.18E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	4.40E-12	4.40E-12	4.40E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	6.38E-10	6.38E-10	6.38E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	1.28E-07	1.28E-07	1.28E-07	5.82E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	9.00E-11	9.00E-11	9.00E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01
cd113m	5.05E-05	5.05E-05	5.05E-05	5.05E-05	4.99E-05	4.81E-05	4.58E-05	3.95E-05	3.09E-05
in113	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02
in113m	1.49E-17	1.49E-17	1.49E-17	6.54E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	4.81E-18	4.81E-18	4.81E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	8.41E-16	8.41E-16	8.41E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	4.50E-12	4.50E-12	4.50E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	4.77E-12	4.77E-12	4.77E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	8.65E-10	8.65E-10	8.65E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	2.77E-11	2.77E-11	2.77E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
in114	1.03E-14	1.03E-14	1.03E-14	7.35E-15	2.11E-15	4.48E-17	2.70E-19	5.87E-26	4.63E-37
in114m	4.63E-10	4.63E-10	4.63E-10	4.57E-10	1.31E-10	2.79E-12	1.68E-14	3.65E-21	2.88E-32
sn114	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06
mo115	6.98E-21	6.98E-21	6.98E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	3.57E-17	3.57E-17	3.57E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	1.07E-13	1.07E-13	1.07E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	1.11E-11	1.11E-11	1.11E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	1.62E-10	1.62E-10	1.62E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	3.95E-09	3.95E-09	3.95E-09	8.63E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	2.39E-11	2.39E-11	2.39E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	8.52E-07	8.52E-07	8.52E-07	6.27E-07	5.92E-19	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	7.39E-07	7.39E-07	7.39E-07	7.28E-07	1.82E-07	2.53E-09	8.66E-12	3.47E-19	1.63E-31
in115	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01
in115m	7.15E-08	7.15E-08	7.15E-08	5.73E-08	8.45E-14	1.17E-15	4.01E-18	1.61E-25	7.54E-38

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 15

0

nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sn115	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02

tc116	6.70E-18	6.70E-18	6.70E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	6.96E-14	6.96E-14	6.96E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	7.45E-13	7.45E-13	7.45E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	7.24E-11	7.24E-11	7.24E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	1.00E-09	1.00E-09	1.00E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	5.60E-12	5.60E-12	5.60E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01
in116	2.97E-13	2.97E-13	2.97E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	2.58E-10	2.58E-10	2.58E-10	2.54E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03
tc117	9.96E-20	9.96E-20	9.96E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	1.93E-15	1.93E-15	1.93E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	3.20E-13	3.20E-13	3.20E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	1.67E-11	1.67E-11	1.67E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	1.75E-10	1.75E-10	1.75E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	1.28E-11	1.28E-11	1.28E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	3.73E-08	3.73E-08	3.73E-08	4.71E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	1.05E-08	1.05E-08	1.05E-08	7.44E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	7.94E-09	7.94E-09	7.94E-09	5.07E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	2.66E-08	2.66E-08	2.66E-08	1.58E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01
sn117m	1.14E-08	1.14E-08	1.14E-08	1.09E-08	1.17E-10	9.47E-17	7.79E-25	.00E+00	.00E+00
tc118	1.60E-21	1.60E-21	1.60E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	5.40E-16	5.40E-16	5.40E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	1.68E-14	1.68E-14	1.68E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	4.90E-12	4.90E-12	4.90E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	1.08E-11	1.08E-11	1.08E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	4.06E-12	4.06E-12	4.06E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	1.42E-08	1.42E-08	1.42E-08	3.43E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	2.36E-11	2.36E-11	2.36E-11	5.70E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	7.56E-13	7.56E-13	7.56E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01
ru119	2.13E-17	2.13E-17	2.13E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	9.91E-15	9.91E-15	9.91E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	1.95E-12	1.95E-12	1.95E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	7.88E-12	7.88E-12	7.88E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	5.84E-10	5.84E-10	5.84E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	2.00E-10	2.00E-10	2.00E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	2.86E-10	2.86E-10	2.86E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	3.53E-09	3.53E-09	3.53E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
sn119m	4.72E-07	4.72E-07	4.72E-07	4.71E-07	3.82E-07	1.99E-07	8.40E-08	6.29E-09	8.37E-11
ru120	4.61E-18	4.61E-18	4.61E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	7.09E-16	7.09E-16	7.09E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	2.03E-12	2.03E-12	2.03E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	2.93E-12	2.93E-12	2.93E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	2.56E-10	2.56E-10	2.56E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	1.57E-11	1.57E-11	1.57E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	2.36E-12	2.36E-12	2.36E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
rh121	2.57E-16	2.57E-16	2.57E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 16

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
pd121	1.25E-13	1.25E-13	1.25E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	1.46E-12	1.46E-12	1.46E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	7.08E-11	7.08E-11	7.08E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	7.84E-12	7.84E-12	7.84E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	1.24E-09	1.24E-09	1.24E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	5.44E-07	5.44E-07	5.44E-07	2.96E-07	3.16E-09	3.13E-09	3.09E-09	2.98E-09	2.79E-09
sn121m	7.28E-05	7.28E-05	7.28E-05	7.28E-05	7.25E-05	7.18E-05	7.09E-05	6.83E-05	6.41E-05
sb121	5.83E-01	5.83E-01	5.83E-01	5.83E-01	5.83E-01	5.83E-01	5.83E-01	5.83E-01	5.83E-01
rh122	1.21E-17	1.21E-17	1.21E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	8.74E-14	8.74E-14	8.74E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	4.65E-13	4.65E-13	4.65E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	3.01E-11	3.01E-11	3.01E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	9.25E-12	9.25E-12	9.25E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	4.33E-12	4.33E-12	4.33E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01
sb122	1.13E-09	1.13E-09	1.13E-09	8.76E-10	1.05E-19	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	1.27E-13	1.27E-13	1.27E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04
rh123	1.21E-18	1.21E-18	1.21E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	2.79E-15	2.79E-15	2.79E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	1.38E-13	1.38E-13	1.38E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	3.32E-11	3.32E-11	3.32E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	2.53E-11	2.53E-11	2.53E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	5.62E-11	5.62E-11	5.62E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	7.41E-06	7.41E-06	7.41E-06	7.37E-06	4.57E-06	1.04E-06	1.47E-07	4.11E-10	2.28E-14
sn123m	1.46E-08	1.46E-08	1.46E-08	2.26E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01
te123	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08
te123m	4.83E-12	4.83E-12	4.83E-12	4.80E-12	2.87E-12	5.82E-13	7.02E-14	1.23E-16	3.14E-21
pd124	2.90E-15	2.90E-15	2.90E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	8.21E-14	8.21E-14	8.21E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	5.99E-12	5.99E-12	5.99E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	3.35E-11	3.35E-11	3.35E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00
sb124	4.94E-08	4.94E-08	4.94E-08	4.88E-08	1.75E-08	7.37E-10	1.10E-11	3.64E-17	2.68E-26
sb124m	1.83E-13	1.83E-13	1.83E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04
pd125	1.99E-16	1.99E-16	1.99E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	4.40E-14	4.40E-14	4.40E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	6.18E-12	6.18E-12	6.18E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	1.29E-11	1.29E-11	1.29E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	4.81E-11	4.81E-11	4.81E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	3.14E-06	3.14E-06	3.14E-06	2.92E-06	4.86E-09	1.23E-17	4.85E-29	.00E+00	.00E+00
sn125m	5.32E-09	5.32E-09	5.32E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	1.13E-03	1.13E-03	1.13E-03	1.13E-03	1.06E-03	8.78E-04	6.81E-04	3.18E-04	8.94E-05
te125	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00
te125m	1.51E-05	1.51E-05	1.51E-05	1.51E-05	1.48E-05	1.25E-05	9.68E-06	4.52E-06	1.27E-06
pd126	6.77E-17	6.77E-17	6.77E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	8.10E-15	8.10E-15	8.10E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	2.50E-12	2.50E-12	2.50E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	1.76E-11	1.76E-11	1.76E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 17

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sb126	1.83E-07	1.83E-07	1.83E-07	1.79E-07	9.57E-08	9.52E-08	9.52E-08	9.52E-08	9.52E-08
sb126m	8.53E-10	8.53E-10	8.53E-10	7.24E-10	7.24E-10	7.24E-10	7.24E-10	7.24E-10	7.24E-10
te126	4.89E-02	4.89E-02	4.89E-02	4.89E-02	4.89E-02	4.89E-02	4.89E-02	4.89E-02	4.90E-02
xe126	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10
ag127	4.79E-15	4.79E-15	4.79E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	2.16E-12	2.16E-12	2.16E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	1.52E-11	1.52E-11	1.52E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	4.96E-11	4.96E-11	4.96E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	1.57E-07	1.57E-07	1.57E-07	5.70E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	7.95E-09	7.95E-09	7.95E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	1.85E-05	1.85E-05	1.85E-05	1.56E-05	1.71E-12	5.12E-34	.00E+00	.00E+00	.00E+00
te127	1.87E-06	1.87E-06	1.87E-06	1.74E-06	1.88E-07	3.27E-08	3.20E-09	3.01E-12	2.73E-17
te127m	9.18E-05	9.18E-05	9.18E-05	9.17E-05	5.37E-05	9.33E-06	9.14E-07	8.61E-10	7.79E-15
i127	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00
xe127	2.89E-15	2.89E-15	2.89E-15	2.84E-15	5.21E-16	2.76E-18	2.63E-21	2.28E-30	.00E+00
ag128	1.07E-15	1.07E-15	1.07E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	3.66E-12	3.66E-12	3.66E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	3.24E-11	3.24E-11	3.24E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	4.83E-07	4.83E-07	4.83E-07	2.24E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	3.36E-07	3.36E-07	3.36E-07	5.67E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	8.73E-08	8.73E-08	8.73E-08	4.77E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01
i128	6.87E-11	6.87E-11	6.87E-11	3.06E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03
cd129	4.43E-13	4.43E-13	4.43E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	2.35E-11	2.35E-11	2.35E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	1.49E-08	1.49E-08	1.49E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	5.99E-08	5.99E-08	5.99E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	4.87E-06	4.87E-06	4.87E-06	1.13E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	1.21E-06	1.21E-06	1.21E-06	1.84E-07	2.41E-08	8.23E-11	4.39E-14	6.69E-24	.00E+00
te129m	1.66E-04	1.66E-04	1.66E-04	1.64E-04	2.61E-05	8.92E-08	4.76E-11	7.26E-21	3.15E-37
i129	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01
xe129	3.61E-03	3.61E-03	3.61E-03	3.61E-03	3.61E-03	3.61E-03	3.62E-03	3.62E-03	3.63E-03
xe129m	2.31E-12	2.31E-12	2.31E-12	2.14E-12	2.07E-15	9.91E-25	4.25E-37	.00E+00	.00E+00
cd130	2.84E-13	2.84E-13	2.84E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	1.21E-11	1.21E-11	1.21E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	9.79E-08	9.79E-08	9.79E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	2.34E-07	2.34E-07	2.34E-07	2.48E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	2.16E-07	2.16E-07	2.16E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01
i130	3.40E-08	3.40E-08	3.40E-08	8.89E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	1.90E-10	1.90E-10	1.90E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02
cd131	7.74E-15	7.74E-15	7.74E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	3.56E-12	3.56E-12	3.56E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	1.40E-08	1.40E-08	1.40E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	1.40E-06	1.40E-06	1.40E-06	2.01E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	1.54E-06	1.54E-06	1.54E-06	3.20E-08	1.18E-29	.00E+00	.00E+00	.00E+00	.00E+00
te131m	1.77E-05	1.77E-05	1.77E-05	1.02E-05	3.77E-27	.00E+00	.00E+00	.00E+00	.00E+00
i131	8.03E-04	8.03E-04	8.03E-04	7.47E-04	3.53E-07	1.75E-17	3.70E-31	.00E+00	.00E+00
xe131	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02
xe131m	1.30E-05	1.30E-05	1.30E-05	1.29E-05	2.03E-07	2.33E-14	1.34E-23	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 18

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cd132	1.12E-15	1.12E-15	1.12E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	6.14E-13	6.14E-13	6.14E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	1.02E-08	1.02E-08	1.02E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	1.35E-07	1.35E-07	1.35E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	9.96E-08	9.96E-08	9.96E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	4.85E-04	4.85E-04	4.85E-04	3.92E-04	2.35E-12	.00E+00	.00E+00	.00E+00	.00E+00
i132	1.43E-05	1.43E-05	1.43E-05	1.18E-05	7.06E-14	.00E+00	.00E+00	.00E+00	.00E+00
xe132	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02
cs132	2.10E-10	2.10E-10	2.10E-10	1.89E-10	1.38E-14	2.25E-27	.00E+00	.00E+00	.00E+00
ba132	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07

in133	6.32E-15	6.32E-15	6.32E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	1.01E-10	1.01E-10	1.01E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	1.42E-07	1.42E-07	1.42E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	1.14E-06	1.14E-06	1.14E-06	3.25E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	4.23E-06	4.23E-06	4.23E-06	6.37E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	2.00E-04	2.00E-04	2.00E-04	9.24E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	1.48E-09	1.48E-09	1.48E-09	1.76E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	1.21E-03	1.21E-03	1.21E-03	1.17E-03	1.01E-08	1.59E-24	.00E+00	.00E+00	.00E+00
xe133m	1.49E-05	1.49E-05	1.49E-05	1.36E-05	1.05E-17	.00E+00	.00E+00	.00E+00	.00E+00
cs133	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02
ba133	2.07E-11	2.07E-11	2.07E-11	2.07E-11	2.04E-11	1.94E-11	1.81E-11	1.49E-11	1.07E-11
in134	7.10E-16	7.10E-16	7.10E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	8.51E-12	8.51E-12	8.51E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	1.54E-10	1.54E-10	1.54E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	1.16E-09	1.16E-09	1.16E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	6.82E-06	6.82E-06	6.82E-06	2.91E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	9.75E-06	9.75E-06	9.75E-06	2.45E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	3.46E-08	3.46E-08	3.46E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02
xe134m	8.74E-12	8.74E-12	8.74E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	9.42E-04	9.42E-04	9.42E-04	9.42E-04	8.68E-04	6.73E-04	4.81E-04	1.76E-04	3.27E-05
cs134m	1.15E-08	1.15E-08	1.15E-08	3.80E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	7.97E-01	7.97E-01	7.97E-01	7.97E-01	7.97E-01	7.97E-01	7.97E-01	7.97E-01	7.98E-01
sn135	2.58E-13	2.58E-13	2.58E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	1.13E-10	1.13E-10	1.13E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	2.51E-08	2.51E-08	2.51E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	6.03E-05	6.03E-05	6.03E-05	4.79E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	8.77E-05	8.77E-05	8.77E-05	3.20E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	4.41E-07	4.41E-07	4.41E-07	3.04E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02
cs135m	2.45E-10	2.45E-10	2.45E-10	1.63E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01
ba135m	2.66E-11	2.66E-11	2.66E-11	1.49E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	3.38E-14	3.38E-14	3.38E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	6.99E-12	6.99E-12	6.99E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	1.12E-08	1.12E-08	1.12E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	1.09E-07	1.09E-07	1.09E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	2.85E-08	2.85E-08	2.85E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02
cs136	8.36E-06	8.36E-06	8.36E-06	7.94E-06	7.31E-08	3.69E-14	1.63E-22	.00E+00	.00E+00
ba136	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01
ba136m	2.54E-13	2.54E-13	2.54E-13	2.41E-13	2.22E-15	1.12E-21	4.95E-30	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 19

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sb137	9.59E-12	9.59E-12	9.59E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	6.72E-10	6.72E-10	6.72E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	3.25E-08	3.25E-08	3.25E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	5.75E-07	5.75E-07	5.75E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.43E+00	2.39E+00	2.33E+00	2.18E+00	1.94E+00
ba137	2.80E+02	2.80E+02	2.80E+02	2.80E+02	2.80E+02	2.80E+02	2.80E+02	2.80E+02	2.80E+02
ba137m	3.73E-07	3.73E-07	3.73E-07	3.73E-07	3.71E-07	3.65E-07	3.56E-07	3.33E-07	2.96E-07
sb138	1.34E-14	1.34E-14	1.34E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	5.13E-11	5.13E-11	5.13E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	4.32E-09	4.32E-09	4.32E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	2.19E-06	2.19E-06	2.19E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	5.25E-06	5.25E-06	5.25E-06	3.16E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	1.24E-08	1.24E-08	1.24E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02
la138	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03
sb139	1.14E-15	1.14E-15	1.14E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	2.78E-12	2.78E-12	2.78E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	9.26E-10	9.26E-10	9.26E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	8.29E-08	8.29E-08	8.29E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	1.44E-06	1.44E-06	1.44E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	1.33E-05	1.33E-05	1.33E-05	1.13E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02
ce139	2.78E-10	2.78E-10	2.78E-10	2.77E-10	1.77E-10	4.42E-11	7.02E-12	2.81E-14	2.85E-18
pr139	1.28E-15	1.28E-15	1.28E-15	2.94E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	6.91E-13	6.91E-13	6.91E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	7.91E-11	7.91E-11	7.91E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	2.10E-08	2.10E-08	2.10E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	1.51E-07	1.51E-07	1.51E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	2.88E-03	2.88E-03	2.88E-03	2.73E-03	2.16E-05	6.90E-12	1.65E-20	.00E+00	.00E+00
la140	3.80E-04	3.80E-04	3.80E-04	3.76E-04	3.28E-06	1.05E-12	2.51E-21	.00E+00	.00E+00
ce140	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02
pr140	5.14E-14	5.14E-14	5.14E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	1.59E-15	1.59E-15	1.59E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	3.74E-12	3.74E-12	3.74E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	9.68E-10	9.68E-10	9.68E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	4.60E-08	4.60E-08	4.60E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	2.65E-06	2.65E-06	2.65E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	3.42E-05	3.42E-05	3.42E-05	5.33E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	6.81E-03	6.81E-03	6.81E-03	6.70E-03	1.00E-03	2.83E-06	1.17E-09	8.32E-20	1.01E-36
pr141	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02
nd141	2.85E-15	2.85E-15	2.85E-15	3.57E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	1.61E-15	1.61E-15	1.61E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	5.46E-13	5.46E-13	5.46E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	2.45E-10	2.45E-10	2.45E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	1.91E-09	1.91E-09	1.91E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	1.53E-06	1.53E-06	1.53E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	1.34E-05	1.34E-05	1.34E-05	2.65E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
pr142	1.76E-07	1.76E-07	1.76E-07	7.38E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01
i143	6.88E-15	6.88E-15	6.88E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 20

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
xe143	2.53E-11	2.53E-11	2.53E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	1.11E-09	1.11E-09	1.11E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	3.19E-08	3.19E-08	3.19E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	2.09E-06	2.09E-06	2.09E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	2.95E-04	2.95E-04	2.95E-04	1.79E-04	5.87E-24	.00E+00	.00E+00	.00E+00	.00E+00
pr143	2.91E-03	2.91E-03	2.91E-03	2.88E-03	3.26E-05	2.54E-11	1.99E-19	.00E+00	.00E+00
nd143	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
i144	8.65E-17	8.65E-17	8.65E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	4.60E-12	4.60E-12	4.60E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	1.61E-10	1.61E-10	1.61E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	2.11E-08	2.11E-08	2.11E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	9.28E-08	9.28E-08	9.28E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	5.66E-02	5.66E-02	5.66E-02	5.65E-02	4.55E-02	2.33E-02	9.57E-03	6.66E-04	7.84E-06
pr144	2.38E-06	2.38E-06	2.38E-06	2.38E-06	1.92E-06	9.81E-07	4.03E-07	2.81E-08	3.30E-10
pr144m	1.39E-08	1.39E-08	1.39E-08	1.39E-08	1.12E-08	5.72E-09	2.35E-09	1.64E-10	1.93E-12
nd144	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02

i145	3.44E-18	3.44E-18	3.44E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	2.28E-13	2.28E-13	2.28E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	1.79E-11	1.79E-11	1.79E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	3.40E-09	3.40E-09	3.40E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	3.81E-08	3.81E-08	3.81E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	3.02E-07	3.02E-07	3.02E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	3.60E-05	3.60E-05	3.60E-05	2.25E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02
pm145	3.22E-10	3.22E-10	3.22E-10	3.22E-10	3.22E-10	3.18E-10	3.09E-10	2.78E-10	2.29E-10
sm145	1.51E-11	1.51E-11	1.51E-11	1.51E-11	1.26E-11	7.17E-12	3.40E-12	3.65E-13	8.82E-15
xe146	1.38E-14	1.38E-14	1.38E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	2.83E-12	2.83E-12	2.83E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	9.55E-10	9.55E-10	9.55E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	6.56E-09	6.56E-09	6.56E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	1.04E-06	1.04E-06	1.04E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	1.87E-06	1.87E-06	1.87E-06	4.78E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02
pm146	2.06E-10	2.06E-10	2.06E-10	2.06E-10	2.00E-10	1.82E-10	1.61E-10	1.10E-10	5.89E-11
sm146	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05
xe147	1.39E-17	1.39E-17	1.39E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	4.55E-14	4.55E-14	4.55E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	3.40E-11	3.40E-11	3.40E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	1.80E-09	1.80E-09	1.80E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	5.38E-08	5.38E-08	5.38E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	8.07E-07	8.07E-07	8.07E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	9.38E-04	9.38E-04	9.38E-04	8.82E-04	3.20E-06	9.10E-14	8.83E-24	.00E+00	.00E+00
pm147	8.19E-02	8.19E-02	8.19E-02	8.19E-02	7.76E-02	6.36E-02	4.88E-02	2.21E-02	5.90E-03
sm147	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02
cs148	3.00E-15	3.00E-15	3.00E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	4.47E-12	4.47E-12	4.47E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	1.26E-10	1.26E-10	1.26E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	3.77E-08	3.77E-08	3.77E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	1.01E-07	1.01E-07	1.01E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01
pm148	6.21E-09	6.21E-09	6.21E-09	5.48E-09	6.43E-11	6.33E-13	1.38E-15	1.42E-23	6.38E-37
pm148m	4.23E-08	4.23E-08	4.23E-08	4.16E-08	9.34E-09	9.20E-11	2.00E-13	2.06E-21	1.00E-34

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 21

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sm148	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01
cs149	2.59E-17	2.59E-17	2.59E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	4.61E-13	4.61E-13	4.61E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	7.19E-11	7.19E-11	7.19E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	1.78E-09	1.78E-09	1.78E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	6.44E-08	6.44E-08	6.44E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	3.03E-06	3.03E-06	3.03E-06	2.01E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	9.32E-05	9.32E-05	9.32E-05	7.05E-05	5.43E-17	.00E+00	.00E+00	.00E+00	.00E+00
sm149	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00
eu149	9.71E-14	9.71E-14	9.71E-14	9.63E-14	4.97E-14	6.39E-15	4.21E-16	1.20E-19	1.48E-25
cs150	1.69E-18	1.69E-18	1.69E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	4.87E-14	4.87E-14	4.87E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	2.36E-12	2.36E-12	2.36E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	5.33E-10	5.33E-10	5.33E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	1.66E-09	1.66E-09	1.66E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01
pm150	4.22E-10	4.22E-10	4.22E-10	8.50E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01
eu150	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.65E-08	1.63E-08	1.60E-08	1.51E-08	1.37E-08

ba151	1.54E-16	1.54E-16	1.54E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	3.67E-13	3.67E-13	3.67E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	3.24E-11	3.24E-11	3.24E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	2.48E-09	2.48E-09	2.48E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	1.51E-07	1.51E-07	1.51E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	2.09E-05	2.09E-05	2.09E-05	1.17E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	5.80E-01	5.80E-01	5.80E-01	5.80E-01	5.79E-01	5.75E-01	5.71E-01	5.58E-01	5.37E-01
eu151	1.65E+01	1.65E+01	1.65E+01	1.65E+01	1.65E+01	1.65E+01	1.65E+01	1.65E+01	1.65E+01
ba152	1.53E-18	1.53E-18	1.53E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	2.94E-15	2.94E-15	2.94E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	3.41E-11	3.41E-11	3.41E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	2.92E-10	2.92E-10	2.92E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	8.78E-08	8.78E-08	8.78E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	3.23E-08	3.23E-08	3.23E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	1.26E-09	1.26E-09	1.26E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01
eu152	2.19E-02	2.19E-02	2.19E-02	2.19E-02	2.16E-02	2.08E-02	1.98E-02	1.69E-02	1.30E-02
eu152m	9.49E-07	9.49E-07	9.49E-07	1.59E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00
la153	1.04E-15	1.04E-15	1.04E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	1.44E-12	1.44E-12	1.44E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	6.86E-11	6.86E-11	6.86E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	4.86E-09	4.86E-09	4.86E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	2.68E-08	2.68E-08	2.68E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	1.48E-05	1.48E-05	1.48E-05	1.04E-05	1.32E-19	.00E+00	.00E+00	.00E+00	.00E+00
eu153	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00
gd153	5.00E-06	5.00E-06	5.00E-06	4.99E-06	3.86E-06	1.75E-06	6.15E-07	2.65E-08	1.40E-10
la154	1.20E-17	1.20E-17	1.20E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	1.74E-13	1.74E-13	1.74E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	2.46E-12	2.46E-12	2.46E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	1.16E-09	1.16E-09	1.16E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	3.56E-09	3.56E-09	3.56E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	8.99E-10	8.99E-10	8.99E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 22

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sm154	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00
eu154	7.29E-04	7.29E-04	7.29E-04	7.29E-04	7.15E-04	6.73E-04	6.20E-04	4.87E-04	3.25E-04
gd154	1.44E-01	1.44E-01	1.44E-01	1.44E-01	1.44E-01	1.44E-01	1.45E-01	1.45E-01	1.45E-01
la155	6.08E-20	6.08E-20	6.08E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	3.64E-15	3.64E-15	3.64E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	4.73E-13	4.73E-13	4.73E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	1.58E-10	1.58E-10	1.58E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	8.57E-10	8.57E-10	8.57E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	2.68E-08	2.68E-08	2.68E-08	1.02E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	2.96E-03	2.96E-03	2.96E-03	2.96E-03	2.86E-03	2.55E-03	2.20E-03	1.41E-03	6.74E-04
gd155m	1.42E-17	1.42E-17	1.42E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	6.99E-01	6.99E-01	6.99E-01	6.99E-01	6.99E-01	6.99E-01	7.00E-01	7.00E-01	7.01E-01
ce156	3.09E-16	3.09E-16	3.09E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	1.86E-14	1.86E-14	1.86E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	4.65E-11	4.65E-11	4.65E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	9.01E-11	9.01E-11	9.01E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	3.33E-07	3.33E-07	3.33E-07	5.68E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	1.30E-05	1.30E-05	1.30E-05	1.27E-05	2.20E-07	7.68E-13	4.41E-20	.00E+00	.00E+00
gd156	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00
ce157	5.27E-18	5.27E-18	5.27E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	2.64E-15	2.64E-15	2.64E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	1.20E-12	1.20E-12	1.20E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	1.56E-10	1.56E-10	1.56E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	2.48E-09	2.48E-09	2.48E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	2.89E-07	2.89E-07	2.89E-07	9.77E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02
pr158	6.06E-17	6.06E-17	6.06E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	2.05E-13	2.05E-13	2.05E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	2.27E-12	2.27E-12	2.27E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	7.95E-10	7.95E-10	7.95E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	7.34E-09	7.34E-09	7.34E-09	2.97E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01
pr159	2.73E-18	2.73E-18	2.73E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	4.15E-15	4.15E-15	4.15E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	3.39E-13	3.39E-13	3.39E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	1.33E-10	1.33E-10	1.33E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	1.22E-09	1.22E-09	1.22E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	7.67E-08	7.67E-08	7.67E-08	3.19E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02
nd160	3.25E-16	3.25E-16	3.25E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	8.74E-15	8.74E-15	8.74E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	1.63E-11	1.63E-11	1.63E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	1.84E-11	1.84E-11	1.84E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02
tb160	1.84E-08	1.84E-08	1.84E-08	1.82E-08	7.75E-09	5.54E-10	1.67E-11	4.58E-16	1.14E-23
dy160	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04
nd161	5.24E-18	5.24E-18	5.24E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	1.11E-15	1.11E-15	1.11E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	1.97E-13	1.97E-13	1.97E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	5.89E-12	5.89E-12	5.89E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	4.31E-11	4.31E-11	4.31E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	1.18E-07	1.18E-07	1.18E-07	1.07E-07	1.40E-11	1.37E-23	1.60E-39	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 23

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
dy161	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02
pm162	3.02E-17	3.02E-17	3.02E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	3.59E-14	3.59E-14	3.59E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	5.68E-12	5.68E-12	5.68E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	4.18E-11	4.18E-11	4.18E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	3.93E-11	3.93E-11	3.93E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	1.27E-11	1.27E-11	1.27E-11	7.28E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03
sm163	7.13E-16	7.13E-16	7.13E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	5.12E-14	5.12E-14	5.12E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	2.71E-12	2.71E-12	2.71E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	3.95E-11	3.95E-11	3.95E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03
sm164	6.14E-17	6.14E-17	6.14E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	1.23E-15	1.23E-15	1.23E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	1.13E-11	1.13E-11	1.13E-11	1.15E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	2.20E-12	2.20E-12	2.20E-12	1.85E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04
sm165	1.11E-18	1.11E-18	1.11E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	1.38E-16	1.38E-16	1.38E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	8.50E-14	8.50E-14	8.50E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	5.57E-13	5.57E-13	5.57E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	5.06E-11	5.06E-11	5.06E-11	4.14E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	3.60E-13	3.60E-13	3.60E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04
dy166	2.18E-10	2.18E-10	2.18E-10	1.78E-10	2.35E-18	.00E+00	.00E+00	.00E+00	.00E+00
ho166	7.41E-11	7.41E-11	7.41E-11	6.95E-11	1.15E-18	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	2.96E-07	2.96E-07	2.96E-07	2.96E-07	2.96E-07	2.96E-07	2.96E-07	2.96E-07	2.95E-07
er166	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05
er167	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08
er167m	5.44E-20	5.44E-20	5.44E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	1.05E-12	1.05E-12	1.05E-12	9.73E-13	1.37E-15	2.11E-24	4.24E-36	.00E+00	.00E+00
tm169	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08
tm170	8.68E-14	8.68E-14	8.68E-14	8.63E-14	5.34E-14	1.21E-14	1.69E-15	4.60E-18	2.44E-22
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10
er171	5.00E-14	5.00E-14	5.00E-14	5.46E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	1.14E-10	1.14E-10	1.14E-10	1.14E-10	1.04E-10	7.96E-11	5.55E-11	1.88E-11	3.09E-12
yb171	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07
er172	2.07E-13	2.07E-13	2.07E-13	1.47E-13	1.34E-26	.00E+00	.00E+00	.00E+00	.00E+00
tm172	2.79E-13	2.79E-13	2.79E-13	2.67E-13	7.18E-23	.00E+00	.00E+00	.00E+00	.00E+00
yb172	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08
total	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 24

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
h 3	3.77E-01	3.77E-01	3.77E-01	3.77E-01	3.71E-01	3.56E-01	3.37E-01	2.84E-01	2.15E-01
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07
c 14	1.99E-05	1.99E-05	1.99E-05	1.99E-05	1.99E-05	1.99E-05	1.99E-05	1.99E-05	1.99E-05
ni 66	1.30E-07	1.30E-07	1.30E-07	9.61E-08	1.62E-19	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	1.31E-07	1.31E-07	1.31E-07	9.63E-08	1.62E-19	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	2.10E-08	2.10E-08	2.10E-08	1.60E-08	6.40E-19	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	4.00E-08	4.00E-08	4.00E-08	1.04E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	3.24E-08	3.24E-08	3.24E-08	9.68E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	1.06E-09	1.06E-09	1.06E-09	3.26E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	2.19E-06	2.19E-06	2.19E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	9.36E-06	9.36E-06	9.36E-06	1.40E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	1.10E-11	1.10E-11	1.10E-11	1.04E-11	4.71E-14	2.67E-21	6.39E-31	.00E+00	.00E+00
ge 71m	5.51E-12	5.51E-12	5.51E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	7.13E-06	7.13E-06	7.13E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	3.70E-04	3.70E-04	3.70E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	8.59E-04	8.59E-04	8.59E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	1.04E-03	1.04E-03	1.04E-03	7.29E-04	1.08E-17	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	1.04E-03	1.04E-03	1.04E-03	9.07E-04	1.55E-17	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	4.46E-06	4.46E-06	4.46E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	5.23E-04	5.23E-04	5.23E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	2.59E-03	2.59E-03	2.59E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	4.09E-03	4.09E-03	4.09E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	4.13E-03	4.13E-03	4.13E-03	1.35E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	4.08E-03	4.08E-03	4.08E-03	1.33E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	9.23E-07	9.23E-07	9.23E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	3.94E-04	3.94E-04	3.94E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	3.92E-03	3.92E-03	3.92E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	1.20E-02	1.20E-02	1.20E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	3.49E-03	3.49E-03	3.49E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	1.75E-07	1.75E-07	1.75E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	1.85E-04	1.85E-04	1.85E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	5.89E-03	5.89E-03	5.89E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	3.33E-02	3.33E-02	3.33E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	3.87E-02	3.87E-02	3.87E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	3.89E-02	3.89E-02	3.89E-02	2.32E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	2.00E-03	2.00E-03	2.00E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	7.04E-05	7.04E-05	7.04E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	5.33E-03	5.33E-03	5.33E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 25

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
zn 76	8.68E-02	8.68E-02	8.68E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	1.21E-01	1.21E-01	1.21E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	2.54E-05	2.54E-05	2.54E-05	1.35E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	1.13E-05	1.13E-05	1.13E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	2.76E-03	2.76E-03	2.76E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	1.02E-01	1.02E-01	1.02E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	2.36E-01	2.36E-01	2.36E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	8.56E-02	8.56E-02	8.56E-02	1.97E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	2.42E-01	2.42E-01	2.42E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	2.77E-01	2.77E-01	2.77E-01	1.95E-01	5.63E-18	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	8.86E-04	8.86E-04	8.86E-04	6.25E-04	1.80E-20	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	1.70E-06	1.70E-06	1.70E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	8.93E-04	8.93E-04	8.93E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	1.17E-01	1.17E-01	1.17E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	4.76E-01	4.76E-01	4.76E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	7.33E-01	7.33E-01	7.33E-01	8.69E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	7.39E-01	7.39E-01	7.39E-01	1.26E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	1.80E-04	1.80E-04	1.80E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	5.85E-02	5.85E-02	5.85E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	6.12E-01	6.12E-01	6.12E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	1.39E+00	1.39E+00	1.39E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	1.49E+00	1.49E+00	1.49E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02
se 79m	1.47E+00	1.47E+00	1.47E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	1.69E-07	1.69E-07	1.69E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	3.49E-12	3.49E-12	3.49E-12	2.17E-12	9.58E-31	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	1.51E-05	1.51E-05	1.51E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	1.55E-02	1.55E-02	1.55E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	3.77E-01	3.77E-01	3.77E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	3.92E+00	3.92E+00	3.92E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	4.31E+00	4.31E+00	4.31E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	1.47E-05	1.47E-05	1.47E-05	1.61E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	6.49E-06	6.49E-06	6.49E-06	1.51E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	1.30E-06	1.30E-06	1.30E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	3.05E-03	3.05E-03	3.05E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	2.49E-01	2.49E-01	2.49E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	4.20E+00	4.20E+00	4.20E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	6.11E+00	6.11E+00	6.11E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	6.38E+00	6.38E+00	6.38E+00	1.65E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	4.15E-01	4.15E-01	4.15E-01	1.12E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	2.46E-09	2.46E-09	2.46E-09	2.46E-09	2.46E-09	2.46E-09	2.46E-09	2.46E-09	2.46E-09
kr 81m	2.66E-08	2.66E-08	2.66E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	9.16E-04	9.16E-04	9.16E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	2.23E-01	2.23E-01	2.23E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 26

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
ge 82	4.38E+00	4.38E+00	4.38E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	6.99E+00	6.99E+00	6.99E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	2.60E+00	2.60E+00	2.60E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	1.07E-02	1.07E-02	1.07E-02	6.68E-03	4.10E-21	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	4.57E-03	4.57E-03	4.57E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	2.46E-05	2.46E-05	2.46E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	1.51E-02	1.51E-02	1.51E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	1.78E+00	1.78E+00	1.78E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	1.14E+01	1.14E+01	1.14E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	7.89E+00	7.89E+00	7.89E+00	2.88E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	9.04E+00	9.04E+00	9.04E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	1.75E+01	1.75E+01	1.75E+01	1.86E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	1.75E+01	1.75E+01	1.75E+01	8.04E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	2.83E-01	2.83E-01	2.83E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	1.06E+00	1.06E+00	1.06E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	8.15E+00	8.15E+00	8.15E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	3.31E+01	3.31E+01	3.31E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	3.39E+01	3.39E+01	3.39E+01	8.79E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	8.05E-01	8.05E-01	8.05E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	1.72E-04	1.72E-04	1.72E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	1.69E-01	1.69E-01	1.69E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	5.12E+00	5.12E+00	5.12E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	1.66E+01	1.66E+01	1.66E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	1.47E+01	1.47E+01	1.47E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	3.95E+01	3.95E+01	3.95E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	8.54E+00	8.54E+00	8.54E+00	8.54E+00	8.41E+00	8.01E+00	7.51E+00	6.18E+00	4.48E+00
kr 85m	3.94E+01	3.94E+01	3.94E+01	9.74E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	3.38E-02	3.38E-02	3.38E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	3.03E+00	3.03E+00	3.03E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	4.14E+01	4.14E+01	4.14E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	4.99E+01	4.99E+01	4.99E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	8.46E+00	8.46E+00	8.46E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	2.45E-03	2.45E-03	2.45E-03	2.36E-03	8.60E-05	3.08E-09	3.87E-15	.00E+00	.00E+00
rb 86m	1.65E-04	1.65E-04	1.65E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	6.05E-01	6.05E-01	6.05E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	2.09E+00	2.09E+00	2.09E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	2.45E+01	2.45E+01	2.45E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	6.47E+01	6.47E+01	6.47E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	8.07E+01	8.07E+01	8.07E+01	1.70E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	3.01E-05	3.01E-05	3.01E-05	8.09E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	7.98E-04	7.98E-04	7.98E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	1.01E+00	1.01E+00	1.01E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	1.20E+01	1.20E+01	1.20E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 27

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
br 88	6.53E+01	6.53E+01	6.53E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	1.14E+02	1.14E+02	1.14E+02	3.26E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	1.17E+02	1.17E+02	1.17E+02	3.64E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	7.24E-03	7.24E-03	7.24E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	4.12E+00	4.12E+00	4.12E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	4.31E+01	4.31E+01	4.31E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	1.47E+02	1.47E+02	1.47E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	1.55E+02	1.55E+02	1.55E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	1.56E+02	1.56E+02	1.56E+02	1.54E+02	4.55E+01	1.04E+00	6.98E-03	2.09E-09	2.79E-20
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	1.58E-02	1.58E-02	1.58E-02	1.43E-02	4.23E-03	9.71E-05	6.49E-07	1.94E-13	2.59E-24
as 90	5.08E-05	5.08E-05	5.08E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	8.41E-01	8.41E-01	8.41E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	2.23E+01	2.23E+01	2.23E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	1.60E+02	1.60E+02	1.60E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	1.46E+02	1.46E+02	1.46E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	4.17E+01	4.17E+01	4.17E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	1.89E+02	1.89E+02	1.89E+02	1.88E+02	1.87E+02	1.84E+02	1.79E+02	1.67E+02	1.47E+02
y 90	1.89E+02	1.89E+02	1.89E+02	1.89E+02	1.87E+02	1.84E+02	1.79E+02	1.67E+02	1.47E+02
y 90m	1.67E-05	1.67E-05	1.67E-05	9.09E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	6.56E-02	6.56E-02	6.56E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	8.07E+00	8.07E+00	8.07E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	1.10E+02	1.10E+02	1.10E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	1.83E+02	1.83E+02	1.83E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	1.91E+02	1.91E+02	1.91E+02	3.34E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	1.91E+02	1.91E+02	1.91E+02	1.90E+02	6.64E+01	2.55E+00	3.36E-02	7.74E-08	3.11E-17
y 91m	1.11E+02	1.11E+02	1.11E+02	2.12E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	1.22E-10	1.22E-10	1.22E-10	1.22E-10	1.22E-10	1.22E-10	1.22E-10	1.22E-10	1.21E-10
se 92	4.28E-03	4.28E-03	4.28E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	1.23E+00	1.23E+00	1.23E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	5.61E+01	5.61E+01	5.61E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	1.57E+02	1.57E+02	1.57E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	1.92E+02	1.92E+02	1.92E+02	4.14E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	1.94E+02	1.94E+02	1.94E+02	6.11E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12
se 93	1.90E-05	1.90E-05	1.90E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	1.39E-01	1.39E-01	1.39E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	1.78E+01	1.78E+01	1.78E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	1.19E+02	1.19E+02	1.19E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	2.05E+02	2.05E+02	2.05E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	1.38E+02	1.38E+02	1.38E+02	2.70E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01
br 94	8.77E-03	8.77E-03	8.77E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	7.65E+00	7.65E+00	7.65E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	5.93E+01	5.93E+01	5.93E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 28

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sr 94	1.98E+02	1.98E+02	1.98E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	2.11E+02	2.11E+02	2.11E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05
nb 94m	4.62E-05	4.62E-05	4.62E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	7.20E-05	7.20E-05	7.20E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	3.69E-01	3.69E-01	3.69E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	2.76E+01	2.76E+01	2.76E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	1.77E+02	1.77E+02	1.77E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	2.12E+02	2.12E+02	2.12E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	2.14E+02	2.14E+02	2.14E+02	2.12E+02	8.10E+01	4.11E+00	7.88E-02	5.54E-07	1.43E-15
nb 95	2.14E+02	2.14E+02	2.14E+02	2.14E+02	1.35E+02	8.87E+00	1.79E-01	1.22E-06	3.15E-15
nb 95m	2.38E+00	2.38E+00	2.38E+00	2.38E+00	9.52E-01	4.84E-02	9.27E-04	6.52E-09	1.68E-17
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	1.70E-05	1.70E-05	1.70E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	7.40E-02	7.40E-02	7.40E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	7.04E+00	7.04E+00	7.04E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	1.29E+02	1.29E+02	1.29E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	2.00E+02	2.00E+02	2.00E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	2.46E-02	2.46E-02	2.46E-02	1.21E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	6.76E-04	6.76E-04	6.76E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	2.50E+00	2.50E+00	2.50E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	6.73E+01	6.73E+01	6.73E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	1.63E+02	1.63E+02	1.63E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	1.89E+02	1.89E+02	1.89E+02	7.05E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	1.89E+02	1.89E+02	1.89E+02	7.08E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	1.79E+02	1.79E+02	1.79E+02	6.69E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	2.16E-04	2.16E-04	2.16E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	1.14E-01	1.14E-01	1.14E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	2.41E+01	2.41E+01	2.41E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	1.20E+02	1.20E+02	1.20E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	1.94E+02	1.94E+02	1.94E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	1.95E+02	1.95E+02	1.95E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	8.18E-01	8.18E-01	8.18E-01	2.90E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08
rb 99	2.65E-03	2.65E-03	2.65E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	1.18E+01	1.18E+01	1.18E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	7.91E+01	7.91E+01	7.91E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	1.89E+02	1.89E+02	1.89E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	1.22E+02	1.22E+02	1.22E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	8.13E+01	8.13E+01	8.13E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	2.06E+02	2.06E+02	2.06E+02	1.60E+02	2.84E-08	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.35E+00
tc 99m	1.81E+02	1.81E+02	1.81E+02	1.54E+02	2.75E-08	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	7.01E-04	7.01E-04	7.01E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	7.49E-01	7.49E-01	7.49E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	1.94E+01	1.94E+01	1.94E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 29

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
zr100	1.94E+02	1.94E+02	1.94E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	2.02E+02	2.02E+02	2.02E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	7.99E+00	7.99E+00	7.99E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	8.91E-01	8.91E-01	8.91E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	5.02E-06	5.02E-06	5.02E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	1.42E-01	1.42E-01	1.42E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	1.36E+01	1.36E+01	1.36E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	1.05E+02	1.05E+02	1.05E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	1.69E+02	1.69E+02	1.69E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	1.74E+02	1.74E+02	1.74E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	1.74E+02	1.74E+02	1.74E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	3.21E-02	3.21E-02	3.21E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	8.28E+00	8.28E+00	8.28E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	7.94E+01	7.94E+01	7.94E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	1.35E+02	1.35E+02	1.35E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	1.48E+02	1.48E+02	1.48E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	1.48E+02	1.48E+02	1.48E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	8.33E-02	8.33E-02	8.33E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.11E-05	9.29E-06	7.32E-06	3.57E-06	1.08E-06
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	9.30E-05	9.30E-05	9.30E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	2.55E+00	2.55E+00	2.55E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	2.29E+01	2.29E+01	2.29E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	8.18E+01	8.18E+01	8.18E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	1.11E+02	1.11E+02	1.11E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	1.14E+02	1.14E+02	1.14E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	1.14E+02	1.14E+02	1.14E+02	1.12E+02	2.32E+01	1.80E-01	2.85E-04	1.13E-12	1.12E-26
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	1.14E+02	1.14E+02	1.14E+02	1.12E+02	2.32E+01	1.80E-01	2.85E-04	1.13E-12	1.12E-26
sr104	2.90E-05	2.90E-05	2.90E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	2.03E-02	2.03E-02	2.03E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	5.05E+00	5.05E+00	5.05E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	2.96E+01	2.96E+01	2.96E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	7.10E+01	7.10E+01	7.10E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	7.35E+01	7.35E+01	7.35E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	2.37E+00	2.37E+00	2.37E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	1.73E-01	1.73E-01	1.73E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	1.91E-04	1.91E-04	1.91E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	2.99E+00	2.99E+00	2.99E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	1.08E+01	1.08E+01	1.08E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	4.14E+01	4.14E+01	4.14E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	4.47E+01	4.47E+01	4.47E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	4.49E+01	4.49E+01	4.49E+01	1.09E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	4.49E+01	4.49E+01	4.49E+01	3.20E+01	2.11E-17	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	1.27E+01	1.27E+01	1.27E+01	3.11E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 30

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
y106	3.21E-06	3.21E-06	3.21E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	3.42E-02	3.42E-02	3.42E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	1.04E+00	1.04E+00	1.04E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	1.80E+01	1.80E+01	1.80E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	2.23E+01	2.23E+01	2.23E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	2.37E+01	2.37E+01	2.37E+01	2.37E+01	2.01E+01	1.20E+01	6.08E+00	7.87E-01	2.61E-02
rh106	2.37E+01	2.37E+01	2.37E+01	2.37E+01	2.01E+01	1.20E+01	6.08E+00	7.87E-01	2.61E-02
rh106m	7.73E-04	7.73E-04	7.73E-04	3.58E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	1.01E-10	1.01E-10	1.01E-10	8.72E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	2.89E-08	2.89E-08	2.89E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	3.25E-04	3.25E-04	3.25E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	1.65E-01	1.65E-01	1.65E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	5.69E+00	5.69E+00	5.69E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	1.04E+01	1.04E+01	1.04E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	1.25E+01	1.25E+01	1.25E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	1.25E+01	1.25E+01	1.25E+01	1.62E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03
pd107m	8.01E-04	8.01E-04	8.01E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	1.27E-05	1.27E-05	1.27E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	4.17E-03	4.17E-03	4.17E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	5.36E-01	5.36E-01	5.36E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	3.01E+00	3.01E+00	3.01E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	6.91E+00	6.91E+00	6.91E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	7.02E+00	7.02E+00	7.02E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	1.10E-01	1.10E-01	1.10E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	7.16E-06	7.16E-06	7.16E-06	9.45E-09	9.44E-09	9.40E-09	9.35E-09	9.20E-09	8.95E-09
ag108m	1.09E-07	1.09E-07	1.09E-07	1.09E-07	1.09E-07	1.08E-07	1.07E-07	1.06E-07	1.03E-07
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	1.01E-08	1.01E-08	1.01E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	1.78E-04	1.78E-04	1.78E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	5.41E-02	5.41E-02	5.41E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	9.36E-01	9.36E-01	9.36E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	4.41E+00	4.41E+00	4.41E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	5.15E+00	5.15E+00	5.15E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	2.57E+00	2.57E+00	2.57E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	5.18E+00	5.18E+00	5.18E+00	1.54E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	1.38E-02	1.38E-02	1.38E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	5.18E+00	5.18E+00	5.18E+00	1.54E+00	1.38E-09	9.16E-10	5.30E-10	1.03E-10	6.65E-12
cd109	1.58E-09	1.58E-09	1.58E-09	1.58E-09	1.38E-09	9.16E-10	5.30E-10	1.03E-10	6.65E-12
nb110	8.44E-06	8.44E-06	8.44E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	7.27E-03	7.27E-03	7.27E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	1.75E-01	1.75E-01	1.75E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	1.71E+00	1.71E+00	1.71E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	2.73E-01	2.73E-01	2.73E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	1.98E+00	1.98E+00	1.98E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	6.12E-02	6.12E-02	6.12E-02	3.35E-05	2.62E-05	1.22E-05	4.43E-06	2.12E-07	1.33E-09
ag110m	2.47E-03	2.47E-03	2.47E-03	2.47E-03	1.93E-03	8.98E-04	3.26E-04	1.56E-05	9.80E-08

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 31

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	7.40E-08	7.40E-08	7.40E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	7.90E-04	7.90E-04	7.90E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	4.27E-02	4.27E-02	4.27E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	6.73E-01	6.73E-01	6.73E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	1.24E+00	1.24E+00	1.24E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	1.30E+00	1.30E+00	1.30E+00	1.95E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	5.10E-02	5.10E-02	5.10E-02	2.48E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	1.31E+00	1.31E+00	1.31E+00	1.20E+00	3.03E-04	2.29E-15	3.99E-30	.00E+00	.00E+00
ag111m	1.30E+00	1.30E+00	1.30E+00	2.42E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	9.57E-07	9.57E-07	9.57E-07	1.15E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	2.75E-09	2.75E-09	2.75E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	1.25E-04	1.25E-04	1.25E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	9.50E-03	9.50E-03	9.50E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	3.24E-01	3.24E-01	3.24E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	7.00E-01	7.00E-01	7.00E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	8.31E-01	8.31E-01	8.31E-01	3.77E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	8.32E-01	8.32E-01	8.32E-01	4.43E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	2.46E-06	2.46E-06	2.46E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	2.60E-03	2.60E-03	2.60E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	1.39E-01	1.39E-01	1.39E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	4.89E-01	4.89E-01	4.89E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	6.85E-01	6.85E-01	6.85E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	6.63E-01	6.63E-01	6.63E-01	3.01E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	1.31E-01	1.31E-01	1.31E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14
cd113m	1.13E-02	1.13E-02	1.13E-02	1.13E-02	1.12E-02	1.08E-02	1.03E-02	8.86E-03	6.93E-03
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	2.49E-10	2.49E-10	2.49E-10	1.09E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	1.26E-06	1.26E-06	1.26E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	4.12E-04	4.12E-04	4.12E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	5.48E-02	5.48E-02	5.48E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	2.78E-01	2.78E-01	2.78E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	5.83E-01	5.83E-01	5.83E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	5.96E-01	5.96E-01	5.96E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	1.42E-05	1.42E-05	1.42E-05	1.01E-05	2.91E-06	6.17E-08	3.71E-10	8.09E-17	6.38E-28
in114m	1.07E-05	1.07E-05	1.07E-05	1.06E-05	3.04E-06	6.45E-08	3.88E-10	8.45E-17	6.67E-28
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	5.44E-09	5.44E-09	5.44E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	1.29E-05	1.29E-05	1.29E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	1.20E-02	1.20E-02	1.20E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	1.31E-01	1.31E-01	1.31E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	4.18E-01	4.18E-01	4.18E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	3.23E-01	3.23E-01	3.23E-01	7.06E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	1.30E-01	1.30E-01	1.30E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	4.35E-01	4.35E-01	4.35E-01	3.20E-01	3.02E-13	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	1.88E-02	1.88E-02	1.88E-02	1.85E-02	4.65E-03	6.44E-05	2.21E-07	8.85E-15	4.16E-27
in115	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12
in115m	4.35E-01	4.35E-01	4.35E-01	3.48E-01	5.13E-07	7.12E-09	2.44E-11	9.78E-19	4.56E-31

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 32

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	5.64E-06	5.64E-06	5.64E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	3.98E-03	3.98E-03	3.98E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	7.64E-02	7.64E-02	7.64E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	5.54E-01	5.54E-01	5.54E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	6.07E-01	6.07E-01	6.07E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	5.24E-02	5.24E-02	5.24E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	2.05E-03	2.05E-03	2.05E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	7.71E-03	7.71E-03	7.71E-03	7.62E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	6.33E-08	6.33E-08	6.33E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	5.45E-04	5.45E-04	5.45E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	2.54E-02	2.54E-02	2.54E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	3.23E-01	3.23E-01	3.23E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	2.31E-01	2.31E-01	2.31E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	2.31E-01	2.31E-01	2.31E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	4.02E-01	4.02E-01	4.02E-01	5.07E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	8.35E-02	8.35E-02	8.35E-02	5.93E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	2.91E-01	2.91E-01	2.91E-01	1.86E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	3.67E-01	3.67E-01	3.67E-01	2.18E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	9.32E-04	9.32E-04	9.32E-04	8.99E-04	9.63E-06	7.78E-12	6.40E-20	.00E+00	.00E+00
tc118	1.87E-09	1.87E-09	1.87E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	7.80E-05	7.80E-05	7.80E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	5.08E-03	5.08E-03	5.08E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	1.51E-01	1.51E-01	1.51E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	2.74E-01	2.74E-01	2.74E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	1.94E-01	1.94E-01	1.94E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	4.51E-01	4.51E-01	4.51E-01	1.09E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	4.51E-01	4.51E-01	4.51E-01	1.09E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	2.71E-04	2.71E-04	2.71E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	1.04E-05	1.04E-05	1.04E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	2.02E-03	2.02E-03	2.02E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	1.05E-01	1.05E-01	1.05E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	3.56E-01	3.56E-01	3.56E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	3.43E-01	3.43E-01	3.43E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	1.44E-01	1.44E-01	1.44E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	1.88E-01	1.88E-01	1.88E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	3.10E-01	3.10E-01	3.10E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	1.77E-03	1.77E-03	1.77E-03	1.77E-03	1.43E-03	7.46E-04	3.14E-04	2.36E-05	3.13E-07
ru120	1.24E-06	1.24E-06	1.24E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	3.87E-04	3.87E-04	3.87E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	4.89E-02	4.89E-02	4.89E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	2.35E-01	2.35E-01	2.35E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	4.74E-01	4.74E-01	4.74E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	4.79E-01	4.79E-01	4.79E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	4.81E-03	4.81E-03	4.81E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	9.61E-05	9.61E-05	9.61E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 33

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
pd121	1.80E-02	1.80E-02	1.80E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	1.71E-01	1.71E-01	1.71E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	4.89E-01	4.89E-01	4.89E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	3.17E-02	3.17E-02	3.17E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	4.95E-01	4.95E-01	4.95E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	5.20E-01	5.20E-01	5.20E-01	2.84E-01	3.02E-03	3.00E-03	2.96E-03	2.85E-03	2.67E-03
sn121m	3.91E-03	3.91E-03	3.91E-03	3.91E-03	3.90E-03	3.86E-03	3.81E-03	3.67E-03	3.45E-03
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	1.05E-05	1.05E-05	1.05E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	5.73E-03	5.73E-03	5.73E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	8.97E-02	8.97E-02	8.97E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	5.31E-01	5.31E-01	5.31E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	5.70E-01	5.70E-01	5.70E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	3.89E-02	3.89E-02	3.89E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	4.49E-04	4.49E-04	4.49E-04	3.47E-04	4.16E-14	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	4.63E-05	4.63E-05	4.63E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	8.28E-07	8.28E-07	8.28E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	8.54E-04	8.54E-04	8.54E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	3.25E-02	3.25E-02	3.25E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	3.43E-01	3.43E-01	3.43E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	3.88E-01	3.88E-01	3.88E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	1.08E-01	1.08E-01	1.08E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	6.09E-02	6.09E-02	6.09E-02	6.06E-02	3.76E-02	8.58E-03	1.21E-03	3.38E-06	1.87E-10
sn123m	5.58E-01	5.58E-01	5.58E-01	8.61E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17
te123m	4.29E-08	4.29E-08	4.29E-08	4.26E-08	2.54E-08	5.17E-09	6.23E-10	1.09E-12	2.78E-17
pd124	5.14E-04	5.14E-04	5.14E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	2.99E-02	2.99E-02	2.99E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	6.06E-01	6.06E-01	6.06E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	9.62E-01	9.62E-01	9.62E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	8.65E-04	8.65E-04	8.65E-04	8.55E-04	3.07E-04	1.29E-05	1.92E-07	6.37E-13	4.69E-22
sb124m	1.79E-04	1.79E-04	1.79E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	1.08E-04	1.08E-04	1.08E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	1.19E-02	1.19E-02	1.19E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	3.60E-01	3.60E-01	3.60E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	5.00E-01	5.00E-01	5.00E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	3.56E-01	3.56E-01	3.56E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	3.41E-01	3.41E-01	3.41E-01	3.17E-01	5.27E-04	1.34E-12	5.26E-24	.00E+00	.00E+00
sn125m	8.41E-01	8.41E-01	8.41E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	1.18E+00	1.18E+00	1.18E+00	1.18E+00	1.11E+00	9.20E-01	7.14E-01	3.33E-01	9.37E-02
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	2.72E-01	2.72E-01	2.72E-01	2.72E-01	2.66E-01	2.25E-01	1.74E-01	8.14E-02	2.29E-02
pd126	2.41E-05	2.41E-05	2.41E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	5.19E-03	5.19E-03	5.19E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	4.42E-01	4.42E-01	4.42E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	1.08E+00	1.08E+00	1.08E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 34

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sb126	1.53E-02	1.53E-02	1.53E-02	1.50E-02	8.01E-03	7.96E-03	7.96E-03	7.96E-03	7.96E-03
sb126m	6.70E-02	6.70E-02	6.70E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	2.43E-03	2.43E-03	2.43E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	3.36E-01	3.36E-01	3.36E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	1.17E+00	1.17E+00	1.17E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	1.17E+00	1.17E+00	1.17E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	1.85E+00	1.85E+00	1.85E+00	6.70E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	2.85E+00	2.85E+00	2.85E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	4.94E+00	4.94E+00	4.94E+00	4.17E+00	4.57E-07	1.37E-28	.00E+00	.00E+00	.00E+00
te127	4.92E+00	4.92E+00	4.92E+00	4.59E+00	4.96E-01	8.62E-02	8.45E-03	7.96E-06	7.20E-11
te127m	8.66E-01	8.66E-01	8.66E-01	8.66E-01	5.07E-01	8.80E-02	8.63E-03	8.12E-06	7.35E-11
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	8.17E-11	8.17E-11	8.17E-11	8.01E-11	1.47E-11	7.79E-14	7.43E-17	6.44E-26	.00E+00
ag128	9.97E-04	9.97E-04	9.97E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	3.07E-01	3.07E-01	3.07E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	3.18E+00	3.18E+00	3.18E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	1.20E+01	1.20E+01	1.20E+01	5.56E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	9.14E-01	9.14E-01	9.14E-01	1.54E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	1.23E+01	1.23E+01	1.23E+01	6.74E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	4.04E-03	4.04E-03	4.04E-03	1.80E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	1.30E-01	1.30E-01	1.30E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	3.49E+00	3.49E+00	3.49E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	1.00E+01	1.00E+01	1.00E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	1.30E+01	1.30E+01	1.30E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	2.69E+01	2.69E+01	2.69E+01	6.23E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	2.53E+01	2.53E+01	2.53E+01	3.85E+00	5.04E-01	1.72E-03	9.20E-07	1.40E-16	.00E+00
te129m	5.01E+00	5.01E+00	5.01E+00	4.93E+00	7.86E-01	2.69E-03	1.44E-06	2.19E-16	.00E+00
i129	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	2.63E-07	2.63E-07	2.63E-07	2.44E-07	2.36E-10	1.13E-19	4.56E-32	.00E+00	.00E+00
cd130	5.17E-02	5.17E-02	5.17E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	3.29E+00	3.29E+00	3.29E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	3.81E+01	3.81E+01	3.81E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	8.57E+00	8.57E+00	8.57E+00	9.09E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	4.96E+01	4.96E+01	4.96E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	6.63E-02	6.63E-02	6.63E-02	1.73E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	3.05E-02	3.05E-02	3.05E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	6.28E-03	6.28E-03	6.28E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	1.14E+00	1.14E+00	1.14E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	3.09E+01	3.09E+01	3.09E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	8.75E+01	8.75E+01	8.75E+01	1.26E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	8.85E+01	8.85E+01	8.85E+01	1.84E+00	6.78E-22	.00E+00	.00E+00	.00E+00	.00E+00
te131m	1.41E+01	1.41E+01	1.41E+01	8.16E+00	3.01E-21	.00E+00	.00E+00	.00E+00	.00E+00
i131	9.96E+01	9.96E+01	9.96E+01	9.26E+01	4.38E-02	2.17E-12	4.59E-26	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	1.09E+00	1.09E+00	1.09E+00	1.08E+00	1.70E-02	1.95E-09	1.12E-18	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 35

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cd132	7.04E-04	7.04E-04	7.04E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	2.82E-01	2.82E-01	2.82E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	2.18E+01	2.18E+01	2.18E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	4.59E+01	4.59E+01	4.59E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	5.07E+01	5.07E+01	5.07E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	1.47E+02	1.47E+02	1.47E+02	1.19E+02	7.13E-07	.00E+00	.00E+00	.00E+00	.00E+00
i132	1.48E+02	1.48E+02	1.48E+02	1.23E+02	7.34E-07	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	3.21E-05	3.21E-05	3.21E-05	2.88E-05	2.11E-09	3.43E-22	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	4.80E-03	4.80E-03	4.80E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	5.94E+00	5.94E+00	5.94E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	8.01E+01	8.01E+01	8.01E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	1.29E+02	1.29E+02	1.29E+02	3.68E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	1.08E+02	1.08E+02	1.08E+02	1.63E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	2.26E+02	2.26E+02	2.26E+02	1.05E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	1.40E+01	1.40E+01	1.40E+01	1.66E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	2.27E+02	2.27E+02	2.27E+02	2.19E+02	1.89E-03	2.98E-19	.00E+00	.00E+00	.00E+00
xe133m	6.67E+00	6.67E+00	6.67E+00	6.09E+00	4.69E-12	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	5.29E-09	5.29E-09	5.29E-09	5.29E-09	5.20E-09	4.95E-09	4.64E-09	3.80E-09	2.74E-09
in134	7.43E-04	7.43E-04	7.43E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	6.89E-01	6.89E-01	6.89E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	1.53E+01	1.53E+01	1.53E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	9.40E+00	9.40E+00	9.40E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	2.29E+02	2.29E+02	2.29E+02	9.77E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	2.60E+02	2.60E+02	2.60E+02	6.55E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	1.32E+01	1.32E+01	1.32E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	2.54E+00	2.54E+00	2.54E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.12E+00	8.72E-01	6.23E-01	2.27E-01	4.23E-02
cs134m	9.25E-02	9.25E-02	9.25E-02	3.05E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	5.17E-02	5.17E-02	5.17E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	5.52E+00	5.52E+00	5.52E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	1.11E+02	1.11E+02	1.11E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	2.13E+02	2.13E+02	2.13E+02	1.69E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	2.23E+02	2.23E+02	2.23E+02	8.12E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	4.02E+01	4.02E+01	4.02E+01	2.77E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01
cs135m	6.45E-03	6.45E-03	6.45E-03	4.27E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	2.15E-05	2.15E-05	2.15E-05	1.21E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	3.91E-03	3.91E-03	3.91E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	7.08E-01	7.08E-01	7.08E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	5.30E+01	5.30E+01	5.30E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	1.08E+02	1.08E+02	1.08E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	5.04E+01	5.04E+01	5.04E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	6.11E-01	6.11E-01	6.11E-01	5.79E-01	5.33E-03	2.69E-09	1.19E-17	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	6.84E-02	6.84E-02	6.84E-02	6.49E-02	5.97E-04	3.02E-10	1.33E-18	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 36

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sb137	1.65E+00	1.65E+00	1.65E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	1.58E+01	1.58E+01	1.58E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	1.09E+02	1.09E+02	1.09E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	2.07E+02	2.07E+02	2.07E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.13E+02	2.13E+02	2.13E+02	2.13E+02	2.12E+02	2.08E+02	2.03E+02	1.90E+02	1.69E+02
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	2.01E+02	2.01E+02	2.01E+02	2.01E+02	2.00E+02	1.96E+02	1.92E+02	1.79E+02	1.59E+02
sb138	6.30E-03	6.30E-03	6.30E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	3.00E+00	3.00E+00	3.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	5.45E+01	5.45E+01	5.45E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	2.12E+02	2.12E+02	2.12E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	2.22E+02	2.22E+02	2.22E+02	1.34E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	5.83E+00	5.83E+00	5.83E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11
sb139	4.24E-04	4.24E-04	4.24E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	3.90E-01	3.90E-01	3.90E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	3.27E+01	3.27E+01	3.27E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	1.70E+02	1.70E+02	1.70E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	2.10E+02	2.10E+02	2.10E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	2.13E+02	2.13E+02	2.13E+02	1.81E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	1.90E-06	1.90E-06	1.90E-06	1.89E-06	1.21E-06	3.02E-07	4.79E-08	1.92E-10	1.95E-14
pr139	6.53E-09	6.53E-09	6.53E-09	1.50E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	6.23E-02	6.23E-02	6.23E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	7.41E+00	7.41E+00	7.41E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	1.24E+02	1.24E+02	1.24E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	1.92E+02	1.92E+02	1.92E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	2.11E+02	2.11E+02	2.11E+02	2.00E+02	1.58E+00	5.05E-07	1.21E-15	.00E+00	.00E+00
la140	2.11E+02	2.11E+02	2.11E+02	2.09E+02	1.82E+00	5.81E-07	1.39E-15	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	2.04E-05	2.04E-05	2.04E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	4.66E-04	4.66E-04	4.66E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	6.51E-01	6.51E-01	6.51E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	4.48E+01	4.48E+01	4.48E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	1.48E+02	1.48E+02	1.48E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	1.93E+02	1.93E+02	1.93E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	1.94E+02	1.94E+02	1.94E+02	3.02E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	1.94E+02	1.94E+02	1.94E+02	1.91E+02	2.86E+01	8.08E-02	3.34E-05	2.37E-15	2.28E-32
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	2.55E-08	2.55E-08	2.55E-08	3.19E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	2.17E-04	2.17E-04	2.17E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	2.17E-01	2.17E-01	2.17E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	1.60E+01	1.60E+01	1.60E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	8.92E+01	8.92E+01	8.92E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	1.92E+02	1.92E+02	1.92E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	1.95E+02	1.95E+02	1.95E+02	3.85E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06
pr142	2.04E-01	2.04E-01	2.04E-01	8.53E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	1.35E-03	1.35E-03	1.35E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 37

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
xe143	2.08E+00	2.08E+00	2.08E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	4.90E+01	4.90E+01	4.90E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	1.74E+02	1.74E+02	1.74E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	1.95E+02	1.95E+02	1.95E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	1.96E+02	1.96E+02	1.96E+02	1.19E+02	3.90E-18	.00E+00	.00E+00	.00E+00	.00E+00
pr143	1.96E+02	1.96E+02	1.96E+02	1.94E+02	2.20E+00	1.71E-06	1.34E-14	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	4.64E-05	4.64E-05	4.64E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	3.28E-01	3.28E-01	3.28E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	1.24E+01	1.24E+01	1.24E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	1.45E+02	1.45E+02	1.45E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	1.78E+02	1.78E+02	1.78E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	1.80E+02	1.80E+02	1.80E+02	1.80E+02	1.45E+02	7.41E+01	3.05E+01	2.12E+00	2.50E-02
pr144	1.80E+02	1.80E+02	1.80E+02	1.80E+02	1.45E+02	7.41E+01	3.05E+01	2.12E+00	2.50E-02
pr144m	2.53E+00	2.53E+00	2.53E+00	2.52E+00	2.03E+00	1.04E+00	4.27E-01	2.97E-02	3.49E-04
nd144	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10
i145	1.39E-06	1.39E-06	1.39E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	1.98E-02	1.98E-02	1.98E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	2.34E+00	2.34E+00	2.34E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	6.14E+01	6.14E+01	6.14E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	1.20E+02	1.20E+02	1.20E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	1.30E+02	1.30E+02	1.30E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	1.30E+02	1.30E+02	1.30E+02	8.15E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	4.49E-08	4.49E-08	4.49E-08	4.49E-08	4.48E-08	4.43E-08	4.31E-08	3.87E-08	3.19E-08
sm145	4.00E-08	4.00E-08	4.00E-08	3.99E-08	3.33E-08	1.90E-08	9.02E-09	9.66E-10	2.34E-11
xe146	1.89E-03	1.89E-03	1.89E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	6.38E-01	6.38E-01	6.38E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	3.36E+01	3.36E+01	3.36E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	8.08E+01	8.08E+01	8.08E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	9.94E+01	9.94E+01	9.94E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	9.98E+01	9.98E+01	9.98E+01	2.55E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	9.14E-08	9.14E-08	9.14E-08	9.14E-08	8.86E-08	8.06E-08	7.11E-08	4.88E-08	2.61E-08
sm146	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09
xe147	5.37E-06	5.37E-06	5.37E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	6.41E-03	6.41E-03	6.41E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	3.73E+00	3.73E+00	3.73E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	3.14E+01	3.14E+01	3.14E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	7.33E+01	7.33E+01	7.33E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	7.59E+01	7.59E+01	7.59E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	7.59E+01	7.59E+01	7.59E+01	7.14E+01	2.59E-01	7.37E-09	7.14E-19	.00E+00	.00E+00
pm147	7.59E+01	7.59E+01	7.59E+01	7.59E+01	7.20E+01	5.90E+01	4.53E+01	2.05E+01	5.47E+00
sm147	2.47E-06	2.47E-06	2.47E-06	2.47E-06	2.47E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06
cs148	1.11E-03	1.11E-03	1.11E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	5.61E-01	5.61E-01	5.61E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	9.13E+00	9.13E+00	9.13E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	5.14E+01	5.14E+01	5.14E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	5.65E+01	5.65E+01	5.65E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	1.02E-03	1.02E-03	1.02E-03	9.01E-04	1.06E-05	1.04E-07	2.26E-10	2.33E-18	1.14E-31
pm148m	9.04E-04	9.04E-04	9.04E-04	8.89E-04	2.00E-04	1.97E-06	4.28E-09	4.40E-17	2.14E-30

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 38

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sm148	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13
cs149	8.03E-06	8.03E-06	8.03E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	5.03E-02	5.03E-02	5.03E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	2.26E+00	2.26E+00	2.26E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	2.59E+01	2.59E+01	2.59E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	3.60E+01	3.60E+01	3.60E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	3.69E+01	3.69E+01	3.69E+01	2.45E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	3.69E+01	3.69E+01	3.69E+01	2.79E+01	2.15E-11	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12
eu149	9.15E-10	9.15E-10	9.15E-10	9.08E-10	4.68E-10	6.02E-11	3.96E-12	1.13E-15	1.40E-21
cs150	1.03E-06	1.03E-06	1.03E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	3.81E-03	3.81E-03	3.81E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	2.92E-01	2.92E-01	2.92E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	1.00E+01	1.00E+01	1.00E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	2.02E+01	2.02E+01	2.02E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	3.29E-03	3.29E-03	3.29E-03	6.63E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	1.11E-06	1.11E-06	1.11E-06	1.11E-06	1.10E-06	1.08E-06	1.06E-06	1.00E-06	9.11E-07
ba151	3.46E-05	3.46E-05	3.46E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	3.81E-02	3.81E-02	3.81E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	2.38E+00	2.38E+00	2.38E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	9.83E+00	9.83E+00	9.83E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	1.51E+01	1.51E+01	1.51E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	1.52E+01	1.52E+01	1.52E+01	8.55E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.52E+01	1.51E+01	1.50E+01	1.47E+01	1.41E+01
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	2.70E-07	2.70E-07	2.70E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	7.65E-04	7.65E-04	7.65E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	3.30E-01	3.30E-01	3.30E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	3.20E+00	3.20E+00	3.20E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	9.53E+00	9.53E+00	9.53E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	9.74E+00	9.74E+00	9.74E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	2.08E-01	2.08E-01	2.08E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	3.87E+00	3.87E+00	3.87E+00	3.87E+00	3.82E+00	3.67E+00	3.49E+00	2.98E+00	2.30E+00
eu152m	2.10E+00	2.10E+00	2.10E+00	3.52E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	4.34E-11	4.34E-11	4.34E-11	4.34E-11	4.34E-11	4.34E-11	4.34E-11	4.34E-11	4.34E-11
la153	2.35E-04	2.35E-04	2.35E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	7.22E-02	7.22E-02	7.22E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	1.13E+00	1.13E+00	1.13E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	5.31E+00	5.31E+00	5.31E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	6.10E+00	6.10E+00	6.10E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	6.58E+00	6.58E+00	6.58E+00	4.60E+00	5.87E-14	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	1.77E-02	1.77E-02	1.77E-02	1.76E-02	1.37E-02	6.20E-03	2.17E-03	9.36E-05	4.96E-07
la154	5.89E-06	5.89E-06	5.89E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	6.31E-03	6.31E-03	6.31E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	1.70E-01	1.70E-01	1.70E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	2.12E+00	2.12E+00	2.12E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	2.53E+00	2.53E+00	2.53E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	4.10E-01	4.10E-01	4.10E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 39

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	1.97E-01	1.97E-01	1.97E-01	1.97E-01	1.93E-01	1.82E-01	1.68E-01	1.32E-01	8.80E-02
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	2.87E-08	2.87E-08	2.87E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	5.02E-04	5.02E-04	5.02E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	3.07E-02	3.07E-02	3.07E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	6.30E-01	6.30E-01	6.30E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	1.30E+00	1.30E+00	1.30E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	1.46E+00	1.46E+00	1.46E+00	5.53E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	1.46E+00	1.46E+00	1.46E+00	1.46E+00	1.41E+00	1.26E+00	1.09E+00	6.97E-01	3.32E-01
gd155m	3.33E-05	3.33E-05	3.33E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	3.75E-05	3.75E-05	3.75E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	3.55E-03	3.55E-03	3.55E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	1.72E-01	1.72E-01	1.72E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	4.98E-01	4.98E-01	4.98E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	7.13E-01	7.13E-01	7.13E-01	1.21E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	7.19E-01	7.19E-01	7.19E-01	7.01E-01	1.21E-02	4.24E-08	2.43E-15	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	1.77E-06	1.77E-06	1.77E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	5.00E-04	5.00E-04	5.00E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	3.48E-02	3.48E-02	3.48E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	1.83E-01	1.83E-01	1.83E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	3.69E-01	3.69E-01	3.69E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	3.81E-01	3.81E-01	3.81E-01	1.28E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	2.57E-05	2.57E-05	2.57E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	5.44E-03	5.44E-03	5.44E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	4.27E-02	4.27E-02	4.27E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	1.72E-01	1.72E-01	1.72E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	1.90E-01	1.90E-01	1.90E-01	7.69E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	1.07E-06	1.07E-06	1.07E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	4.59E-04	4.59E-04	4.59E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	8.02E-03	8.02E-03	8.02E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	5.81E-02	5.81E-02	5.81E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	7.97E-02	7.97E-02	7.97E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	8.15E-02	8.15E-02	8.15E-02	3.39E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	2.91E-05	2.91E-05	2.91E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	8.46E-04	8.46E-04	8.46E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	1.58E-02	1.58E-02	1.58E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	2.96E-02	2.96E-02	2.96E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	2.07E-04	2.07E-04	2.07E-04	2.05E-04	8.75E-05	6.25E-06	1.89E-07	5.17E-12	1.29E-19
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	1.18E-06	1.18E-06	1.18E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	9.81E-05	9.81E-05	9.81E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	2.89E-03	2.89E-03	2.89E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	9.81E-03	9.81E-03	9.81E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	1.38E-02	1.38E-02	1.38E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	1.39E-02	1.39E-02	1.39E-02	1.25E-02	1.64E-06	1.61E-18	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 40

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	6.49E-06	6.49E-06	6.49E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	4.76E-04	4.76E-04	4.76E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	2.44E-03	2.44E-03	2.44E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	5.78E-03	5.78E-03	5.78E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	5.89E-03	5.89E-03	5.89E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	1.10E-04	1.10E-04	1.10E-04	6.32E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	3.89E-05	3.89E-05	3.89E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	4.67E-04	4.67E-04	4.67E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	2.02E-03	2.02E-03	2.02E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	2.33E-03	2.33E-03	2.33E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	3.05E-06	3.05E-06	3.05E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	5.52E-05	5.52E-05	5.52E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	5.97E-04	5.97E-04	5.97E-04	6.09E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	8.42E-04	8.42E-04	8.42E-04	7.06E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	1.67E-07	1.67E-07	1.67E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	6.97E-06	6.97E-06	6.97E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	1.37E-04	1.37E-04	1.37E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	3.01E-04	3.01E-04	3.01E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	4.12E-04	4.12E-04	4.12E-04	3.37E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	3.26E-04	3.26E-04	3.26E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	5.04E-05	5.04E-05	5.04E-05	4.11E-05	5.43E-13	.00E+00	.00E+00	.00E+00	.00E+00
ho166	5.22E-05	5.22E-05	5.22E-05	4.89E-05	8.09E-13	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	5.32E-07	5.32E-07	5.32E-07	5.32E-07	5.32E-07	5.32E-07	5.32E-07	5.31E-07	5.29E-07
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	1.61E-09	1.61E-09	1.61E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	8.61E-08	8.61E-08	8.61E-08	8.00E-08	1.13E-10	1.73E-19	3.42E-31	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	5.19E-10	5.19E-10	5.19E-10	5.16E-10	3.19E-10	7.24E-11	1.01E-11	2.75E-14	1.46E-18
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	1.22E-07	1.22E-07	1.22E-07	1.33E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	1.24E-07	1.24E-07	1.24E-07	1.24E-07	1.14E-07	8.67E-08	6.04E-08	2.05E-08	3.37E-09
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	7.63E-08	7.63E-08	7.63E-08	5.45E-08	4.96E-21	.00E+00	.00E+00	.00E+00	.00E+00
tm172	8.00E-08	8.00E-08	8.00E-08	7.64E-08	2.06E-17	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	2.06E+04	2.06E+04	2.06E+04	4.80E+03	1.64E+03	1.06E+03	9.07E+02	7.58E+02	6.55E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 41

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
he 4	1.17E+01	1.17E+01	1.17E+01	1.18E+01	1.18E+01	1.20E+01	1.22E+01	1.23E+01	1.25E+01	1.26E+01	1.29E+01
tl206	2.19E-15	2.19E-15	2.20E-15	2.20E-15	2.21E-15	2.24E-15	2.27E-15	2.30E-15	2.34E-15	2.37E-15	2.44E-15
tl207	2.08E-10	2.08E-10	2.08E-10	2.09E-10	2.09E-10	2.10E-10	2.12E-10	2.14E-10	2.15E-10	2.17E-10	2.21E-10
tl208	6.94E-12	6.61E-12	6.29E-12	5.69E-12	4.67E-12	2.84E-12	1.73E-12	1.05E-12	6.41E-13	3.91E-13	1.46E-13
tl209	1.47E-12	1.47E-12	1.47E-12	1.48E-12	1.49E-12	1.52E-12	1.54E-12	1.57E-12	1.60E-12	1.63E-12	1.69E-12
pb206	2.76E-01	2.77E-01	2.78E-01	2.79E-01	2.82E-01	2.90E-01	2.97E-01	3.05E-01	3.12E-01	3.20E-01	3.36E-01
pb207	3.96E-02	3.97E-02	3.97E-02	3.99E-02	4.02E-02	4.10E-02	4.18E-02	4.27E-02	4.35E-02	4.43E-02	4.60E-02
pb208	6.29E-03	6.30E-03	6.31E-03	6.33E-03	6.36E-03	6.42E-03	6.46E-03	6.48E-03	6.50E-03	6.51E-03	6.51E-03
pb209	6.20E-09	6.22E-09	6.23E-09	6.25E-09	6.30E-09	6.41E-09	6.53E-09	6.64E-09	6.76E-09	6.88E-09	7.12E-09
pb210	4.73E-03	4.73E-03	4.73E-03	4.74E-03	4.76E-03	4.82E-03	4.89E-03	4.97E-03	5.04E-03	5.11E-03	5.26E-03
pb211	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.62E-09	1.63E-09	1.64E-09	1.65E-09	1.67E-09	1.68E-09	1.71E-09
pb212	4.11E-09	3.92E-09	3.73E-09	3.37E-09	2.77E-09	1.68E-09	1.03E-09	6.24E-10	3.80E-10	2.32E-10	8.63E-11
pb214	1.10E-08	1.11E-08	1.11E-08	1.11E-08	1.12E-08	1.13E-08	1.15E-08	1.17E-08	1.18E-08	1.20E-08	1.24E-08
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.02E-02	2.02E-02	2.03E-02	2.04E-02	2.06E-02	2.12E-02	2.18E-02	2.25E-02	2.31E-02	2.37E-02	2.50E-02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.91E-06	2.91E-06	2.91E-06	2.92E-06	2.93E-06	2.97E-06	3.01E-06	3.06E-06	3.10E-06	3.15E-06	3.23E-06
bi211	9.55E-11	9.56E-11	9.56E-11	9.56E-11	9.58E-11	9.64E-11	9.72E-11	9.80E-11	9.88E-11	9.96E-11	1.01E-10
bi212	3.90E-10	3.72E-10	3.54E-10	3.20E-10	2.63E-10	1.60E-10	9.72E-11	5.92E-11	3.61E-11	2.20E-11	8.18E-12
bi213	1.48E-09	1.48E-09	1.48E-09	1.49E-09	1.50E-09	1.53E-09	1.55E-09	1.58E-09	1.61E-09	1.64E-09	1.69E-09
bi214	8.20E-09	8.21E-09	8.22E-09	8.25E-09	8.30E-09	8.42E-09	8.54E-09	8.67E-09	8.79E-09	8.92E-09	9.17E-09
po210	8.04E-05	8.05E-05	8.05E-05	8.06E-05	8.09E-05	8.20E-05	8.32E-05	8.44E-05	8.56E-05	8.69E-05	8.93E-05
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	1.06E-15	1.06E-15	1.06E-15	1.06E-15	1.06E-15	1.07E-15	1.07E-15	1.08E-15	1.09E-15	1.10E-15	1.12E-15
po212	2.05E-20	1.95E-20	1.86E-20	1.68E-20	1.38E-20	8.39E-21	5.11E-21	3.11E-21	1.89E-21	1.15E-21	4.30E-22
po213	2.22E-18	2.22E-18	2.23E-18	2.24E-18	2.25E-18	2.29E-18	2.34E-18	2.38E-18	2.42E-18	2.46E-18	2.55E-18
po214	1.13E-15	1.13E-15	1.13E-15	1.13E-15	1.14E-15	1.16E-15	1.18E-15	1.19E-15	1.21E-15	1.23E-15	1.26E-15

po215	1.35E-15	1.35E-15	1.35E-15	1.35E-15	1.35E-15	1.36E-15	1.37E-15	1.38E-15	1.40E-15	1.41E-15	1.43E-15
po216	1.59E-14	1.51E-14	1.44E-14	1.30E-14	1.07E-14	6.49E-15	3.95E-15	2.41E-15	1.47E-15	8.94E-16	3.33E-16
po218	1.30E-09	1.30E-09	1.31E-09	1.31E-09	1.32E-09	1.34E-09	1.36E-09	1.38E-09	1.40E-09	1.42E-09	1.46E-09
at217	1.78E-14	1.78E-14	1.78E-14	1.79E-14	1.80E-14	1.84E-14	1.87E-14	1.90E-14	1.94E-14	1.97E-14	2.04E-14
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	3.06E-12	3.06E-12	3.06E-12	3.06E-12	3.07E-12	3.09E-12	3.11E-12	3.14E-12	3.16E-12	3.19E-12	3.24E-12
rn220	6.20E-12	5.90E-12	5.62E-12	5.08E-12	4.17E-12	2.54E-12	1.54E-12	9.40E-13	5.73E-13	3.49E-13	1.30E-13
rn222	2.35E-06	2.36E-06	2.36E-06	2.37E-06	2.38E-06	2.42E-06	2.45E-06	2.49E-06	2.52E-06	2.56E-06	2.63E-06
fr221	1.65E-10	1.65E-10	1.65E-10	1.66E-10	1.67E-10	1.70E-10	1.73E-10	1.76E-10	1.80E-10	1.83E-10	1.89E-10
fr223	1.42E-11	1.42E-11	1.42E-11	1.42E-11	1.42E-11	1.43E-11	1.44E-11	1.46E-11	1.47E-11	1.48E-11	1.50E-11
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	7.77E-07	7.77E-07	7.77E-07	7.78E-07	7.79E-07	7.84E-07	7.90E-07	7.97E-07	8.03E-07	8.10E-07	8.22E-07
ra224	3.59E-08	3.42E-08	3.25E-08	2.94E-08	2.41E-08	1.47E-08	8.94E-09	5.44E-09	3.32E-09	2.02E-09	7.53E-10
ra225	7.30E-07	7.31E-07	7.32E-07	7.35E-07	7.40E-07	7.54E-07	7.67E-07	7.81E-07	7.95E-07	8.09E-07	8.37E-07
ra226	3.66E-01	3.67E-01	3.67E-01	3.68E-01	3.71E-01	3.76E-01	3.82E-01	3.87E-01	3.93E-01	3.98E-01	4.10E-01
ra228	2.45E-09	2.45E-09	2.45E-09	2.46E-09	2.47E-09	2.49E-09	2.52E-09	2.54E-09	2.56E-09	2.59E-09	2.64E-09
ac225	4.93E-07	4.94E-07	4.95E-07	4.96E-07	5.00E-07	5.09E-07	5.18E-07	5.28E-07	5.37E-07	5.46E-07	5.66E-07
ac227	5.49E-04	5.49E-04	5.49E-04	5.50E-04	5.51E-04	5.55E-04	5.59E-04	5.64E-04	5.68E-04	5.73E-04	5.82E-04
ac228	2.99E-13	2.99E-13	2.99E-13	3.00E-13	3.01E-13	3.04E-13	3.07E-13	3.10E-13	3.13E-13	3.16E-13	3.23E-13
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	1.28E-06	1.28E-06	1.28E-06	1.28E-06	1.28E-06	1.29E-06	1.30E-06	1.31E-06	1.32E-06	1.33E-06	1.35E-06
th228	6.97E-06	6.63E-06	6.31E-06	5.72E-06	4.69E-06	2.85E-06	1.74E-06	1.06E-06	6.44E-07	3.93E-07	1.46E-07
th229	1.44E-01	1.45E-01	1.45E-01	1.45E-01	1.47E-01	1.49E-01	1.52E-01	1.55E-01	1.57E-01	1.60E-01	1.66E-01
th230	2.98E+01	2.98E+01	2.98E+01	2.99E+01	3.00E+01	3.03E+01	3.06E+01	3.09E+01	3.12E+01	3.15E+01	3.21E+01
th231	6.65E-07	6.65E-07	6.65E-07	6.65E-07	6.65E-07	6.65E-07	6.65E-07	6.65E-07	6.65E-07	6.65E-07	6.65E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 42

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
th232	6.09E+00	6.10E+00	6.11E+00	6.12E+00	6.14E+00	6.20E+00	6.27E+00	6.33E+00	6.39E+00	6.45E+00	6.57E+00
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	8.41E-01	8.42E-01	8.43E-01	8.44E-01	8.47E-01	8.54E-01	8.61E-01	8.68E-01	8.75E-01	8.82E-01	8.96E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	2.52E-04	2.40E-04	2.28E-04	2.06E-04	1.69E-04	1.03E-04	6.27E-05	3.82E-05	2.32E-05	1.42E-05	5.25E-06
u233	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.55E+01	1.56E+01	1.58E+01	1.59E+01	1.61E+01	1.62E+01	1.66E+01
u234	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03
u235	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.64E+05
u236	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04
u237	8.33E-10	6.54E-10	5.14E-10	3.17E-10	1.21E-10	1.08E-11	9.62E-13	8.59E-14	7.67E-15	6.85E-16	5.47E-18
u238	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	2.95E-35	2.97E-35	3.00E-35	3.05E-35	3.15E-35	3.40E-35	3.65E-35	3.89E-35	4.14E-35	4.39E-35	4.89E-35
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	3.44E-12	1.41E-13	5.76E-15	9.67E-18	2.72E-23	3.60E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	2.32E-04	2.32E-04	2.32E-04	2.32E-04	2.31E-04	2.31E-04	2.31E-04	2.31E-04	2.31E-04	2.31E-04	2.31E-04
np237	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03
np238	8.54E-11	8.33E-11	8.13E-11	7.74E-11	7.01E-11	5.49E-11	4.29E-11	3.35E-11	2.62E-11	2.05E-11	1.26E-11
np239	2.91E-11	2.91E-11	2.91E-11	2.90E-11	2.90E-11	2.89E-11	2.87E-11	2.86E-11	2.84E-11	2.83E-11	2.80E-11
np240m	2.51E-37	2.53E-37	2.56E-37	2.60E-37	2.68E-37	2.90E-37	3.11E-37	3.32E-37	3.54E-37	3.75E-37	4.17E-37
np240	1.80E-39	1.80E-39	1.80E-39	1.80E-39	3.60E-39	3.60E-39	3.60E-39	3.60E-39	3.60E-39	3.60E-39	3.60E-39
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	2.48E-08	7.88E-09	2.75E-09	7.24E-10	5.21E-10	5.19E-10	5.19E-10	5.19E-10	5.19E-10	5.19E-10	5.18E-10
pu237	4.51E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	5.07E+00	4.87E+00	4.68E+00	4.33E+00	3.70E+00	2.49E+00	1.68E+00	1.13E+00	7.61E-01	5.12E-01	2.33E-01
pu239	5.18E+03	5.18E+03	5.18E+03	5.18E+03	5.17E+03	5.17E+03	5.16E+03	5.15E+03	5.14E+03	5.14E+03	5.12E+03
pu240	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.07E+02	1.07E+02	1.06E+02	1.06E+02	1.05E+02	1.05E+02	1.04E+02
pu241	2.75E-02	2.16E-02	1.69E-02	1.05E-02	3.98E-03	3.55E-04	3.17E-05	2.83E-06	2.53E-07	2.26E-08	1.80E-10
pu242	5.23E-03	5.23E-03	5.23E-03	5.23E-03	5.24E-03	5.25E-03	5.26E-03	5.27E-03	5.28E-03	5.28E-03	5.29E-03
pu243	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29
pu244	1.49E-24	1.50E-24	1.52E-24	1.54E-24	1.59E-24	1.72E-24	1.85E-24	1.97E-24	2.10E-24	2.22E-24	2.48E-24
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	1.06E+00	1.05E+00	1.05E+00	1.04E+00	1.01E+00	9.38E-01	8.66E-01	8.00E-01	7.38E-01	6.81E-01	5.80E-01
am242m	4.69E-04	4.58E-04	4.47E-04	4.25E-04	3.86E-04	3.02E-04	2.36E-04	1.84E-04	1.44E-04	1.13E-04	6.90E-05
am242	6.06E-09	5.91E-09	5.76E-09	5.49E-09	4.97E-09	3.89E-09	3.04E-09	2.38E-09	1.86E-09	1.46E-09	8.90E-10
am243	3.38E-05	3.38E-05	3.38E-05	3.37E-05	3.37E-05	3.35E-05	3.34E-05	3.32E-05	3.31E-05	3.29E-05	3.26E-05
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 43

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cm242	1.22E-06	1.19E-06	1.16E-06	1.11E-06	1.00E-06	7.85E-07	6.14E-07	4.80E-07	3.76E-07	2.94E-07	1.80E-07
cm243	5.04E-15	4.46E-15	3.95E-15	3.10E-15	1.91E-15	5.65E-16	1.67E-16	4.96E-17	1.47E-17	4.36E-18	3.83E-19
cm244	2.76E-09	2.28E-09	1.88E-09	1.28E-09	5.97E-10	8.80E-11	1.30E-11	1.91E-12	2.81E-13	4.15E-14	9.01E-16
cm245	4.24E-12	4.23E-12	4.23E-12	4.23E-12	4.22E-12	4.21E-12	4.19E-12	4.17E-12	4.15E-12	4.14E-12	4.10E-12
cm246	1.99E-14	1.99E-14	1.99E-14	1.98E-14	1.98E-14	1.96E-14	1.95E-14	1.93E-14	1.92E-14	1.91E-14	1.88E-14
cm247	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18
cm248	1.37E-21	1.37E-21	1.37E-21	1.37E-21	1.37E-21	1.37E-21	1.37E-21	1.37E-21	1.37E-21	1.37E-21	1.37E-21
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	1.01E-36	1.01E-36	1.01E-36	1.01E-36	1.00E-36	1.00E-36	1.00E-36	9.99E-37	9.97E-37	9.95E-37	9.91E-37
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	1.14E-31	2.18E-33	4.17E-35	1.53E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	6.68E-26	6.61E-26	6.55E-26	6.42E-26	6.17E-26	5.59E-26	5.06E-26	4.58E-26	4.15E-26	3.76E-26	3.09E-26
cf250	5.10E-30	3.91E-30	3.00E-30	1.77E-30	6.12E-31	4.32E-32	3.06E-33	2.16E-34	1.53E-35	1.08E-36	5.49E-39
cf251	1.15E-31	1.15E-31	1.14E-31	1.13E-31	1.12E-31	1.07E-31	1.03E-31	9.94E-32	9.56E-32	9.20E-32	8.52E-32
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
fm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 44

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	4.77E-07	4.77E-07	4.77E-07	4.78E-07	4.80E-07	4.86E-07	4.93E-07	5.01E-07	5.08E-07	5.15E-07	5.30E-07

tl207	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.98E-02	4.01E-02	4.04E-02	4.07E-02	4.10E-02	4.14E-02	4.20E-02
tl208	2.06E-03	1.96E-03	1.86E-03	1.69E-03	1.38E-03	8.41E-04	5.12E-04	3.12E-04	1.90E-04	1.16E-04	4.31E-05
tl209	6.01E-04	6.02E-04	6.03E-04	6.05E-04	6.10E-04	6.21E-04	6.32E-04	6.43E-04	6.55E-04	6.66E-04	6.89E-04
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	2.86E-02	2.87E-02	2.87E-02	2.88E-02	2.90E-02	2.96E-02	3.01E-02	3.06E-02	3.12E-02	3.17E-02	3.28E-02
pb210	3.61E-01	3.61E-01	3.62E-01	3.62E-01	3.64E-01	3.68E-01	3.74E-01	3.79E-01	3.85E-01	3.90E-01	4.01E-01
pb211	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.99E-02	4.02E-02	4.05E-02	4.08E-02	4.12E-02	4.15E-02	4.21E-02
pb212	5.72E-03	5.45E-03	5.18E-03	4.69E-03	3.85E-03	2.34E-03	1.42E-03	8.68E-04	5.28E-04	3.22E-04	1.20E-04
pb214	3.62E-01	3.63E-01	3.63E-01	3.64E-01	3.66E-01	3.72E-01	3.77E-01	3.83E-01	3.88E-01	3.94E-01	4.05E-01
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	3.61E-01	3.62E-01	3.62E-01	3.62E-01	3.64E-01	3.68E-01	3.74E-01	3.79E-01	3.85E-01	3.90E-01	4.01E-01
bi211	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.99E-02	4.02E-02	4.05E-02	4.08E-02	4.12E-02	4.15E-02	4.21E-02
bi212	5.72E-03	5.45E-03	5.18E-03	4.69E-03	3.85E-03	2.34E-03	1.42E-03	8.68E-04	5.28E-04	3.22E-04	1.20E-04
bi213	2.86E-02	2.87E-02	2.87E-02	2.88E-02	2.90E-02	2.96E-02	3.01E-02	3.06E-02	3.12E-02	3.17E-02	3.28E-02
bi214	3.62E-01	3.63E-01	3.63E-01	3.64E-01	3.66E-01	3.72E-01	3.77E-01	3.83E-01	3.88E-01	3.94E-01	4.05E-01
po210	3.61E-01	3.62E-01	3.62E-01	3.62E-01	3.64E-01	3.68E-01	3.74E-01	3.79E-01	3.85E-01	3.90E-01	4.01E-01
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	1.09E-04	1.09E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.11E-04	1.12E-04	1.13E-04	1.14E-04	1.16E-04
po212	3.66E-03	3.49E-03	3.32E-03	3.00E-03	2.46E-03	1.50E-03	9.13E-04	5.56E-04	3.39E-04	2.06E-04	7.68E-05
po213	2.80E-02	2.81E-02	2.81E-02	2.82E-02	2.84E-02	2.89E-02	2.95E-02	3.00E-02	3.05E-02	3.11E-02	3.21E-02
po214	3.62E-01	3.63E-01	3.63E-01	3.64E-01	3.66E-01	3.72E-01	3.77E-01	3.83E-01	3.88E-01	3.94E-01	4.05E-01
po215	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.99E-02	4.02E-02	4.05E-02	4.08E-02	4.12E-02	4.15E-02	4.21E-02
po216	5.72E-03	5.45E-03	5.18E-03	4.69E-03	3.85E-03	2.34E-03	1.42E-03	8.68E-04	5.28E-04	3.22E-04	1.20E-04
po218	3.62E-01	3.63E-01	3.63E-01	3.64E-01	3.67E-01	3.72E-01	3.78E-01	3.83E-01	3.89E-01	3.94E-01	4.05E-01
at217	2.86E-02	2.87E-02	2.87E-02	2.88E-02	2.90E-02	2.96E-02	3.01E-02	3.06E-02	3.12E-02	3.17E-02	3.28E-02
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.99E-02	4.02E-02	4.05E-02	4.08E-02	4.12E-02	4.15E-02	4.21E-02
rn220	5.72E-03	5.45E-03	5.18E-03	4.69E-03	3.85E-03	2.34E-03	1.42E-03	8.68E-04	5.28E-04	3.22E-04	1.20E-04
rn222	3.62E-01	3.63E-01	3.63E-01	3.64E-01	3.67E-01	3.72E-01	3.78E-01	3.83E-01	3.89E-01	3.94E-01	4.05E-01
fr221	2.86E-02	2.87E-02	2.87E-02	2.88E-02	2.90E-02	2.96E-02	3.01E-02	3.06E-02	3.12E-02	3.17E-02	3.28E-02
fr223	5.48E-04	5.48E-04	5.48E-04	5.49E-04	5.50E-04	5.54E-04	5.59E-04	5.63E-04	5.68E-04	5.72E-04	5.81E-04
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.99E-02	4.02E-02	4.05E-02	4.08E-02	4.12E-02	4.15E-02	4.21E-02
ra224	5.72E-03	5.45E-03	5.18E-03	4.69E-03	3.85E-03	2.34E-03	1.42E-03	8.68E-04	5.28E-04	3.22E-04	1.20E-04
ra225	2.86E-02	2.87E-02	2.87E-02	2.88E-02	2.90E-02	2.96E-02	3.01E-02	3.06E-02	3.12E-02	3.17E-02	3.28E-02
ra226	3.62E-01	3.63E-01	3.63E-01	3.64E-01	3.67E-01	3.72E-01	3.77E-01	3.83E-01	3.89E-01	3.94E-01	4.05E-01
ra228	6.68E-07	6.68E-07	6.69E-07	6.70E-07	6.73E-07	6.80E-07	6.86E-07	6.93E-07	7.00E-07	7.07E-07	7.21E-07
ac225	2.86E-02	2.87E-02	2.87E-02	2.88E-02	2.90E-02	2.96E-02	3.01E-02	3.06E-02	3.12E-02	3.17E-02	3.28E-02
ac227	3.97E-02	3.97E-02	3.97E-02	3.98E-02	3.99E-02	4.02E-02	4.05E-02	4.08E-02	4.11E-02	4.15E-02	4.21E-02
ac228	6.68E-07	6.68E-07	6.69E-07	6.70E-07	6.73E-07	6.80E-07	6.86E-07	6.93E-07	7.00E-07	7.07E-07	7.21E-07
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	3.93E-02	3.93E-02	3.93E-02	3.93E-02	3.94E-02	3.96E-02	3.99E-02	4.03E-02	4.06E-02	4.09E-02	4.15E-02
th228	5.71E-03	5.44E-03	5.18E-03	4.69E-03	3.85E-03	2.34E-03	1.42E-03	8.68E-04	5.28E-04	3.22E-04	1.20E-04
th229	2.86E-02	2.87E-02	2.87E-02	2.88E-02	2.90E-02	2.96E-02	3.01E-02	3.06E-02	3.12E-02	3.17E-02	3.28E-02
th230	6.14E-01	6.14E-01	6.15E-01	6.16E-01	6.19E-01	6.25E-01	6.31E-01	6.37E-01	6.44E-01	6.50E-01	6.62E-01
th231	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.54E-01	3.54E-01	3.54E-01	3.54E-01	3.54E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 45

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
th232	6.69E-07	6.69E-07	6.70E-07	6.71E-07	6.74E-07	6.81E-07	6.87E-07	6.94E-07	7.01E-07	7.08E-07	7.21E-07
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	3.98E-02	3.98E-02	3.98E-02	3.99E-02	4.00E-02	4.03E-02	4.07E-02	4.10E-02	4.13E-02	4.17E-02	4.23E-02
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	5.56E-03	5.29E-03	5.04E-03	4.56E-03	3.74E-03	2.28E-03	1.39E-03	8.43E-04	5.13E-04	3.13E-04	1.16E-04
u233	1.48E-01	1.48E-01	1.48E-01	1.49E-01	1.49E-01	1.51E-01	1.52E-01	1.54E-01	1.55E-01	1.57E-01	1.60E-01
u234	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01
u235	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.54E-01	3.54E-01	3.54E-01	3.54E-01	3.54E-01
u236	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00
u237	6.80E-05	5.34E-05	4.19E-05	2.59E-05	9.85E-06	8.79E-07	7.85E-08	7.01E-09	6.26E-10	5.60E-11	4.46E-13
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	2.73E-29	2.75E-29	2.78E-29	2.82E-29	2.91E-29	3.15E-29	3.38E-29	3.61E-29	3.84E-29	4.07E-29	4.53E-29
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	4.82E-09	1.98E-10	8.09E-12	1.36E-14	3.81E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.04E-06
np237	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00
np238	2.21E-05	2.16E-05	2.11E-05	2.01E-05	1.82E-05	1.42E-05	1.11E-05	8.70E-06	6.80E-06	5.32E-06	3.25E-06
np239	6.75E-06	6.75E-06	6.75E-06	6.74E-06	6.73E-06	6.70E-06	6.66E-06	6.63E-06	6.60E-06	6.57E-06	6.51E-06
np240m	2.73E-29	2.75E-29	2.78E-29	2.82E-29	2.91E-29	3.15E-29	3.38E-29	3.61E-29	3.84E-29	4.07E-29	4.53E-29
np240	2.28E-32	2.28E-32	2.28E-32	2.28E-32	4.56E-32	4.56E-32	4.56E-32	4.56E-32	4.56E-32	4.56E-32	4.56E-32
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.30E-05	4.12E-06	1.44E-06	3.78E-07	2.72E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07
pu237	5.48E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	8.69E+01	8.35E+01	8.03E+01	7.42E+01	6.33E+01	4.26E+01	2.87E+01	1.94E+01	1.30E+01	8.78E+00	3.98E+00
pu239	3.21E+02	3.21E+02	3.21E+02	3.21E+02	3.21E+02	3.21E+02	3.20E+02	3.20E+02	3.19E+02	3.19E+02	3.18E+02
pu240	2.45E+01	2.45E+01	2.45E+01	2.44E+01	2.44E+01	2.43E+01	2.41E+01	2.40E+01	2.39E+01	2.38E+01	2.35E+01
pu241	2.84E+00	2.23E+00	1.75E+00	1.08E+00	4.11E-01	3.67E-02	3.28E-03	2.93E-04	2.62E-05	2.34E-06	1.87E-08
pu242	2.07E-05	2.07E-05	2.07E-05	2.07E-05	2.07E-05	2.08E-05	2.08E-05	2.09E-05	2.09E-05	2.09E-05	2.09E-05
pu243	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22
pu244	2.73E-29	2.76E-29	2.78E-29	2.82E-29	2.92E-29	3.15E-29	3.38E-29	3.61E-29	3.84E-29	4.08E-29	4.54E-29
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	3.62E+00	3.61E+00	3.60E+00	3.57E+00	3.47E+00	3.22E+00	2.97E+00	2.74E+00	2.53E+00	2.34E+00	1.99E+00
am242m	4.92E-03	4.80E-03	4.68E-03	4.46E-03	4.04E-03	3.16E-03	2.47E-03	1.93E-03	1.51E-03	1.18E-03	7.23E-04
am242	4.90E-03	4.78E-03	4.66E-03	4.44E-03	4.02E-03	3.15E-03	2.46E-03	1.92E-03	1.50E-03	1.18E-03	7.20E-04
am243	6.75E-06	6.75E-06	6.75E-06	6.74E-06	6.73E-06	6.70E-06	6.66E-06	6.63E-06	6.60E-06	6.57E-06	6.51E-06
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 46

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cm242	4.05E-03	3.95E-03	3.86E-03	3.67E-03	3.33E-03	2.60E-03	2.03E-03	1.59E-03	1.24E-03	9.73E-04	5.95E-04
cm243	2.60E-13	2.30E-13	2.04E-13	1.60E-13	9.84E-14	2.92E-14	8.64E-15	2.56E-15	7.59E-16	2.25E-16	1.98E-17
cm244	2.24E-07	1.85E-07	1.53E-07	1.04E-07	4.83E-08	7.12E-09	1.05E-09	1.55E-10	2.28E-11	3.36E-12	7.29E-14
cm245	7.28E-13	7.27E-13	7.27E-13	7.27E-13	7.25E-13	7.22E-13	7.19E-13	7.17E-13	7.14E-13	7.11E-13	7.05E-13
cm246	6.11E-15	6.11E-15	6.10E-15	6.09E-15	6.08E-15	6.03E-15	5.99E-15	5.94E-15	5.90E-15	5.86E-15	5.77E-15
cm247	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22
cm248	5.82E-24	5.82E-24	5.82E-24	5.82E-24	5.82E-24	5.82E-24	5.82E-24	5.82E-24	5.82E-24	5.82E-24	5.82E-24
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	1.87E-28	3.58E-30	6.85E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	2.74E-25	2.71E-25	2.68E-25	2.63E-25	2.53E-25	2.29E-25	2.07E-25	1.88E-25	1.70E-25	1.54E-25	1.27E-25
cf250	5.57E-28	4.28E-28	3.28E-28	1.93E-28	6.69E-29	4.72E-30	3.42E-31	2.28E-32	.00E+00	.00E+00	.00E+00
cf251	1.83E-31	1.83E-31	1.83E-31	1.83E-31	1.83E-31	1.60E-31	1.60E-31	1.60E-31	1.60E-31	1.37E-31	1.37E-31
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	4.84E+02	4.80E+02	4.76E+02	4.70E+02	4.58E+02	4.36E+02	4.21E+02	4.11E+02	4.04E+02	3.99E+02	3.93E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 47

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
h 3	2.22E-05	1.68E-05	1.27E-05	7.21E-06	2.34E-06	1.41E-07	8.47E-09	5.10E-10	3.06E-11	1.84E-12	6.67E-15
li 6	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05
li 7	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06
be 9	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06
be 10	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05
c 14	4.46E-06	4.46E-06	4.46E-06	4.45E-06	4.44E-06	4.42E-06	4.39E-06	4.36E-06	4.34E-06	4.31E-06	4.26E-06
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08
zn 68	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08
zn 70	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 48

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	5.98E-03	5.99E-03	6.00E-03	6.03E-03	6.08E-03	6.19E-03	6.31E-03	6.43E-03	6.55E-03	6.67E-03	6.91E-03
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06

cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00
kr 81	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 49

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	1.14E-02	8.25E-03	5.97E-03	3.13E-03	8.58E-04	3.38E-05	1.33E-06	5.26E-08	2.08E-09	8.18E-11	1.27E-13
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	3.32E+01	3.32E+01	3.32E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01
rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01
sr 87	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 50

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	9.60E-25	1.28E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02
y 89m	3.28E-34	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	1.04E+00	9.23E-01	8.16E-01	6.38E-01	3.90E-01	1.14E-01	3.32E-02	9.69E-03	2.83E-03	8.26E-04	7.04E-05
y 90	2.71E-04	2.40E-04	2.12E-04	1.66E-04	1.01E-04	2.96E-05	8.63E-06	2.52E-06	7.35E-07	2.15E-07	1.83E-08
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	1.67E+02	1.67E+02	1.67E+02	1.67E+02	1.67E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	1.27E-21	5.07E-31	2.03E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02
nb 91	2.09E-11	2.08E-11	2.07E-11	2.05E-11	2.01E-11	1.91E-11	1.81E-11	1.72E-11	1.64E-11	1.56E-11	1.41E-11
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02
nb 92	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02
nb 93	1.43E-01	1.43E-01	1.44E-01	1.44E-01	1.45E-01	1.48E-01	1.51E-01	1.54E-01	1.57E-01	1.60E-01	1.65E-01
nb 93m	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 51

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02
nb 94	5.78E-05	5.78E-05	5.78E-05	5.77E-05	5.77E-05	5.76E-05	5.75E-05	5.74E-05	5.73E-05	5.72E-05	5.70E-05
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	6.67E-20	1.72E-28	4.44E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	8.02E-20	2.07E-28	5.93E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	4.42E-23	1.14E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02
tc 98	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.95E+02	1.95E+02
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	1.62E+00	1.63E+00	1.63E+00	1.64E+00	1.65E+00	1.68E+00	1.71E+00	1.75E+00	1.78E+00	1.81E+00	1.88E+00

rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 52

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02
rh102	8.94E-10	2.71E-10	8.19E-11	7.51E-12	6.30E-14	4.06E-19	2.62E-24	1.69E-29	1.09E-34	7.03E-40	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	3.47E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02
rh103m	3.44E-34	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 53

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	7.87E-06	2.61E-07	8.66E-09	9.52E-12	1.15E-17	1.85E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	7.31E-12	2.42E-13	8.04E-15	8.84E-18	1.07E-23	1.72E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	2.33E-03	2.33E-03	2.34E-03	2.35E-03	2.37E-03	2.42E-03	2.47E-03	2.53E-03	2.58E-03	2.63E-03	2.74E-03
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00
ag108	1.22E-17	1.19E-17	1.15E-17	1.09E-17	9.79E-18	7.45E-18	5.67E-18	4.32E-18	3.29E-18	2.50E-18	1.45E-18
ag108m	3.95E-09	3.84E-09	3.74E-09	3.54E-09	3.17E-09	2.41E-09	1.84E-09	1.40E-09	1.06E-09	8.11E-10	4.70E-10
cd108	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00
ag109m	2.54E-21	1.65E-22	1.07E-23	4.48E-26	7.90E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	2.57E-15	1.66E-16	1.08E-17	4.53E-20	7.98E-25	1.04E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00
ag110	3.20E-19	2.01E-21	1.26E-23	5.01E-28	7.84E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	2.06E-11	1.30E-13	8.16E-16	3.23E-20	5.06E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 54

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cd110	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01
cd113m	3.09E-05	2.42E-05	1.89E-05	1.16E-05	4.32E-06	3.70E-07	3.17E-08	2.71E-09	2.32E-10	1.99E-11	1.46E-13
in113	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
in114	4.63E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	2.88E-32	1.60E-43	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	1.63E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01
in115m	7.54E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 55

nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sn115	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02

tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
sn119m	8.37E-11	1.11E-12	1.48E-14	2.62E-18	8.20E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 56

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	2.79E-09	2.62E-09	2.46E-09	2.17E-09	1.69E-09	8.99E-10	4.79E-10	2.55E-10	1.36E-10	7.23E-11	2.05E-11
sn121m	6.41E-05	6.02E-05	5.65E-05	4.99E-05	3.87E-05	2.06E-05	1.10E-05	5.85E-06	3.12E-06	1.66E-06	4.71E-07
sb121	5.83E-01	5.83E-01	5.83E-01	5.83E-01	5.83E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	2.28E-14	1.26E-18	6.98E-23	2.14E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01
te123	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08
te123m	3.14E-21	7.99E-26	2.03E-30	1.32E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00
sb124	2.68E-26	1.97E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	8.94E-05	2.51E-05	7.05E-06	5.57E-07	3.47E-09	1.06E-14	3.25E-20	9.96E-26	3.05E-31	9.34E-37	.00E+00
te125	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00
te125m	1.27E-06	3.57E-07	1.00E-07	7.91E-09	4.92E-11	1.51E-16	4.62E-22	1.41E-27	4.33E-33	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 57

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sb126	9.52E-08	9.52E-08	9.52E-08	9.52E-08	9.52E-08	9.51E-08	9.51E-08	9.51E-08	9.50E-08	9.50E-08	9.49E-08
sb126m	7.24E-10	7.24E-10	7.24E-10	7.24E-10	7.23E-10	7.23E-10	7.23E-10	7.23E-10	7.22E-10	7.22E-10	7.22E-10
te126	4.90E-02	4.91E-02	4.91E-02	4.93E-02	4.96E-02	5.03E-02	5.10E-02	5.16E-02	5.23E-02	5.30E-02	5.44E-02
xe126	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	2.73E-17	2.47E-22	2.23E-27	1.82E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	7.79E-15	7.04E-20	6.37E-25	5.20E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	3.15E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01
xe129	3.63E-03	3.63E-03	3.64E-03	3.66E-03	3.69E-03	3.76E-03	3.83E-03	3.90E-03	3.98E-03	4.05E-03	4.20E-03
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 58

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07

in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02
ba133	1.07E-11	7.70E-12	5.54E-12	2.87E-12	7.67E-13	2.85E-14	1.06E-15	3.91E-17	1.45E-18	5.38E-20	7.40E-23
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	3.27E-05	6.09E-06	1.13E-06	3.93E-08	4.72E-11	2.37E-18	1.18E-25	5.94E-33	2.97E-40	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	2.19E-01	2.20E-01	2.20E-01	2.21E-01	2.23E-01	2.27E-01	2.32E-01	2.36E-01	2.40E-01	2.45E-01	2.53E-01
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 59
0
nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	1.94E+00	1.73E+00	1.54E+00	1.22E+00	7.70E-01	2.42E-01	7.64E-02	2.41E-02	7.58E-03	2.39E-03	2.37E-04
ba137	2.80E+02	2.80E+02	2.81E+02	2.81E+02	2.81E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02
ba137m	2.96E-07	2.64E-07	2.35E-07	1.87E-07	1.18E-07	3.70E-08	1.17E-08	3.67E-09	1.16E-09	3.64E-10	3.61E-11
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02
la138	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02
ce139	2.85E-18	2.88E-22	2.91E-26	2.98E-34	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	1.01E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 60

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	7.84E-06	9.22E-08	1.08E-09	1.50E-13	2.88E-21	1.46E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	3.30E-10	3.88E-12	4.57E-14	6.32E-18	1.21E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	1.93E-12	2.27E-14	2.67E-16	3.69E-20	7.06E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02

i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02
pm145	2.29E-10	1.88E-10	1.55E-10	1.04E-10	4.77E-11	6.74E-12	9.51E-13	1.34E-13	1.89E-14	2.67E-15	5.32E-17
sm145	8.82E-15	2.13E-16	5.15E-18	3.01E-21	1.02E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02
pm146	5.89E-11	3.15E-11	1.68E-11	4.80E-12	3.91E-13	7.41E-16	1.41E-18	2.66E-21	5.05E-24	9.58E-27	3.44E-32
sm146	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	5.90E-03	1.57E-03	4.20E-04	2.99E-05	1.52E-07	2.77E-13	5.07E-19	9.28E-25	1.70E-30	3.10E-36	.00E+00
sm147	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01
pm148	6.38E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	1.00E-34	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 61

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sm148	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00
eu149	1.48E-25	1.83E-31	2.26E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01
eu150	1.37E-08	1.24E-08	1.13E-08	9.29E-09	6.31E-09	2.40E-09	9.10E-10	3.46E-10	1.31E-10	4.99E-11	7.20E-12

ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	5.37E-01	5.17E-01	4.97E-01	4.60E-01	3.95E-01	2.68E-01	1.83E-01	1.24E-01	8.45E-02	5.75E-02	2.66E-02
eu151	1.65E+01	1.66E+01	1.66E+01	1.66E+01	1.67E+01	1.68E+01	1.69E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01
eu152	1.30E-02	1.00E-02	7.75E-03	4.61E-03	1.63E-03	1.21E-04	8.97E-06	6.66E-07	4.94E-08	3.67E-09	2.02E-11
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	1.99E+00	1.99E+00	1.99E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00
gd153	1.40E-10	7.43E-13	3.93E-15	1.10E-19	8.67E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 62

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sm154	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00
eu154	3.25E-04	2.17E-04	1.45E-04	6.48E-05	1.29E-05	2.28E-07	4.04E-09	7.14E-11	1.26E-12	2.24E-14	7.00E-18
gd154	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	6.74E-04	3.21E-04	1.53E-04	3.48E-05	1.80E-06	1.10E-09	6.66E-13	4.05E-16	2.46E-19	1.50E-22	5.53E-29
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	7.01E-01	7.01E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02
tb160	1.14E-23	2.84E-31	7.06E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 63

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
dy161	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	2.95E-07	2.94E-07	2.93E-07	2.91E-07	2.88E-07	2.80E-07	2.72E-07	2.64E-07	2.57E-07	2.49E-07	2.35E-07
er166	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05
er167	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08
tm170	2.44E-22	1.29E-26	6.86E-31	1.93E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	3.09E-12	5.08E-13	8.36E-14	2.26E-15	1.66E-18	2.40E-26	3.48E-34	5.03E-42	.00E+00	.00E+00	.00E+00
yb171	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08
total	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 64

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
h 3	2.15E-01	1.62E-01	1.22E-01	6.97E-02	2.27E-02	1.36E-03	8.19E-05	4.93E-06	2.96E-07	1.78E-08	6.45E-11
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07
c 14	1.99E-05	1.99E-05	1.99E-05	1.99E-05	1.98E-05	1.97E-05	1.96E-05	1.95E-05	1.93E-05	1.92E-05	1.90E-05
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 65

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	2.46E-09	2.46E-09	2.46E-09	2.46E-09	2.46E-09	2.46E-09	2.46E-09	2.46E-09	2.46E-09	2.46E-09	2.46E-09
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 66

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	4.48E+00	3.24E+00	2.34E+00	1.23E+00	3.37E-01	1.33E-02	5.24E-04	2.07E-05	8.14E-07	3.21E-08	4.99E-11
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 67

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	2.79E-20	3.65E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	2.59E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	1.47E+02	1.30E+02	1.15E+02	9.00E+01	5.50E+01	1.61E+01	4.69E+00	1.37E+00	4.00E-01	1.17E-01	9.94E-03
y 90	1.47E+02	1.30E+02	1.15E+02	9.01E+01	5.50E+01	1.61E+01	4.69E+00	1.37E+00	4.00E-01	1.17E-01	9.94E-03
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	3.11E-17	1.24E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	1.21E-10	1.20E-10	1.20E-10	1.18E-10	1.16E-10	1.10E-10	1.05E-10	9.96E-11	9.47E-11	9.00E-11	8.13E-11
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 68

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.07E-05	1.07E-05	1.07E-05
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	1.43E-15	3.69E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	3.15E-15	8.14E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	1.68E-17	4.34E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.34E+00
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 69

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	1.08E-06	3.27E-07	9.91E-08	9.07E-09	7.61E-11	4.91E-16	3.17E-21	2.04E-26	1.37E-31	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	1.12E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	1.12E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 70

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	2.61E-02	8.66E-04	2.87E-05	3.16E-08	3.82E-14	6.14E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	2.61E-02	8.66E-04	2.87E-05	3.16E-08	3.82E-14	6.14E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	8.95E-09	8.71E-09	8.48E-09	8.03E-09	7.20E-09	5.48E-09	4.17E-09	3.17E-09	2.42E-09	1.84E-09	1.07E-09
ag108m	1.03E-07	1.00E-07	9.74E-08	9.23E-08	8.27E-08	6.30E-08	4.79E-08	3.65E-08	2.78E-08	2.11E-08	1.22E-08
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	6.65E-12	4.31E-13	2.79E-14	1.17E-16	2.07E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	6.65E-12	4.31E-13	2.79E-14	1.17E-16	2.07E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	1.33E-09	8.38E-12	5.28E-14	2.09E-18	3.27E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	9.80E-08	6.17E-10	3.88E-12	1.54E-16	2.41E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 71

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14
cd113m	6.93E-03	5.42E-03	4.24E-03	2.59E-03	9.70E-04	8.31E-05	7.11E-06	6.09E-07	5.21E-08	4.46E-09	3.27E-11
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	6.38E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	6.67E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	4.16E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12
in115m	4.56E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 72

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	3.13E-07	4.17E-09	5.54E-11	9.81E-15	3.07E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 73

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	2.67E-03	2.51E-03	2.36E-03	2.08E-03	1.62E-03	8.60E-04	4.58E-04	2.44E-04	1.30E-04	6.92E-05	1.96E-05
sn121m	3.45E-03	3.24E-03	3.04E-03	2.68E-03	2.08E-03	1.11E-03	5.90E-04	3.14E-04	1.67E-04	8.92E-05	2.53E-05
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	1.87E-10	1.04E-14	5.74E-19	1.76E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17
te123m	2.78E-17	7.09E-22	1.80E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	4.69E-22	3.42E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	9.37E-02	2.63E-02	7.39E-03	5.83E-04	3.63E-06	1.11E-11	3.41E-17	1.04E-22	3.20E-28	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	2.29E-02	6.43E-03	1.81E-03	1.42E-04	8.87E-07	2.72E-12	8.32E-18	2.55E-23	7.80E-29	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.68E-02	5.68E-02	5.68E-02	5.68E-02	5.68E-02	5.68E-02	5.67E-02

1

Part B 8% UO2 in Tuff (47% H2O) OBF Fuel 5K yr burn fission products page 74

0 nuclide radioactivity, curies
basis per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sb126	7.96E-03	7.96E-03	7.96E-03	7.96E-03	7.96E-03	7.96E-03	7.95E-03	7.95E-03	7.95E-03	7.95E-03	7.94E-03
sb126m	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.68E-02	5.68E-02	5.68E-02	5.68E-02	5.68E-02	5.68E-02	5.67E-02

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	7.20E-11	6.51E-16	5.88E-21	4.79E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	7.35E-11	6.65E-16	6.01E-21	5.02E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 75

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	2.74E-09	1.97E-09	1.42E-09	7.33E-10	1.96E-10	7.27E-12	2.70E-13	1.00E-14	3.71E-16	1.38E-17	1.89E-20
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	4.23E-02	7.88E-03	1.47E-03	5.09E-05	6.11E-08	3.06E-15	1.53E-22	7.69E-30	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 76

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	1.69E+02	1.50E+02	1.34E+02	1.06E+02	6.70E+01	2.11E+01	6.65E+00	2.09E+00	6.59E-01	2.08E-01	2.06E-02
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	1.59E+02	1.42E+02	1.27E+02	1.00E+02	6.33E+01	1.99E+01	6.28E+00	1.98E+00	6.22E-01	1.96E-01	1.94E-02
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	1.95E-14	1.97E-18	1.99E-22	2.03E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	2.28E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 77

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	2.50E-02	2.94E-04	3.45E-06	4.78E-10	9.16E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	2.50E-02	2.94E-04	3.45E-06	4.78E-10	9.16E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	3.49E-04	4.11E-06	4.84E-08	6.69E-12	1.28E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10
i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	3.19E-08	2.62E-08	2.15E-08	1.46E-08	6.65E-09	9.39E-10	1.32E-10	1.87E-11	2.64E-12	3.72E-13	7.42E-15
sm145	2.34E-11	5.64E-13	1.36E-14	7.96E-18	2.71E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	2.61E-08	1.39E-08	7.45E-09	2.13E-09	1.73E-10	3.28E-13	6.23E-16	1.18E-18	2.24E-21	4.24E-24	1.52E-29
sm146	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	5.47E+00	1.46E+00	3.89E-01	2.77E-02	1.41E-04	2.57E-10	4.70E-16	8.60E-22	1.57E-27	.00E+00	.00E+00
sm147	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	1.14E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	2.14E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 78

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sm148	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12
eu149	1.40E-21	1.73E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	9.11E-07	8.27E-07	7.50E-07	6.18E-07	4.20E-07	1.59E-07	6.06E-08	2.30E-08	8.74E-09	3.32E-09	4.79E-10
ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	1.41E+01	1.36E+01	1.31E+01	1.21E+01	1.04E+01	7.06E+00	4.81E+00	3.27E+00	2.22E+00	1.51E+00	7.01E-01
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	2.30E+00	1.77E+00	1.37E+00	8.13E-01	2.87E-01	2.13E-02	1.58E-03	1.18E-04	8.72E-06	6.48E-07	3.57E-09
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	4.34E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	4.96E-07	2.63E-09	1.39E-11	3.90E-16	3.07E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 79

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	8.80E-02	5.88E-02	3.92E-02	1.75E-02	3.49E-03	6.17E-05	1.09E-06	1.93E-08	3.42E-10	6.04E-12	1.89E-15
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	3.32E-01	1.58E-01	7.55E-02	1.72E-02	8.88E-04	5.40E-07	3.28E-10	2.00E-13	1.21E-16	7.37E-20	2.72E-26
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	1.29E-19	3.20E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 80

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	5.29E-07	5.28E-07	5.26E-07	5.23E-07	5.17E-07	5.02E-07	4.88E-07	4.74E-07	4.61E-07	4.48E-07	4.22E-07
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	1.46E-18	7.74E-23	4.10E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	3.37E-09	5.54E-10	9.11E-11	2.46E-12	1.80E-15	2.61E-23	3.88E-31	.00E+00	.00E+00	.00E+00	.00E+00
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	6.55E+02	5.78E+02	5.13E+02	4.06E+02	2.56E+02	8.47E+01	3.16E+01	1.45E+01	8.77E+00	6.61E+00	5.22E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 81

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
he 4	1.29E+01	1.32E+01	1.46E+01	1.74E+01	2.28E+01	2.79E+01	3.27E+01	3.73E+01	4.16E+01	4.58E+01	4.97E+01
tl206	2.44E-15	2.50E-15	2.87E-15	3.57E-15	5.01E-15	6.45E-15	7.88E-15	9.28E-15	1.06E-14	1.20E-14	1.33E-14
tl207	2.21E-10	2.24E-10	2.42E-10	2.76E-10	3.41E-10	4.04E-10	4.65E-10	5.23E-10	5.78E-10	6.32E-10	6.83E-10
tl208	1.46E-13	5.47E-14	1.67E-15	1.46E-15	1.79E-15	2.11E-15	2.44E-15	2.77E-15	3.09E-15	3.42E-15	3.74E-15
tl209	1.69E-12	1.74E-12	2.04E-12	2.70E-12	4.23E-12	6.00E-12	7.95E-12	1.01E-11	1.23E-11	1.47E-11	1.71E-11
pb206	3.36E-01	3.52E-01	4.41E-01	6.54E-01	1.22E+00	1.98E+00	2.92E+00	4.06E+00	5.37E+00	6.87E+00	8.54E+00
pb207	4.60E-02	4.77E-02	5.66E-02	7.64E-02	1.24E-01	1.81E-01	2.47E-01	3.23E-01	4.07E-01	5.00E-01	6.01E-01
pb208	6.51E-03	6.52E-03	6.52E-03	6.52E-03	6.52E-03	6.52E-03	6.52E-03	6.52E-03	6.53E-03	6.53E-03	6.53E-03
pb209	7.12E-09	7.36E-09	8.63E-09	1.14E-08	1.79E-08	2.53E-08	3.36E-08	4.25E-08	5.20E-08	6.20E-08	7.22E-08
pb210	5.26E-03	5.40E-03	6.19E-03	7.71E-03	1.08E-02	1.39E-02	1.70E-02	2.00E-02	2.30E-02	2.58E-02	2.87E-02
pb211	1.71E-09	1.73E-09	1.87E-09	2.14E-09	2.64E-09	3.13E-09	3.59E-09	4.04E-09	4.47E-09	4.89E-09	5.29E-09
pb212	8.63E-11	3.24E-11	9.91E-13	8.68E-13	1.06E-12	1.25E-12	1.45E-12	1.64E-12	1.83E-12	2.03E-12	2.22E-12
pb214	1.24E-08	1.27E-08	1.44E-08	1.79E-08	2.52E-08	3.24E-08	3.96E-08	4.66E-08	5.35E-08	6.02E-08	6.68E-08
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.50E-02	2.64E-02	3.38E-02	5.25E-02	1.07E-01	1.87E-01	2.97E-01	4.39E-01	6.16E-01	8.29E-01	1.08E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	3.23E-06	3.32E-06	3.81E-06	4.74E-06	6.65E-06	8.57E-06	1.05E-05	1.23E-05	1.41E-05	1.59E-05	1.76E-05
bi211	1.01E-10	1.03E-10	1.11E-10	1.27E-10	1.57E-10	1.85E-10	2.13E-10	2.40E-10	2.65E-10	2.90E-10	3.13E-10
bi212	8.18E-12	3.08E-12	9.40E-14	8.23E-14	1.01E-13	1.19E-13	1.37E-13	1.56E-13	1.74E-13	1.92E-13	2.10E-13
bi213	1.69E-09	1.75E-09	2.05E-09	2.72E-09	4.25E-09	6.03E-09	8.00E-09	1.01E-08	1.24E-08	1.47E-08	1.72E-08
bi214	9.17E-09	9.42E-09	1.07E-08	1.33E-08	1.87E-08	2.41E-08	2.94E-08	3.46E-08	3.97E-08	4.47E-08	4.96E-08
po210	8.93E-05	9.18E-05	1.05E-04	1.31E-04	1.84E-04	2.37E-04	2.89E-04	3.40E-04	3.90E-04	4.39E-04	4.87E-04
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	1.12E-15	1.14E-15	1.23E-15	1.40E-15	1.73E-15	2.05E-15	2.36E-15	2.65E-15	2.93E-15	3.20E-15	3.46E-15
po212	4.30E-22	1.62E-22	4.94E-24	4.33E-24	5.29E-24	6.25E-24	7.21E-24	8.17E-24	9.14E-24	1.01E-23	1.11E-23
po213	2.55E-18	2.63E-18	3.09E-18	4.09E-18	6.40E-18	9.06E-18	1.20E-17	1.52E-17	1.86E-17	2.22E-17	2.58E-17
po214	1.26E-15	1.30E-15	1.47E-15	1.83E-15	2.57E-15	3.31E-15	4.04E-15	4.76E-15	5.46E-15	6.15E-15	6.82E-15

po215	1.43E-15	1.45E-15	1.57E-15	1.79E-15	2.21E-15	2.62E-15	3.01E-15	3.39E-15	3.75E-15	4.09E-15	4.43E-15
po216	3.33E-16	1.25E-16	3.82E-18	3.35E-18	4.09E-18	4.84E-18	5.58E-18	6.33E-18	7.07E-18	7.81E-18	8.56E-18
po218	1.46E-09	1.50E-09	1.70E-09	2.12E-09	2.97E-09	3.82E-09	4.66E-09	5.49E-09	6.30E-09	7.09E-09	7.87E-09
at217	2.04E-14	2.11E-14	2.47E-14	3.27E-14	5.12E-14	7.25E-14	9.62E-14	1.22E-13	1.49E-13	1.77E-13	2.07E-13
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	3.24E-12	3.29E-12	3.56E-12	4.05E-12	5.01E-12	5.94E-12	6.82E-12	7.67E-12	8.49E-12	9.28E-12	1.00E-11
rn220	1.30E-13	4.88E-14	1.49E-15	1.31E-15	1.60E-15	1.89E-15	2.18E-15	2.47E-15	2.76E-15	3.05E-15	3.34E-15
rn222	2.63E-06	2.71E-06	3.07E-06	3.83E-06	5.37E-06	6.91E-06	8.44E-06	9.93E-06	1.14E-05	1.28E-05	1.42E-05
fr221	1.89E-10	1.95E-10	2.29E-10	3.03E-10	4.75E-10	6.72E-10	8.92E-10	1.13E-09	1.38E-09	1.65E-09	1.92E-09
fr223	1.50E-11	1.53E-11	1.65E-11	1.88E-11	2.33E-11	2.75E-11	3.17E-11	3.56E-11	3.94E-11	4.31E-11	4.66E-11
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	8.22E-07	8.35E-07	9.03E-07	1.03E-06	1.27E-06	1.51E-06	1.73E-06	1.95E-06	2.16E-06	2.36E-06	2.55E-06
ra224	7.53E-10	2.83E-10	8.65E-12	7.57E-12	9.25E-12	1.09E-11	1.26E-11	1.43E-11	1.60E-11	1.77E-11	1.94E-11
ra225	8.37E-07	8.66E-07	1.02E-06	1.34E-06	2.10E-06	2.98E-06	3.95E-06	5.00E-06	6.12E-06	7.29E-06	8.49E-06
ra226	4.10E-01	4.21E-01	4.78E-01	5.95E-01	8.35E-01	1.08E+00	1.31E+00	1.55E+00	1.77E+00	2.00E+00	2.21E+00
ra228	2.64E-09	2.69E-09	2.94E-09	3.44E-09	4.43E-09	5.43E-09	6.42E-09	7.42E-09	8.41E-09	9.40E-09	1.04E-08
ac225	5.66E-07	5.85E-07	6.86E-07	9.07E-07	1.42E-06	2.01E-06	2.67E-06	3.38E-06	4.13E-06	4.92E-06	5.74E-06
ac227	5.82E-04	5.91E-04	6.40E-04	7.29E-04	9.01E-04	1.07E-03	1.23E-03	1.38E-03	1.53E-03	1.67E-03	1.80E-03
ac228	3.23E-13	3.29E-13	3.59E-13	4.20E-13	5.41E-13	6.62E-13	7.84E-13	9.05E-13	1.03E-12	1.15E-12	1.27E-12
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	1.35E-06	1.37E-06	1.48E-06	1.69E-06	2.09E-06	2.48E-06	2.85E-06	3.20E-06	3.54E-06	3.87E-06	4.19E-06
th228	1.46E-07	5.50E-08	1.68E-09	1.47E-09	1.80E-09	2.13E-09	2.45E-09	2.78E-09	3.11E-09	3.43E-09	3.76E-09
th229	1.66E-01	1.71E-01	2.01E-01	2.66E-01	4.16E-01	5.89E-01	7.82E-01	9.90E-01	1.21E+00	1.44E+00	1.68E+00
th230	3.21E+01	3.27E+01	3.57E+01	4.17E+01	5.34E+01	6.48E+01	7.60E+01	8.69E+01	9.75E+01	1.08E+02	1.18E+02
th231	6.65E-07	6.65E-07	6.65E-07	6.66E-07	6.67E-07	6.68E-07	6.69E-07	6.70E-07	6.71E-07	6.71E-07	6.72E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 82

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
th232	6.57E+00	6.70E+00	7.32E+00	8.55E+00	1.10E+01	1.35E+01	1.60E+01	1.84E+01	2.09E+01	2.34E+01	2.59E+01
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	8.96E-01	9.10E-01	9.79E-01	1.12E+00	1.38E+00	1.63E+00	1.88E+00	2.11E+00	2.34E+00	2.55E+00	2.76E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.35E-04	3.35E-04	3.35E-04	3.35E-04	3.34E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	5.25E-06	1.95E-06	2.57E-08	1.22E-08	1.20E-08	1.19E-08	1.17E-08	1.16E-08	1.14E-08	1.13E-08	1.12E-08
u233	1.66E+01	1.69E+01	1.84E+01	2.15E+01	2.75E+01	3.36E+01	3.96E+01	4.55E+01	5.13E+01	5.71E+01	6.29E+01
u234	2.28E+03	2.28E+03	2.28E+03	2.27E+03	2.26E+03	2.25E+03	2.24E+03	2.23E+03	2.22E+03	2.21E+03	2.20E+03
u235	1.64E+05	1.64E+05	1.64E+05	1.64E+05	1.64E+05	1.64E+05	1.64E+05	1.65E+05	1.65E+05	1.65E+05	1.65E+05
u236	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04
u237	5.47E-18	4.38E-20	1.97E-22	1.81E-22	1.54E-22	1.31E-22	1.11E-22	9.45E-23	8.02E-23	6.82E-23	5.79E-23
u238	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	4.89E-35	5.39E-35	7.88E-35	1.29E-34	2.28E-34	3.27E-34	4.25E-34	5.23E-34	6.21E-34	7.18E-34	8.15E-34
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	2.31E-04	2.31E-04	2.30E-04	2.29E-04	2.26E-04	2.23E-04	2.21E-04	2.18E-04	2.15E-04	2.13E-04	2.10E-04
np237	9.90E+03	9.90E+03	9.90E+03	9.89E+03	9.89E+03	9.88E+03	9.87E+03	9.87E+03	9.86E+03	9.85E+03	9.85E+03
np238	1.26E-11	7.68E-12	6.57E-13	4.82E-15	2.59E-19	1.39E-23	7.47E-28	4.01E-32	2.11E-36	.00E+00	.00E+00
np239	2.80E-11	2.78E-11	2.65E-11	2.41E-11	2.00E-11	1.66E-11	1.37E-11	1.14E-11	9.42E-12	7.81E-12	6.47E-12
np240m	4.17E-37	4.60E-37	6.73E-37	1.10E-36	1.94E-36	2.79E-36	3.63E-36	4.46E-36	5.30E-36	6.13E-36	6.95E-36
np240	3.60E-39	5.41E-39	7.21E-39	1.08E-38	1.98E-38	2.88E-38	3.78E-38	4.51E-38	5.41E-38	6.31E-38	7.21E-38
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	5.18E-10	5.18E-10	5.17E-10	5.13E-10	5.07E-10	5.01E-10	4.95E-10	4.89E-10	4.83E-10	4.78E-10	4.72E-10
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	2.33E-01	1.06E-01	2.03E-03	7.65E-07	2.01E-12	1.03E-16	5.52E-21	2.96E-25	1.59E-29	8.55E-34	4.59E-38
pu239	5.12E+03	5.11E+03	5.03E+03	4.89E+03	4.62E+03	4.36E+03	4.12E+03	3.89E+03	3.67E+03	3.46E+03	3.27E+03
pu240	1.04E+02	1.02E+02	9.72E+01	8.74E+01	7.08E+01	5.73E+01	4.64E+01	3.76E+01	3.04E+01	2.46E+01	1.99E+01
pu241	1.80E-10	1.45E-12	6.50E-15	5.99E-15	5.09E-15	4.32E-15	3.67E-15	3.12E-15	2.65E-15	2.25E-15	1.91E-15
pu242	5.29E-03	5.29E-03	5.30E-03	5.29E-03	5.27E-03	5.25E-03	5.23E-03	5.21E-03	5.19E-03	5.17E-03	5.15E-03
pu243	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29
pu244	2.48E-24	2.73E-24	3.99E-24	6.51E-24	1.15E-23	1.65E-23	2.15E-23	2.65E-23	3.14E-23	3.63E-23	4.12E-23
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	5.80E-01	4.94E-01	2.22E-01	4.47E-02	1.81E-03	7.35E-05	2.98E-06	1.21E-07	4.90E-09	1.99E-10	8.11E-12
am242m	6.90E-05	4.22E-05	3.61E-06	2.65E-08	1.42E-12	7.64E-17	4.10E-21	2.20E-25	1.18E-29	6.36E-34	3.42E-38
am242	8.90E-10	5.44E-10	4.66E-11	3.42E-13	1.84E-17	9.86E-22	5.29E-26	2.84E-30	1.53E-34	.00E+00	.00E+00
am243	3.26E-05	3.23E-05	3.08E-05	2.80E-05	2.32E-05	1.92E-05	1.59E-05	1.32E-05	1.09E-05	9.07E-06	7.52E-06
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 83

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cm242	1.80E-07	1.10E-07	9.41E-09	6.90E-11	3.72E-15	2.00E-19	1.07E-23	5.76E-28	3.09E-32	1.66E-36	8.92E-41
cm243	3.83E-19	3.36E-20	1.76E-25	4.80E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	9.01E-16	1.96E-17	9.44E-26	2.05E-42	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	4.10E-12	4.07E-12	3.91E-12	3.60E-12	3.06E-12	2.60E-12	2.21E-12	1.88E-12	1.59E-12	1.35E-12	1.15E-12
cm246	1.88E-14	1.85E-14	1.72E-14	1.49E-14	1.11E-14	8.27E-15	6.17E-15	4.60E-15	3.43E-15	2.56E-15	1.91E-15
cm247	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18
cm248	1.37E-21	1.37E-21	1.37E-21	1.37E-21	1.36E-21	1.36E-21	1.35E-21	1.35E-21	1.34E-21	1.33E-21	1.33E-21
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	9.91E-37	9.87E-37	9.67E-37	9.29E-37	8.58E-37	7.93E-37	7.32E-37	6.76E-37	6.24E-37	5.76E-37	5.32E-37
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	3.09E-26	2.53E-26	9.42E-27	1.30E-27	2.50E-29	4.78E-31	9.14E-33	1.75E-34	3.35E-36	6.41E-38	1.23E-39
cf250	5.49E-39	1.31E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	8.52E-32	7.89E-32	5.36E-32	2.48E-32	5.29E-33	1.13E-33	2.41E-34	5.15E-35	1.10E-35	2.35E-36	5.02E-37
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
fm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 84

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	5.30E-07	5.45E-07	6.24E-07	7.77E-07	1.09E-06	1.40E-06	1.71E-06	2.02E-06	2.31E-06	2.61E-06	2.89E-06

tl207	4.20E-02	4.27E-02	4.62E-02	5.26E-02	6.51E-02	7.70E-02	8.85E-02	9.96E-02	1.10E-01	1.20E-01	1.30E-01
tl208	4.31E-05	1.62E-05	4.95E-07	4.34E-07	5.30E-07	6.26E-07	7.23E-07	8.19E-07	9.16E-07	1.01E-06	1.11E-06
tl209	6.89E-04	7.13E-04	8.36E-04	1.11E-03	1.73E-03	2.45E-03	3.25E-03	4.12E-03	5.04E-03	6.00E-03	7.00E-03
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	3.28E-02	3.40E-02	3.98E-02	5.27E-02	8.24E-02	1.17E-01	1.55E-01	1.96E-01	2.40E-01	2.86E-01	3.33E-01
pb210	4.01E-01	4.13E-01	4.73E-01	5.89E-01	8.25E-01	1.06E+00	1.30E+00	1.53E+00	1.75E+00	1.97E+00	2.19E+00
pb211	4.21E-02	4.28E-02	4.63E-02	5.27E-02	6.52E-02	7.72E-02	8.88E-02	9.99E-02	1.10E-01	1.21E-01	1.31E-01
pb212	1.20E-04	4.51E-05	1.38E-06	1.21E-06	1.47E-06	1.74E-06	2.01E-06	2.28E-06	2.55E-06	2.82E-06	3.08E-06
pb214	4.05E-01	4.16E-01	4.73E-01	5.89E-01	8.26E-01	1.06E+00	1.30E+00	1.53E+00	1.75E+00	1.97E+00	2.19E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	4.01E-01	4.13E-01	4.73E-01	5.89E-01	8.25E-01	1.06E+00	1.30E+00	1.53E+00	1.75E+00	1.97E+00	2.19E+00
bi211	4.21E-02	4.28E-02	4.63E-02	5.27E-02	6.52E-02	7.72E-02	8.88E-02	9.99E-02	1.10E-01	1.21E-01	1.31E-01
bi212	1.20E-04	4.51E-05	1.38E-06	1.21E-06	1.47E-06	1.74E-06	2.01E-06	2.28E-06	2.55E-06	2.82E-06	3.08E-06
bi213	3.28E-02	3.40E-02	3.98E-02	5.27E-02	8.24E-02	1.17E-01	1.55E-01	1.96E-01	2.40E-01	2.86E-01	3.33E-01
bi214	4.05E-01	4.16E-01	4.73E-01	5.89E-01	8.26E-01	1.06E+00	1.30E+00	1.53E+00	1.75E+00	1.97E+00	2.19E+00
po210	4.01E-01	4.13E-01	4.73E-01	5.89E-01	8.25E-01	1.06E+00	1.30E+00	1.53E+00	1.75E+00	1.97E+00	2.19E+00
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	1.16E-04	1.18E-04	1.27E-04	1.45E-04	1.79E-04	2.12E-04	2.44E-04	2.75E-04	3.04E-04	3.32E-04	3.59E-04
po212	7.68E-05	2.89E-05	8.83E-07	7.73E-07	9.45E-07	1.12E-06	1.29E-06	1.46E-06	1.63E-06	1.80E-06	1.98E-06
po213	3.21E-02	3.32E-02	3.90E-02	5.16E-02	8.07E-02	1.14E-01	1.52E-01	1.92E-01	2.35E-01	2.80E-01	3.26E-01
po214	4.05E-01	4.16E-01	4.73E-01	5.89E-01	8.25E-01	1.06E+00	1.30E+00	1.53E+00	1.75E+00	1.97E+00	2.19E+00
po215	4.21E-02	4.28E-02	4.63E-02	5.27E-02	6.52E-02	7.72E-02	8.88E-02	9.99E-02	1.10E-01	1.21E-01	1.31E-01
po216	1.20E-04	4.51E-05	1.38E-06	1.21E-06	1.47E-06	1.74E-06	2.01E-06	2.28E-06	2.55E-06	2.82E-06	3.08E-06
po218	4.05E-01	4.16E-01	4.73E-01	5.89E-01	8.26E-01	1.06E+00	1.30E+00	1.53E+00	1.75E+00	1.97E+00	2.19E+00
at217	3.28E-02	3.40E-02	3.98E-02	5.27E-02	8.24E-02	1.17E-01	1.55E-01	1.96E-01	2.40E-01	2.86E-01	3.33E-01
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	4.21E-02	4.28E-02	4.63E-02	5.27E-02	6.52E-02	7.72E-02	8.88E-02	9.99E-02	1.10E-01	1.21E-01	1.31E-01
rn220	1.20E-04	4.51E-05	1.38E-06	1.21E-06	1.47E-06	1.74E-06	2.01E-06	2.28E-06	2.55E-06	2.82E-06	3.08E-06
rn222	4.05E-01	4.16E-01	4.73E-01	5.89E-01	8.26E-01	1.06E+00	1.30E+00	1.53E+00	1.75E+00	1.97E+00	2.19E+00
fr221	3.28E-02	3.40E-02	3.98E-02	5.27E-02	8.24E-02	1.17E-01	1.55E-01	1.96E-01	2.40E-01	2.86E-01	3.33E-01
fr223	5.81E-04	5.90E-04	6.39E-04	7.28E-04	9.00E-04	1.07E-03	1.23E-03	1.38E-03	1.52E-03	1.67E-03	1.80E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	4.21E-02	4.28E-02	4.63E-02	5.27E-02	6.52E-02	7.72E-02	8.88E-02	9.99E-02	1.10E-01	1.21E-01	1.31E-01
ra224	1.20E-04	4.51E-05	1.38E-06	1.21E-06	1.47E-06	1.74E-06	2.01E-06	2.28E-06	2.55E-06	2.82E-06	3.08E-06
ra225	3.28E-02	3.40E-02	3.98E-02	5.27E-02	8.24E-02	1.17E-01	1.55E-01	1.96E-01	2.40E-01	2.86E-01	3.33E-01
ra226	4.05E-01	4.16E-01	4.73E-01	5.89E-01	8.26E-01	1.06E+00	1.30E+00	1.53E+00	1.75E+00	1.97E+00	2.19E+00
ra228	7.21E-07	7.35E-07	8.03E-07	9.38E-07	1.21E-06	1.48E-06	1.75E-06	2.02E-06	2.30E-06	2.57E-06	2.84E-06
ac225	3.28E-02	3.40E-02	3.98E-02	5.27E-02	8.24E-02	1.17E-01	1.55E-01	1.96E-01	2.40E-01	2.86E-01	3.33E-01
ac227	4.21E-02	4.28E-02	4.63E-02	5.27E-02	6.52E-02	7.72E-02	8.88E-02	9.99E-02	1.10E-01	1.21E-01	1.31E-01
ac228	7.21E-07	7.35E-07	8.03E-07	9.38E-07	1.21E-06	1.48E-06	1.75E-06	2.02E-06	2.30E-06	2.57E-06	2.84E-06
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	4.15E-02	4.22E-02	4.56E-02	5.20E-02	6.43E-02	7.62E-02	8.76E-02	9.85E-02	1.09E-01	1.19E-01	1.29E-01
th228	1.20E-04	4.51E-05	1.38E-06	1.21E-06	1.47E-06	1.74E-06	2.01E-06	2.28E-06	2.55E-06	2.82E-06	3.08E-06
th229	3.28E-02	3.40E-02	3.98E-02	5.27E-02	8.24E-02	1.17E-01	1.55E-01	1.96E-01	2.40E-01	2.86E-01	3.33E-01
th230	6.62E-01	6.75E-01	7.37E-01	8.59E-01	1.10E+00	1.34E+00	1.57E+00	1.79E+00	2.01E+00	2.23E+00	2.44E+00
th231	3.54E-01	3.54E-01	3.54E-01	3.54E-01	3.55E-01	3.55E-01	3.56E-01	3.56E-01	3.57E-01	3.57E-01	3.58E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 85

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
th232	7.21E-07	7.35E-07	8.03E-07	9.38E-07	1.21E-06	1.48E-06	1.75E-06	2.02E-06	2.30E-06	2.57E-06	2.84E-06
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	4.23E-02	4.30E-02	4.63E-02	5.27E-02	6.52E-02	7.72E-02	8.87E-02	9.98E-02	1.10E-01	1.21E-01	1.30E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.97E+00	6.97E+00	6.96E+00	6.96E+00	6.95E+00	6.95E+00	6.94E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	1.16E-04	4.31E-05	5.67E-07	2.68E-07	2.65E-07	2.62E-07	2.59E-07	2.56E-07	2.53E-07	2.50E-07	2.47E-07
u233	1.60E-01	1.63E-01	1.77E-01	2.07E-01	2.66E-01	3.24E-01	3.81E-01	4.38E-01	4.95E-01	5.51E-01	6.06E-01
u234	1.42E+01	1.42E+01	1.42E+01	1.41E+01	1.41E+01	1.40E+01	1.39E+01	1.39E+01	1.38E+01	1.38E+01	1.37E+01
u235	3.54E-01	3.54E-01	3.54E-01	3.54E-01	3.55E-01	3.55E-01	3.56E-01	3.56E-01	3.57E-01	3.57E-01	3.58E-01
u236	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00
u237	4.46E-13	3.58E-15	1.61E-17	1.48E-17	1.26E-17	1.07E-17	9.08E-18	7.71E-18	6.55E-18	5.57E-18	4.73E-18
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	4.53E-29	4.99E-29	7.30E-29	1.19E-28	2.11E-28	3.03E-28	3.94E-28	4.85E-28	5.75E-28	6.65E-28	7.55E-28
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	3.04E-06	3.04E-06	3.03E-06	3.01E-06	2.98E-06	2.94E-06	2.91E-06	2.87E-06	2.84E-06	2.80E-06	2.77E-06
np237	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.97E+00	6.97E+00	6.96E+00	6.96E+00	6.95E+00	6.95E+00	6.94E+00
np238	3.25E-06	1.99E-06	1.70E-07	1.25E-09	6.71E-14	3.60E-18	1.94E-22	1.04E-26	5.48E-31	.00E+00	.00E+00
np239	6.51E-06	6.45E-06	6.15E-06	5.60E-06	4.64E-06	3.84E-06	3.18E-06	2.64E-06	2.19E-06	1.81E-06	1.50E-06
np240m	4.53E-29	4.99E-29	7.30E-29	1.19E-28	2.11E-28	3.03E-28	3.94E-28	4.85E-28	5.75E-28	6.65E-28	7.55E-28
np240	4.56E-32	6.85E-32	9.13E-32	1.37E-31	2.51E-31	3.65E-31	4.79E-31	5.70E-31	6.85E-31	7.99E-31	9.13E-31
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	2.71E-07	2.71E-07	2.70E-07	2.68E-07	2.65E-07	2.62E-07	2.59E-07	2.56E-07	2.53E-07	2.50E-07	2.47E-07
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	3.98E+00	1.81E+00	3.48E-02	1.31E-05	3.45E-11	1.76E-15	9.45E-20	5.08E-24	2.73E-28	2.28E-32	.00E+00
pu239	3.18E+02	3.17E+02	3.12E+02	3.04E+02	2.87E+02	2.71E+02	2.56E+02	2.41E+02	2.28E+02	2.15E+02	2.03E+02
pu240	2.35E+01	2.33E+01	2.21E+01	1.99E+01	1.61E+01	1.30E+01	1.05E+01	8.53E+00	6.90E+00	5.59E+00	4.52E+00
pu241	1.87E-08	1.49E-10	6.72E-13	6.20E-13	5.26E-13	4.47E-13	3.80E-13	3.23E-13	2.74E-13	2.33E-13	1.98E-13
pu242	2.09E-05	2.09E-05	2.10E-05	2.09E-05	2.08E-05	2.08E-05	2.07E-05	2.06E-05	2.05E-05	2.05E-05	2.04E-05
pu243	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22
pu244	4.54E-29	5.00E-29	7.31E-29	1.19E-28	2.11E-28	3.03E-28	3.94E-28	4.85E-28	5.76E-28	6.66E-28	7.56E-28
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	1.99E+00	1.70E+00	7.61E-01	1.53E-01	6.22E-03	2.52E-04	1.02E-05	4.14E-07	1.68E-08	6.82E-10	2.78E-11
am242m	7.23E-04	4.42E-04	3.79E-05	2.78E-07	1.49E-11	8.01E-16	4.30E-20	2.31E-24	1.24E-28	.00E+00	.00E+00
am242	7.20E-04	4.40E-04	3.77E-05	2.76E-07	1.48E-11	7.97E-16	4.28E-20	2.30E-24	1.24E-28	.00E+00	.00E+00
am243	6.51E-06	6.45E-06	6.15E-06	5.60E-06	4.64E-06	3.84E-06	3.18E-06	2.64E-06	2.19E-06	1.81E-06	1.50E-06
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 86

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cm242	5.95E-04	3.64E-04	3.12E-05	2.28E-07	1.23E-11	6.61E-16	3.55E-20	1.91E-24	1.02E-28	.00E+00	.00E+00
cm243	1.98E-17	1.74E-18	9.08E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	7.29E-14	1.58E-15	7.64E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	7.05E-13	6.99E-13	6.71E-13	6.19E-13	5.26E-13	4.46E-13	3.79E-13	3.22E-13	2.74E-13	2.32E-13	1.97E-13
cm246	5.77E-15	5.69E-15	5.29E-15	4.57E-15	3.41E-15	2.54E-15	1.90E-15	1.41E-15	1.05E-15	7.87E-16	5.87E-16
cm247	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.51E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22
cm248	5.82E-24	5.82E-24	5.81E-24	5.80E-24	5.78E-24	5.75E-24	5.73E-24	5.71E-24	5.68E-24	5.66E-24	5.64E-24
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	1.27E-25	1.04E-25	3.86E-26	5.34E-27	1.02E-28	1.96E-30	4.56E-32	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	1.37E-31	1.14E-31	9.13E-32	4.56E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	3.93E+02	3.89E+02	3.82E+02	3.71E+02	3.53E+02	3.37E+02	3.22E+02	3.08E+02	2.96E+02	2.84E+02	2.74E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 87

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
h 3	6.67E-15	2.41E-17	1.49E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05
li 7	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06
be 9	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06
be 10	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.93E-05	2.93E-05	2.93E-05	2.93E-05	2.92E-05
c 14	4.26E-06	4.21E-06	3.96E-06	3.51E-06	2.75E-06	2.16E-06	1.70E-06	1.33E-06	1.05E-06	8.22E-07	6.45E-07
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08
zn 68	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08
zn 70	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 88

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.12E+00	1.12E+00	1.11E+00	1.11E+00	1.10E+00	1.10E+00	1.10E+00
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	6.91E-03	7.15E-03	8.33E-03	1.07E-02	1.54E-02	2.01E-02	2.48E-02	2.95E-02	3.42E-02	3.88E-02	4.34E-02
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06

cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00
kr 81	1.19E-07	1.19E-07	1.18E-07	1.18E-07	1.17E-07	1.17E-07	1.16E-07	1.15E-07	1.14E-07	1.14E-07	1.13E-07
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	1.27E-13	1.98E-16	1.80E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01
rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01
sr 87	1.30E-04	1.30E-04	1.31E-04	1.32E-04	1.34E-04	1.36E-04	1.38E-04	1.40E-04	1.42E-04	1.44E-04	1.46E-04
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 90

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	7.04E-05	6.00E-06	2.69E-11	5.43E-22	2.52E-43	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	1.83E-08	1.56E-09	7.00E-15	1.41E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02
nb 91	1.41E-11	1.27E-11	7.63E-12	2.75E-12	3.58E-13	4.66E-14	6.07E-15	7.91E-16	1.03E-16	1.34E-17	1.74E-18
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02
nb 92	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.25E+02	1.25E+02	1.25E+02	1.25E+02	1.25E+02
nb 93	1.65E-01	1.71E-01	2.00E-01	2.57E-01	3.71E-01	4.85E-01	5.98E-01	7.12E-01	8.26E-01	9.39E-01	1.05E+00
nb 93m	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.32E-03	1.32E-03	1.32E-03	1.32E-03	1.32E-03	1.32E-03
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 91

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02
nb 94	5.70E-05	5.68E-05	5.59E-05	5.40E-05	5.04E-05	4.71E-05	4.40E-05	4.11E-05	3.84E-05	3.58E-05	3.35E-05
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02
tc 98	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.18E-05	3.18E-05	3.18E-05	3.18E-05
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	1.95E+02	1.95E+02	1.95E+02	1.94E+02	1.93E+02	1.92E+02	1.91E+02	1.89E+02	1.88E+02	1.87E+02	1.86E+02
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	1.88E+00	1.94E+00	2.26E+00	2.90E+00	4.17E+00	5.44E+00	6.69E+00	7.94E+00	9.18E+00	1.04E+01	1.16E+01

rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 92

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 93

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.80E+00	9.80E+00	9.80E+00	9.80E+00
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	2.74E-03	2.84E-03	3.36E-03	4.41E-03	6.50E-03	8.60E-03	1.07E-02	1.28E-02	1.49E-02	1.70E-02	1.91E-02
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00
ag108	1.45E-18	8.40E-19	5.48E-20	2.34E-22	4.24E-27	7.71E-32	1.40E-36	3.10E-41	.00E+00	.00E+00	.00E+00
ag108m	4.70E-10	2.72E-10	1.78E-11	7.57E-14	1.38E-18	2.50E-23	4.54E-28	8.24E-33	1.50E-37	2.72E-42	.00E+00
cd108	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00
ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 94

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cd110	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01
cd113m	1.46E-13	1.07E-15	2.26E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 95
0
nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sn115	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02

tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 96

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	2.05E-11	5.81E-12	1.07E-14	3.59E-20	4.08E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	4.71E-07	1.34E-07	2.45E-10	8.25E-16	9.36E-27	1.06E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01
te123	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	2.00E+00	2.00E+00	1.99E+00	1.98E+00	1.95E+00	1.92E+00	1.90E+00	1.87E+00	1.84E+00	1.82E+00	1.79E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 97

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sb126	9.49E-08	9.49E-08	9.45E-08	9.39E-08	9.26E-08	9.13E-08	9.01E-08	8.88E-08	8.76E-08	8.64E-08	8.52E-08
sb126m	7.22E-10	7.21E-10	7.19E-10	7.14E-10	7.04E-10	6.94E-10	6.85E-10	6.75E-10	6.66E-10	6.57E-10	6.48E-10
te126	5.44E-02	5.58E-02	6.27E-02	7.65E-02	1.04E-01	1.30E-01	1.57E-01	1.83E-01	2.09E-01	2.34E-01	2.59E-01
xe126	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01
xe129	4.20E-03	4.34E-03	5.07E-03	6.53E-03	9.45E-03	1.24E-02	1.53E-02	1.82E-02	2.11E-02	2.40E-02	2.69E-02
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 98

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07

in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02
ba133	7.40E-23	1.02E-25	5.01E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.89E+02	2.89E+02	2.89E+02	2.89E+02	2.89E+02
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	2.53E-01	2.62E-01	3.06E-01	3.93E-01	5.68E-01	7.43E-01	9.17E-01	1.09E+00	1.27E+00	1.44E+00	1.61E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 99

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.37E-04	2.35E-05	2.25E-10	2.08E-20	1.76E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02
ba137m	3.61E-11	3.58E-12	3.44E-17	3.17E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02
la138	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 100

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02

i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02
pm145	5.32E-17	1.06E-18	3.32E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02
pm146	3.44E-32	1.24E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 101

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sm148	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01
eu150	7.20E-12	1.04E-12	6.49E-17	2.54E-25	3.99E-42	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	2.66E-02	1.23E-02	2.62E-04	1.18E-07	2.41E-14	4.92E-21	1.00E-27	2.04E-34	4.17E-41	.00E+00	.00E+00
eu151	1.70E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01
eu152	2.02E-11	1.11E-13	5.66E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 102

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sm154	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00
eu154	7.00E-18	2.19E-21	6.58E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	5.53E-29	2.04E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 103

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
dy161	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	2.35E-07	2.22E-07	1.66E-07	9.34E-08	2.94E-08	9.26E-09	2.92E-09	9.19E-10	2.89E-10	9.12E-11	2.87E-11
er166	4.70E-05	4.70E-05	4.71E-05	4.72E-05	4.72E-05	4.72E-05	4.73E-05	4.73E-05	4.73E-05	4.73E-05	4.73E-05
er167	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08
total	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 104

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
h 3	6.45E-11	2.33E-13	1.44E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	6.58E-07	6.58E-07	6.58E-07	6.57E-07	6.57E-07	6.56E-07	6.56E-07	6.55E-07	6.54E-07	6.54E-07	6.53E-07
c 14	1.90E-05	1.88E-05	1.77E-05	1.56E-05	1.23E-05	9.64E-06	7.57E-06	5.94E-06	4.67E-06	3.66E-06	2.88E-06
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 105

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.54E-02	1.53E-02	1.53E-02	1.52E-02	1.52E-02	1.51E-02	1.50E-02
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	2.46E-09	2.46E-09	2.46E-09	2.45E-09	2.43E-09	2.42E-09	2.40E-09	2.39E-09	2.37E-09	2.35E-09	2.34E-09
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 106

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	4.99E-11	7.76E-14	7.05E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 107

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	9.94E-03	8.47E-04	3.80E-09	7.67E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	9.94E-03	8.47E-04	3.80E-09	7.67E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	8.13E-11	7.34E-11	4.41E-11	1.59E-11	2.07E-12	2.70E-13	3.51E-14	4.57E-15	5.95E-16	7.75E-17	1.01E-17
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	3.17E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.15E-01	3.15E-01	3.15E-01	3.15E-01	3.14E-01
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	3.17E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.15E-01	3.15E-01	3.15E-01	3.15E-01	3.14E-01
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 108

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	1.07E-05	1.07E-05	1.05E-05	1.01E-05	9.45E-06	8.83E-06	8.24E-06	7.70E-06	7.19E-06	6.72E-06	6.27E-06
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	3.34E+00	3.34E+00	3.34E+00	3.33E+00	3.31E+00	3.28E+00	3.26E+00	3.24E+00	3.22E+00	3.20E+00	3.18E+00
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 109

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 110

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.04E-03	5.04E-03	5.04E-03	5.04E-03	5.04E-03	5.04E-03
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	1.07E-09	6.17E-10	4.03E-11	1.72E-13	3.12E-18	5.67E-23	1.03E-27	2.28E-32	.00E+00	.00E+00	.00E+00
ag108m	1.22E-08	7.09E-09	4.63E-10	1.97E-12	3.59E-17	6.51E-22	1.18E-26	2.05E-31	.00E+00	.00E+00	.00E+00
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 111

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14
cd113m	3.27E-11	2.40E-13	5.07E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 112

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 113

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	1.96E-05	5.57E-06	1.02E-08	3.44E-14	3.90E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	2.53E-05	7.17E-06	1.32E-08	4.43E-14	5.03E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	5.67E-02	5.67E-02	5.65E-02	5.61E-02	5.53E-02	5.46E-02	5.38E-02	5.31E-02	5.23E-02	5.16E-02	5.09E-02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 114

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sb126	7.94E-03	7.93E-03	7.91E-03	7.85E-03	7.74E-03	7.64E-03	7.53E-03	7.43E-03	7.33E-03	7.23E-03	7.13E-03
sb126m	5.67E-02	5.67E-02	5.65E-02	5.61E-02	5.53E-02	5.46E-02	5.38E-02	5.31E-02	5.23E-02	5.16E-02	5.09E-02

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 115

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	1.89E-20	2.60E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.33E-01	3.33E-01	3.33E-01	3.33E-01	3.33E-01
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 116

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.06E-02	2.04E-03	1.96E-08	1.81E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	1.94E-02	1.93E-03	1.85E-08	1.71E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 117

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10
i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	7.42E-15	1.48E-16	4.63E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	1.52E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 118

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sm148	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	4.79E-10	6.91E-11	4.32E-15	1.69E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	7.01E-01	3.24E-01	6.89E-03	3.11E-06	6.35E-13	1.29E-19	2.64E-26	.00E+00	.00E+00	.00E+00	.00E+00
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	3.57E-09	1.97E-11	9.99E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 119

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	1.89E-15	5.92E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	2.72E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 120

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	4.22E-07	3.99E-07	2.99E-07	1.68E-07	5.28E-08	1.66E-08	5.24E-09	1.65E-09	5.20E-10	1.64E-10	5.15E-11
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	5.22E+00	4.79E+00	4.46E+00	4.44E+00	4.42E+00	4.39E+00	4.37E+00	4.34E+00	4.32E+00	4.30E+00	4.27E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 121

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
he 4	4.97E+01	5.36E+01	5.72E+01	6.07E+01	6.40E+01	6.73E+01	7.04E+01	7.34E+01	7.63E+01	8.18E+01	8.44E+01
tl206	1.33E-14	1.46E-14	1.58E-14	1.70E-14	1.82E-14	1.94E-14	2.05E-14	2.16E-14	2.27E-14	2.48E-14	2.58E-14
tl207	6.83E-10	7.33E-10	7.80E-10	8.25E-10	8.69E-10	9.11E-10	9.51E-10	9.90E-10	1.03E-09	1.10E-09	1.13E-09
tl208	3.74E-15	4.07E-15	4.39E-15	4.72E-15	5.05E-15	5.37E-15	5.70E-15	6.02E-15	6.35E-15	7.00E-15	7.33E-15
tl209	1.71E-11	1.96E-11	2.21E-11	2.47E-11	2.73E-11	3.00E-11	3.26E-11	3.53E-11	3.79E-11	4.32E-11	4.58E-11
pb206	8.54E+00	1.04E+01	1.24E+01	1.46E+01	1.69E+01	1.94E+01	2.20E+01	2.48E+01	2.77E+01	3.40E+01	3.74E+01
pb207	6.01E-01	7.09E-01	8.25E-01	9.48E-01	1.08E+00	1.21E+00	1.36E+00	1.51E+00	1.66E+00	1.99E+00	2.16E+00
pb208	6.53E-03	6.53E-03	6.54E-03	6.54E-03	6.54E-03	6.55E-03	6.55E-03	6.55E-03	6.56E-03	6.57E-03	6.57E-03
pb209	7.22E-08	8.28E-08	9.35E-08	1.04E-07	1.15E-07	1.27E-07	1.38E-07	1.49E-07	1.60E-07	1.82E-07	1.94E-07
pb210	2.87E-02	3.14E-02	3.41E-02	3.67E-02	3.93E-02	4.18E-02	4.42E-02	4.66E-02	4.90E-02	5.34E-02	5.56E-02
pb211	5.29E-09	5.67E-09	6.03E-09	6.39E-09	6.72E-09	7.05E-09	7.36E-09	7.66E-09	7.94E-09	8.48E-09	8.74E-09
pb212	2.22E-12	2.41E-12	2.61E-12	2.80E-12	2.99E-12	3.19E-12	3.38E-12	3.57E-12	3.77E-12	4.15E-12	4.35E-12
pb214	6.68E-08	7.32E-08	7.94E-08	8.56E-08	9.15E-08	9.74E-08	1.03E-07	1.09E-07	1.14E-07	1.24E-07	1.30E-07
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.08E+00	1.37E+00	1.70E+00	2.07E+00	2.48E+00	2.93E+00	3.42E+00	3.96E+00	4.54E+00	5.82E+00	6.52E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.76E-05	1.93E-05	2.10E-05	2.26E-05	2.42E-05	2.57E-05	2.72E-05	2.87E-05	3.01E-05	3.29E-05	3.42E-05
bi211	3.13E-10	3.36E-10	3.58E-10	3.79E-10	3.99E-10	4.18E-10	4.36E-10	4.54E-10	4.71E-10	5.03E-10	5.18E-10
bi212	2.10E-13	2.29E-13	2.47E-13	2.65E-13	2.84E-13	3.02E-13	3.20E-13	3.39E-13	3.57E-13	3.94E-13	4.12E-13
bi213	1.72E-08	1.97E-08	2.23E-08	2.49E-08	2.75E-08	3.01E-08	3.28E-08	3.55E-08	3.81E-08	4.34E-08	4.61E-08
bi214	4.96E-08	5.43E-08	5.90E-08	6.35E-08	6.80E-08	7.23E-08	7.65E-08	8.06E-08	8.47E-08	9.24E-08	9.62E-08
po210	4.87E-04	5.34E-04	5.80E-04	6.24E-04	6.68E-04	7.10E-04	7.52E-04	7.92E-04	8.32E-04	9.08E-04	9.45E-04
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.46E-15	3.71E-15	3.95E-15	4.18E-15	4.40E-15	4.62E-15	4.82E-15	5.02E-15	5.20E-15	5.56E-15	5.72E-15
po212	1.11E-23	1.20E-23	1.30E-23	1.39E-23	1.49E-23	1.59E-23	1.68E-23	1.78E-23	1.88E-23	2.07E-23	2.17E-23
po213	2.58E-17	2.96E-17	3.35E-17	3.74E-17	4.13E-17	4.53E-17	4.93E-17	5.33E-17	5.73E-17	6.53E-17	6.93E-17
po214	6.82E-15	7.48E-15	8.12E-15	8.74E-15	9.35E-15	9.95E-15	1.05E-14	1.11E-14	1.16E-14	1.27E-14	1.32E-14

po215	4.43E-15	4.75E-15	5.05E-15	5.35E-15	5.63E-15	5.90E-15	6.16E-15	6.41E-15	6.65E-15	7.10E-15	7.32E-15
po216	8.56E-18	9.31E-18	1.01E-17	1.08E-17	1.15E-17	1.23E-17	1.30E-17	1.38E-17	1.45E-17	1.60E-17	1.68E-17
po218	7.87E-09	8.62E-09	9.36E-09	1.01E-08	1.08E-08	1.15E-08	1.21E-08	1.28E-08	1.34E-08	1.47E-08	1.53E-08
at217	2.07E-13	2.37E-13	2.68E-13	2.99E-13	3.31E-13	3.63E-13	3.95E-13	4.27E-13	4.59E-13	5.23E-13	5.54E-13
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	1.00E-11	1.08E-11	1.14E-11	1.21E-11	1.28E-11	1.34E-11	1.40E-11	1.45E-11	1.51E-11	1.61E-11	1.66E-11
rn220	3.34E-15	3.63E-15	3.93E-15	4.22E-15	4.51E-15	4.80E-15	5.09E-15	5.38E-15	5.67E-15	6.25E-15	6.55E-15
rn222	1.42E-05	1.56E-05	1.69E-05	1.82E-05	1.95E-05	2.08E-05	2.20E-05	2.32E-05	2.43E-05	2.65E-05	2.76E-05
fr221	1.92E-09	2.20E-09	2.48E-09	2.77E-09	3.07E-09	3.36E-09	3.66E-09	3.95E-09	4.25E-09	4.84E-09	5.14E-09
fr223	4.66E-11	4.99E-11	5.31E-11	5.62E-11	5.92E-11	6.21E-11	6.48E-11	6.74E-11	7.00E-11	7.47E-11	7.70E-11
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	2.55E-06	2.73E-06	2.91E-06	3.08E-06	3.24E-06	3.40E-06	3.55E-06	3.69E-06	3.83E-06	4.09E-06	4.21E-06
ra224	1.94E-11	2.10E-11	2.27E-11	2.44E-11	2.61E-11	2.78E-11	2.95E-11	3.12E-11	3.28E-11	3.62E-11	3.79E-11
ra225	8.49E-06	9.73E-06	1.10E-05	1.23E-05	1.36E-05	1.49E-05	1.62E-05	1.75E-05	1.88E-05	2.15E-05	2.28E-05
ra226	2.21E+00	2.43E+00	2.63E+00	2.84E+00	3.04E+00	3.23E+00	3.42E+00	3.60E+00	3.78E+00	4.13E+00	4.30E+00
ra228	1.04E-08	1.14E-08	1.24E-08	1.34E-08	1.44E-08	1.54E-08	1.64E-08	1.74E-08	1.84E-08	2.03E-08	2.13E-08
ac225	5.74E-06	6.58E-06	7.43E-06	8.30E-06	9.17E-06	1.01E-05	1.09E-05	1.18E-05	1.27E-05	1.45E-05	1.54E-05
ac227	1.80E-03	1.93E-03	2.06E-03	2.18E-03	2.29E-03	2.40E-03	2.51E-03	2.61E-03	2.71E-03	2.89E-03	2.98E-03
ac228	1.27E-12	1.39E-12	1.51E-12	1.63E-12	1.76E-12	1.88E-12	2.00E-12	2.12E-12	2.24E-12	2.48E-12	2.60E-12
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	4.19E-06	4.49E-06	4.78E-06	5.06E-06	5.32E-06	5.58E-06	5.83E-06	6.07E-06	6.29E-06	6.72E-06	6.92E-06
th228	3.76E-09	4.09E-09	4.42E-09	4.74E-09	5.07E-09	5.40E-09	5.73E-09	6.06E-09	6.38E-09	7.04E-09	7.37E-09
th229	1.68E+00	1.93E+00	2.18E+00	2.43E+00	2.69E+00	2.95E+00	3.21E+00	3.47E+00	3.73E+00	4.25E+00	4.50E+00
th230	1.18E+02	1.28E+02	1.38E+02	1.47E+02	1.56E+02	1.65E+02	1.74E+02	1.83E+02	1.91E+02	2.07E+02	2.15E+02
th231	6.72E-07	6.73E-07	6.74E-07	6.74E-07	6.75E-07	6.75E-07	6.76E-07	6.77E-07	6.77E-07	6.78E-07	6.78E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 122

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
th232	2.59E+01	2.83E+01	3.08E+01	3.33E+01	3.58E+01	3.82E+01	4.07E+01	4.32E+01	4.57E+01	5.06E+01	5.31E+01
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	2.76E+00	2.96E+00	3.15E+00	3.34E+00	3.51E+00	3.68E+00	3.84E+00	4.00E+00	4.15E+00	4.43E+00	4.56E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.33E-04	3.33E-04	3.33E-04	3.33E-04	3.32E-04	3.32E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	1.12E-08	1.10E-08	1.09E-08	1.08E-08	1.06E-08	1.05E-08	1.04E-08	1.03E-08	1.01E-08	9.90E-09	9.78E-09
u233	6.29E+01	6.86E+01	7.42E+01	7.98E+01	8.54E+01	9.08E+01	9.63E+01	1.02E+02	1.07E+02	1.18E+02	1.23E+02
u234	2.20E+03	2.19E+03	2.18E+03	2.17E+03	2.16E+03	2.15E+03	2.14E+03	2.14E+03	2.13E+03	2.11E+03	2.10E+03
u235	1.65E+05	1.66E+05	1.66E+05	1.66E+05	1.66E+05	1.66E+05	1.66E+05	1.66E+05	1.67E+05	1.67E+05	1.67E+05
u236	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04
u237	5.79E-23	4.92E-23	4.18E-23	3.55E-23	3.01E-23	2.56E-23	2.18E-23	1.85E-23	1.57E-23	1.13E-23	9.62E-24
u238	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	8.15E-34	9.11E-34	1.01E-33	1.10E-33	1.20E-33	1.29E-33	1.39E-33	1.48E-33	1.57E-33	1.76E-33	1.85E-33
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	2.10E-04	2.08E-04	2.05E-04	2.03E-04	2.00E-04	1.98E-04	1.96E-04	1.93E-04	1.91E-04	1.86E-04	1.84E-04
np237	9.85E+03	9.84E+03	9.83E+03	9.83E+03	9.82E+03	9.82E+03	9.81E+03	9.80E+03	9.80E+03	9.78E+03	9.78E+03
np238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np239	6.47E-12	5.36E-12	4.44E-12	3.68E-12	3.05E-12	2.53E-12	2.09E-12	1.73E-12	1.44E-12	9.86E-13	8.17E-13
np240m	6.95E-36	7.77E-36	8.59E-36	9.41E-36	1.02E-35	1.10E-35	1.18E-35	1.26E-35	1.34E-35	1.50E-35	1.58E-35
np240	7.21E-38	7.93E-38	8.83E-38	9.73E-38	1.05E-37	1.14E-37	1.23E-37	1.30E-37	1.39E-37	1.55E-37	1.62E-37
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	4.72E-10	4.66E-10	4.61E-10	4.55E-10	4.50E-10	4.44E-10	4.39E-10	4.34E-10	4.29E-10	4.18E-10	4.13E-10
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	4.59E-38	2.33E-42	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu239	3.27E+03	3.09E+03	2.92E+03	2.75E+03	2.60E+03	2.45E+03	2.32E+03	2.19E+03	2.06E+03	1.84E+03	1.74E+03
pu240	1.99E+01	1.61E+01	1.31E+01	1.06E+01	8.56E+00	6.93E+00	5.61E+00	4.54E+00	3.68E+00	2.41E+00	1.95E+00
pu241	1.91E-15	1.62E-15	1.38E-15	1.17E-15	9.96E-16	8.46E-16	7.19E-16	6.11E-16	5.19E-16	3.74E-16	3.18E-16
pu242	5.15E-03	5.13E-03	5.11E-03	5.09E-03	5.08E-03	5.06E-03	5.04E-03	5.02E-03	5.00E-03	4.96E-03	4.95E-03
pu243	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.78E-29	5.77E-29	5.77E-29	5.77E-29	5.77E-29
pu244	4.12E-23	4.61E-23	5.10E-23	5.58E-23	6.06E-23	6.54E-23	7.02E-23	7.50E-23	7.97E-23	8.92E-23	9.38E-23
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	8.11E-12	3.78E-13	5.67E-14	3.74E-14	3.14E-14	2.66E-14	2.26E-14	1.92E-14	1.63E-14	1.18E-14	1.00E-14
am242m	3.42E-38	1.70E-42	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am243	7.52E-06	6.23E-06	5.16E-06	4.27E-06	3.54E-06	2.93E-06	2.43E-06	2.01E-06	1.67E-06	1.15E-06	9.49E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 123

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cm242	8.92E-41	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	1.15E-12	9.77E-13	8.30E-13	7.05E-13	5.99E-13	5.09E-13	4.32E-13	3.67E-13	3.12E-13	2.25E-13	1.91E-13
cm246	1.91E-15	1.43E-15	1.06E-15	7.93E-16	5.92E-16	4.41E-16	3.29E-16	2.46E-16	1.83E-16	1.02E-16	7.61E-17
cm247	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18
cm248	1.33E-21	1.32E-21	1.32E-21	1.31E-21	1.31E-21	1.30E-21	1.30E-21	1.29E-21	1.29E-21	1.28E-21	1.27E-21
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	5.32E-37	4.91E-37	4.54E-37	4.19E-37	3.87E-37	3.57E-37	3.30E-37	3.05E-37	2.81E-37	2.40E-37	2.21E-37
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	1.23E-39	2.34E-41	3.49E-43	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	5.02E-37	1.07E-37	2.29E-38	4.89E-39	1.04E-39	2.23E-40	4.75E-41	1.02E-41	2.11E-42	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
fm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 124

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	2.89E-06	3.17E-06	3.44E-06	3.70E-06	3.96E-06	4.21E-06	4.46E-06	4.70E-06	4.94E-06	5.39E-06	5.61E-06

tl207	1.30E-01	1.40E-01	1.49E-01	1.57E-01	1.66E-01	1.74E-01	1.81E-01	1.89E-01	1.96E-01	2.09E-01	2.15E-01
tl208	1.11E-06	1.21E-06	1.30E-06	1.40E-06	1.49E-06	1.59E-06	1.69E-06	1.78E-06	1.88E-06	2.07E-06	2.17E-06
tl209	7.00E-03	8.02E-03	9.06E-03	1.01E-02	1.12E-02	1.23E-02	1.33E-02	1.44E-02	1.55E-02	1.77E-02	1.87E-02
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	3.33E-01	3.82E-01	4.31E-01	4.82E-01	5.33E-01	5.84E-01	6.35E-01	6.87E-01	7.38E-01	8.41E-01	8.93E-01
pb210	2.19E+00	2.40E+00	2.61E+00	2.81E+00	3.00E+00	3.19E+00	3.38E+00	3.56E+00	3.74E+00	4.08E+00	4.25E+00
pb211	1.31E-01	1.40E-01	1.49E-01	1.58E-01	1.66E-01	1.74E-01	1.82E-01	1.89E-01	1.96E-01	2.10E-01	2.16E-01
pb212	3.08E-06	3.35E-06	3.62E-06	3.89E-06	4.16E-06	4.43E-06	4.70E-06	4.97E-06	5.23E-06	5.77E-06	6.04E-06
pb214	2.19E+00	2.40E+00	2.61E+00	2.81E+00	3.00E+00	3.19E+00	3.38E+00	3.56E+00	3.74E+00	4.08E+00	4.25E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.19E+00	2.40E+00	2.61E+00	2.81E+00	3.00E+00	3.19E+00	3.38E+00	3.56E+00	3.74E+00	4.08E+00	4.25E+00
bi211	1.31E-01	1.40E-01	1.49E-01	1.58E-01	1.66E-01	1.74E-01	1.82E-01	1.89E-01	1.96E-01	2.10E-01	2.16E-01
bi212	3.08E-06	3.35E-06	3.62E-06	3.89E-06	4.16E-06	4.43E-06	4.70E-06	4.97E-06	5.23E-06	5.77E-06	6.04E-06
bi213	3.33E-01	3.82E-01	4.31E-01	4.82E-01	5.33E-01	5.84E-01	6.35E-01	6.87E-01	7.38E-01	8.41E-01	8.93E-01
bi214	2.19E+00	2.40E+00	2.61E+00	2.81E+00	3.00E+00	3.19E+00	3.38E+00	3.56E+00	3.74E+00	4.08E+00	4.25E+00
po210	2.19E+00	2.40E+00	2.61E+00	2.81E+00	3.00E+00	3.19E+00	3.38E+00	3.56E+00	3.74E+00	4.08E+00	4.25E+00
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.59E-04	3.85E-04	4.10E-04	4.34E-04	4.57E-04	4.79E-04	5.00E-04	5.20E-04	5.40E-04	5.76E-04	5.93E-04
po212	1.98E-06	2.15E-06	2.32E-06	2.49E-06	2.66E-06	2.84E-06	3.01E-06	3.18E-06	3.35E-06	3.70E-06	3.87E-06
po213	3.26E-01	3.74E-01	4.22E-01	4.72E-01	5.21E-01	5.72E-01	6.22E-01	6.72E-01	7.23E-01	8.24E-01	8.74E-01
po214	2.19E+00	2.40E+00	2.61E+00	2.81E+00	3.00E+00	3.19E+00	3.38E+00	3.56E+00	3.74E+00	4.08E+00	4.25E+00
po215	1.31E-01	1.40E-01	1.49E-01	1.58E-01	1.66E-01	1.74E-01	1.82E-01	1.89E-01	1.96E-01	2.10E-01	2.16E-01
po216	3.08E-06	3.35E-06	3.62E-06	3.89E-06	4.16E-06	4.43E-06	4.70E-06	4.97E-06	5.23E-06	5.77E-06	6.04E-06
po218	2.19E+00	2.40E+00	2.61E+00	2.81E+00	3.00E+00	3.19E+00	3.38E+00	3.56E+00	3.74E+00	4.08E+00	4.25E+00
at217	3.33E-01	3.82E-01	4.31E-01	4.82E-01	5.33E-01	5.84E-01	6.35E-01	6.87E-01	7.39E-01	8.41E-01	8.93E-01
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	1.31E-01	1.40E-01	1.49E-01	1.58E-01	1.66E-01	1.74E-01	1.82E-01	1.89E-01	1.96E-01	2.10E-01	2.16E-01
rn220	3.08E-06	3.35E-06	3.62E-06	3.89E-06	4.16E-06	4.43E-06	4.70E-06	4.97E-06	5.23E-06	5.77E-06	6.04E-06
rn222	2.19E+00	2.40E+00	2.61E+00	2.81E+00	3.00E+00	3.19E+00	3.38E+00	3.56E+00	3.74E+00	4.08E+00	4.25E+00
fr221	3.33E-01	3.82E-01	4.31E-01	4.82E-01	5.33E-01	5.84E-01	6.35E-01	6.87E-01	7.39E-01	8.41E-01	8.93E-01
fr223	1.80E-03	1.93E-03	2.06E-03	2.18E-03	2.29E-03	2.40E-03	2.51E-03	2.61E-03	2.71E-03	2.89E-03	2.98E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	1.31E-01	1.40E-01	1.49E-01	1.58E-01	1.66E-01	1.74E-01	1.82E-01	1.89E-01	1.96E-01	2.10E-01	2.16E-01
ra224	3.08E-06	3.35E-06	3.62E-06	3.89E-06	4.16E-06	4.43E-06	4.70E-06	4.97E-06	5.23E-06	5.77E-06	6.04E-06
ra225	3.33E-01	3.82E-01	4.31E-01	4.82E-01	5.33E-01	5.84E-01	6.35E-01	6.87E-01	7.39E-01	8.41E-01	8.93E-01
ra226	2.19E+00	2.40E+00	2.61E+00	2.81E+00	3.00E+00	3.19E+00	3.38E+00	3.56E+00	3.74E+00	4.08E+00	4.25E+00
ra228	2.84E-06	3.11E-06	3.38E-06	3.65E-06	3.92E-06	4.20E-06	4.47E-06	4.74E-06	5.01E-06	5.55E-06	5.82E-06
ac225	3.33E-01	3.82E-01	4.31E-01	4.82E-01	5.33E-01	5.84E-01	6.35E-01	6.87E-01	7.39E-01	8.41E-01	8.93E-01
ac227	1.31E-01	1.40E-01	1.49E-01	1.58E-01	1.66E-01	1.74E-01	1.82E-01	1.89E-01	1.96E-01	2.10E-01	2.16E-01
ac228	2.84E-06	3.11E-06	3.38E-06	3.65E-06	3.92E-06	4.20E-06	4.47E-06	4.74E-06	5.01E-06	5.55E-06	5.82E-06
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	1.29E-01	1.38E-01	1.47E-01	1.56E-01	1.64E-01	1.72E-01	1.79E-01	1.86E-01	1.93E-01	2.07E-01	2.13E-01
th228	3.08E-06	3.35E-06	3.62E-06	3.89E-06	4.16E-06	4.43E-06	4.70E-06	4.97E-06	5.23E-06	5.77E-06	6.04E-06
th229	3.33E-01	3.82E-01	4.31E-01	4.82E-01	5.33E-01	5.84E-01	6.35E-01	6.87E-01	7.39E-01	8.41E-01	8.93E-01
th230	2.44E+00	2.64E+00	2.84E+00	3.04E+00	3.23E+00	3.41E+00	3.59E+00	3.77E+00	3.94E+00	4.28E+00	4.44E+00
th231	3.58E-01	3.58E-01	3.58E-01	3.59E-01	3.59E-01	3.59E-01	3.60E-01	3.60E-01	3.60E-01	3.61E-01	3.61E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 125

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
th232	2.84E-06	3.11E-06	3.38E-06	3.65E-06	3.92E-06	4.20E-06	4.47E-06	4.74E-06	5.01E-06	5.55E-06	5.82E-06
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	1.30E-01	1.40E-01	1.49E-01	1.58E-01	1.66E-01	1.74E-01	1.82E-01	1.89E-01	1.96E-01	2.09E-01	2.16E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.94E+00	6.94E+00	6.94E+00	6.93E+00	6.93E+00	6.92E+00	6.92E+00	6.91E+00	6.91E+00	6.90E+00	6.90E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	2.47E-07	2.44E-07	2.41E-07	2.38E-07	2.35E-07	2.32E-07	2.29E-07	2.27E-07	2.24E-07	2.19E-07	2.16E-07
u233	6.06E-01	6.61E-01	7.16E-01	7.70E-01	8.23E-01	8.76E-01	9.28E-01	9.80E-01	1.03E+00	1.13E+00	1.18E+00
u234	1.37E+01	1.36E+01	1.36E+01	1.35E+01	1.35E+01	1.34E+01	1.33E+01	1.33E+01	1.32E+01	1.31E+01	1.30E+01
u235	3.58E-01	3.58E-01	3.58E-01	3.59E-01	3.59E-01	3.59E-01	3.60E-01	3.60E-01	3.60E-01	3.61E-01	3.61E-01
u236	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00
u237	4.73E-18	4.02E-18	3.41E-18	2.90E-18	2.46E-18	2.09E-18	1.78E-18	1.51E-18	1.28E-18	9.25E-19	7.86E-19
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	7.55E-28	8.44E-28	9.33E-28	1.02E-27	1.11E-27	1.20E-27	1.29E-27	1.37E-27	1.46E-27	1.63E-27	1.72E-27
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	2.77E-06	2.74E-06	2.70E-06	2.67E-06	2.64E-06	2.61E-06	2.58E-06	2.55E-06	2.52E-06	2.46E-06	2.43E-06
np237	6.94E+00	6.94E+00	6.94E+00	6.93E+00	6.93E+00	6.92E+00	6.92E+00	6.91E+00	6.91E+00	6.90E+00	6.90E+00
np238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np239	1.50E-06	1.24E-06	1.03E-06	8.54E-07	7.07E-07	5.86E-07	4.85E-07	4.02E-07	3.33E-07	2.29E-07	1.90E-07
np240m	7.55E-28	8.44E-28	9.33E-28	1.02E-27	1.11E-27	1.20E-27	1.29E-27	1.37E-27	1.46E-27	1.63E-27	1.72E-27
np240	9.13E-31	1.00E-30	1.12E-30	1.23E-30	1.32E-30	1.44E-30	1.55E-30	1.64E-30	1.76E-30	1.96E-30	2.05E-30
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	2.47E-07	2.44E-07	2.41E-07	2.38E-07	2.35E-07	2.32E-07	2.29E-07	2.27E-07	2.24E-07	2.19E-07	2.16E-07
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu239	2.03E+02	1.92E+02	1.81E+02	1.71E+02	1.61E+02	1.52E+02	1.44E+02	1.36E+02	1.28E+02	1.14E+02	1.08E+02
pu240	4.52E+00	3.66E+00	2.97E+00	2.40E+00	1.94E+00	1.57E+00	1.27E+00	1.03E+00	8.35E-01	5.47E-01	4.43E-01
pu241	1.98E-13	1.68E-13	1.43E-13	1.21E-13	1.03E-13	8.75E-14	7.43E-14	6.31E-14	5.36E-14	3.87E-14	3.29E-14
pu242	2.04E-05	2.03E-05	2.02E-05	2.02E-05	2.01E-05	2.00E-05	1.99E-05	1.99E-05	1.98E-05	1.96E-05	1.96E-05
pu243	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22
pu244	7.56E-28	8.45E-28	9.34E-28	1.02E-27	1.11E-27	1.20E-27	1.29E-27	1.37E-27	1.46E-27	1.63E-27	1.72E-27
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	2.78E-11	1.30E-12	1.94E-13	1.28E-13	1.08E-13	9.13E-14	7.76E-14	6.59E-14	5.60E-14	4.05E-14	3.43E-14
am242m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am243	1.50E-06	1.24E-06	1.03E-06	8.54E-07	7.07E-07	5.86E-07	4.85E-07	4.02E-07	3.33E-07	2.29E-07	1.90E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 126

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cm242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	1.97E-13	1.68E-13	1.43E-13	1.21E-13	1.03E-13	8.74E-14	7.42E-14	6.30E-14	5.35E-14	3.86E-14	3.28E-14
cm246	5.87E-16	5.38E-16	3.27E-16	2.44E-16	1.82E-16	1.36E-16	1.01E-16	7.55E-17	5.63E-17	3.13E-17	2.34E-17
cm247	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22
cm248	5.64E-24	5.61E-24	5.59E-24	5.57E-24	5.55E-24	5.52E-24	5.50E-24	5.48E-24	5.46E-24	5.41E-24	5.39E-24
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	2.74E+02	2.64E+02	2.55E+02	2.47E+02	2.40E+02	2.33E+02	2.26E+02	2.20E+02	2.15E+02	2.05E+02	2.00E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 127

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05
li 7	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06
be 9	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06
be 10	2.92E-05	2.92E-05	2.92E-05	2.91E-05	2.91E-05	2.91E-05	2.91E-05	2.90E-05	2.90E-05	2.90E-05	2.89E-05
c 14	6.45E-07	5.06E-07	3.97E-07	3.12E-07	2.45E-07	1.92E-07	1.51E-07	1.19E-07	9.31E-08	5.74E-08	4.50E-08
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08
zn 68	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08
zn 70	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 128

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	1.10E+00	1.09E+00	1.09E+00	1.08E+00	1.08E+00	1.07E+00	1.07E+00	1.06E+00	1.06E+00	1.05E+00	1.05E+00
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	4.34E-02	4.80E-02	5.26E-02	5.71E-02	6.17E-02	6.62E-02	7.07E-02	7.52E-02	7.96E-02	8.85E-02	9.29E-02
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06

cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00
kr 81	1.13E-07	1.12E-07	1.11E-07	1.11E-07	1.10E-07	1.09E-07	1.09E-07	1.08E-07	1.07E-07	1.06E-07	1.05E-07
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 129

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01
rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01
sr 87	1.46E-04	1.48E-04	1.50E-04	1.52E-04	1.54E-04	1.56E-04	1.58E-04	1.60E-04	1.62E-04	1.67E-04	1.69E-04
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 130

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02
nb 91	1.74E-18	2.27E-19	2.96E-20	3.85E-21	5.01E-22	6.53E-23	8.50E-24	1.11E-24	1.44E-25	2.44E-27	3.18E-28
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02
nb 92	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	1.25E+02	1.25E+02	1.25E+02	1.25E+02	1.25E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02
nb 93	1.05E+00	1.17E+00	1.28E+00	1.39E+00	1.50E+00	1.62E+00	1.73E+00	1.84E+00	1.96E+00	2.18E+00	2.29E+00
nb 93m	1.32E-03	1.32E-03	1.32E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 131

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02
nb 94	3.35E-05	3.13E-05	2.92E-05	2.73E-05	2.55E-05	2.38E-05	2.22E-05	2.08E-05	1.94E-05	1.69E-05	1.58E-05
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02
tc 98	3.18E-05	3.18E-05	3.18E-05	3.18E-05	3.18E-05	3.18E-05	3.18E-05	3.17E-05	3.17E-05	3.17E-05	3.17E-05
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	1.86E+02	1.84E+02	1.83E+02	1.82E+02	1.81E+02	1.80E+02	1.79E+02	1.77E+02	1.76E+02	1.74E+02	1.73E+02
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	1.16E+01	1.28E+01	1.41E+01	1.53E+01	1.64E+01	1.76E+01	1.88E+01	2.00E+01	2.11E+01	2.34E+01	2.46E+01

rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 132

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 133
0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	9.80E+00	9.80E+00	9.79E+00	9.79E+00	9.79E+00	9.79E+00	9.79E+00	9.78E+00	9.78E+00	9.78E+00	9.77E+00
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	1.91E-02	2.11E-02	2.32E-02	2.53E-02	2.74E-02	2.95E-02	3.16E-02	3.37E-02	3.58E-02	3.99E-02	4.20E-02
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00
ag108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd108	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00
ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 134
0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
cd110	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd111	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd112	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd113	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	
cd113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in113	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd114	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn114	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in115	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 135

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
sn115	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	

tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 136

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01
te123	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	1.79E+00	1.77E+00	1.74E+00	1.72E+00	1.70E+00	1.67E+00	1.65E+00	1.63E+00	1.61E+00	1.56E+00	1.54E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 137

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sb126	8.52E-08	8.40E-08	8.29E-08	8.17E-08	8.06E-08	7.95E-08	7.84E-08	7.73E-08	7.63E-08	7.42E-08	7.31E-08
sb126m	6.48E-10	6.39E-10	6.30E-10	6.21E-10	6.13E-10	6.04E-10	5.96E-10	5.88E-10	5.80E-10	5.64E-10	5.56E-10
te126	2.59E-01	2.84E-01	3.08E-01	3.32E-01	3.56E-01	3.79E-01	4.02E-01	4.25E-01	4.47E-01	4.91E-01	5.13E-01
xe126	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01
xe129	2.69E-02	2.99E-02	3.28E-02	3.57E-02	3.86E-02	4.15E-02	4.44E-02	4.73E-02	5.03E-02	5.61E-02	5.90E-02
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 138

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07

in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02
ba133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	2.89E+02	2.89E+02	2.88E+02	2.88E+02	2.88E+02	2.88E+02	2.88E+02	2.88E+02	2.87E+02	2.87E+02	2.87E+02
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	1.61E+00	1.79E+00	1.96E+00	2.14E+00	2.31E+00	2.48E+00	2.66E+00	2.83E+00	3.00E+00	3.35E+00	3.52E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 139

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02
ba137m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02
la138	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 140

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02

i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02
pm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02
pm146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 141

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sm148	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01
eu150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu151	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01
eu152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 142

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sm154	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00
eu154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 143

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
dy161	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	2.87E-11	9.04E-12	2.85E-12	8.97E-13	2.83E-13	8.90E-14	2.80E-14	8.83E-15	2.78E-15	2.76E-16	8.69E-17
er166	4.73E-05	4.73E-05	4.73E-05	4.73E-05	4.73E-05	4.73E-05	4.73E-05	4.73E-05	4.73E-05	4.73E-05	4.73E-05
er167	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08
total	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 144

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	6.53E-07	6.53E-07	6.52E-07	6.52E-07	6.51E-07	6.50E-07	6.50E-07	6.49E-07	6.49E-07	6.48E-07	6.47E-07
c 14	2.88E-06	2.26E-06	1.77E-06	1.39E-06	1.09E-06	8.58E-07	6.73E-07	5.29E-07	4.15E-07	2.56E-07	2.01E-07
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 145

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	1.50E-02	1.50E-02	1.49E-02	1.48E-02	1.48E-02	1.47E-02	1.47E-02	1.46E-02	1.45E-02	1.44E-02	1.44E-02
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	2.34E-09	2.32E-09	2.31E-09	2.29E-09	2.28E-09	2.26E-09	2.25E-09	2.23E-09	2.22E-09	2.19E-09	2.18E-09
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 146

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 147

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	1.01E-17	1.31E-18	1.71E-19	2.23E-20	2.90E-21	3.77E-22	4.91E-23	6.39E-24	8.32E-25	1.41E-26	1.84E-27
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	3.14E-01	3.14E-01	3.14E-01	3.13E-01	3.13E-01	3.13E-01	3.13E-01	3.12E-01	3.12E-01	3.11E-01	3.11E-01
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	3.14E-01	3.14E-01	3.14E-01	3.13E-01	3.13E-01	3.13E-01	3.13E-01	3.12E-01	3.12E-01	3.11E-01	3.11E-01
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 148

0

nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	Initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	6.27E-06	5.86E-06	5.47E-06	5.11E-06	4.77E-06	4.46E-06	4.16E-06	3.89E-06	3.63E-06	3.17E-06	2.96E-06
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	2.77E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	3.18E+00	3.16E+00	3.14E+00	3.12E+00	3.10E+00	3.07E+00	3.05E+00	3.03E+00	3.01E+00	2.98E+00	2.96E+00
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 149

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 150

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	5.04E-03	5.04E-03	5.04E-03	5.04E-03	5.03E-03	5.03E-03	5.03E-03	5.03E-03	5.03E-03	5.03E-03	5.03E-03
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 151

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14
cd113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 152

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 153

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
te123	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn126	5.09E-02	5.02E-02	4.95E-02	4.88E-02	4.82E-02	4.75E-02	4.68E-02	4.62E-02	4.56E-02	4.43E-02	4.37E-02	

1

Part B 8% UO2 in Tuff (47% H20) DBF Fuel 5K yr burn fission products page 154

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
sb126	7.13E-03	7.03E-03	6.93E-03	6.84E-03	6.74E-03	6.65E-03	6.56E-03	6.47E-03	6.38E-03	6.20E-03	6.12E-03	
sb126m	5.09E-02	5.02E-02	4.95E-02	4.88E-02	4.82E-02	4.75E-02	4.68E-02	4.62E-02	4.56E-02	4.43E-02	4.37E-02	

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.82E-03	5.82E-03
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 155

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	3.33E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.31E-01	3.31E-01	3.31E-01	3.31E-01	3.30E-01
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 156

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 157

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10
i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 158

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sm148	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 159

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 160

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	5.15E-11	1.62E-11	5.11E-12	1.61E-12	5.07E-13	1.60E-13	5.03E-14	1.58E-14	4.99E-15	4.95E-16	1.56E-16
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	4.27E+00	4.25E+00	4.23E+00	4.20E+00	4.18E+00	4.16E+00	4.14E+00	4.11E+00	4.09E+00	4.05E+00	4.03E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 161

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
he 4	8.44E+01	8.70E+01	9.30E+01	9.87E+01	1.04E+02	1.09E+02	1.14E+02	1.19E+02	1.44E+02	2.25E+02	2.65E+02
tl206	2.58E-14	2.68E-14	2.91E-14	3.13E-14	3.34E-14	3.53E-14	3.71E-14	3.88E-14	4.79E-14	5.63E-14	5.59E-14
tl207	1.13E-09	1.16E-09	1.23E-09	1.30E-09	1.36E-09	1.41E-09	1.46E-09	1.51E-09	1.69E-09	1.88E-09	1.90E-09
tl208	7.33E-15	7.66E-15	8.47E-15	9.29E-15	1.01E-14	1.09E-14	1.17E-14	1.26E-14	1.74E-14	3.38E-14	4.19E-14
tl209	4.58E-11	4.84E-11	5.49E-11	6.13E-11	6.75E-11	7.36E-11	7.96E-11	8.55E-11	1.18E-10	2.08E-10	2.24E-10
pb206	3.74E+01	4.08E+01	5.01E+01	6.00E+01	7.07E+01	8.21E+01	9.40E+01	1.07E+02	1.93E+02	5.45E+02	7.30E+02
pb207	2.16E+00	2.33E+00	2.79E+00	3.28E+00	3.79E+00	4.32E+00	4.87E+00	5.44E+00	9.14E+00	2.31E+01	3.03E+01
pb208	6.57E-03	6.58E-03	6.59E-03	6.60E-03	6.62E-03	6.64E-03	6.66E-03	6.68E-03	6.83E-03	7.68E-03	8.31E-03
pb209	1.94E-07	2.05E-07	2.32E-07	2.59E-07	2.85E-07	3.11E-07	3.36E-07	3.61E-07	4.98E-07	8.80E-07	9.46E-07
pb210	5.56E-02	5.77E-02	6.28E-02	6.75E-02	7.19E-02	7.61E-02	8.00E-02	8.36E-02	1.03E-01	1.22E-01	1.21E-01
pb211	8.74E-09	8.98E-09	9.55E-09	1.01E-08	1.05E-08	1.09E-08	1.13E-08	1.17E-08	1.31E-08	1.46E-08	1.47E-08
pb212	4.35E-12	4.54E-12	5.02E-12	5.51E-12	5.99E-12	6.47E-12	6.96E-12	7.44E-12	1.03E-11	2.00E-11	2.49E-11
pb214	1.30E-07	1.34E-07	1.46E-07	1.57E-07	1.68E-07	1.77E-07	1.86E-07	1.95E-07	2.40E-07	2.83E-07	2.81E-07
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	6.52E+00	7.26E+00	9.30E+00	1.16E+01	1.41E+01	1.69E+01	1.99E+01	2.32E+01	4.74E+01	1.79E+02	2.63E+02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	3.42E-05	3.55E-05	3.86E-05	4.15E-05	4.43E-05	4.68E-05	4.92E-05	5.15E-05	6.35E-05	7.48E-05	7.42E-05
bi211	5.18E-10	5.32E-10	5.66E-10	5.96E-10	6.24E-10	6.49E-10	6.71E-10	6.91E-10	7.76E-10	8.63E-10	8.71E-10
bi212	4.12E-13	4.31E-13	4.76E-13	5.22E-13	5.68E-13	6.14E-13	6.60E-13	7.06E-13	9.81E-13	1.90E-12	2.36E-12
bi213	4.61E-08	4.87E-08	5.52E-08	6.16E-08	6.79E-08	7.40E-08	8.01E-08	8.59E-08	1.18E-07	2.09E-07	2.25E-07
bi214	9.62E-08	9.98E-08	1.09E-07	1.17E-07	1.24E-07	1.32E-07	1.38E-07	1.45E-07	1.79E-07	2.10E-07	2.09E-07
po210	9.45E-04	9.81E-04	1.07E-03	1.15E-03	1.22E-03	1.29E-03	1.36E-03	1.42E-03	1.75E-03	2.07E-03	2.05E-03
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	5.72E-15	5.88E-15	6.26E-15	6.59E-15	6.89E-15	7.17E-15	7.41E-15	7.64E-15	8.58E-15	9.53E-15	9.62E-15
po212	2.17E-23	2.26E-23	2.50E-23	2.74E-23	2.99E-23	3.23E-23	3.47E-23	3.71E-23	5.16E-23	9.98E-23	1.24E-22
po213	6.93E-17	7.32E-17	8.30E-17	9.26E-17	1.02E-16	1.11E-16	1.20E-16	1.29E-16	1.78E-16	3.15E-16	3.39E-16
po214	1.32E-14	1.37E-14	1.49E-14	1.61E-14	1.71E-14	1.81E-14	1.90E-14	1.99E-14	2.46E-14	2.89E-14	2.87E-14

po215	7.32E-15	7.52E-15	8.00E-15	8.43E-15	8.81E-15	9.16E-15	9.48E-15	9.76E-15	1.10E-14	1.22E-14	1.23E-14
po216	1.68E-17	1.75E-17	1.94E-17	2.12E-17	2.31E-17	2.50E-17	2.68E-17	2.87E-17	3.99E-17	7.73E-17	9.59E-17
po218	1.53E-08	1.58E-08	1.72E-08	1.85E-08	1.97E-08	2.09E-08	2.20E-08	2.30E-08	2.83E-08	3.34E-08	3.31E-08
at217	5.54E-13	5.86E-13	6.64E-13	7.41E-13	8.17E-13	8.91E-13	9.63E-13	1.03E-12	1.43E-12	2.52E-12	2.71E-12
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	1.66E-11	1.70E-11	1.81E-11	1.91E-11	2.00E-11	2.08E-11	2.15E-11	2.21E-11	2.49E-11	2.76E-11	2.79E-11
rn220	6.55E-15	6.84E-15	7.57E-15	8.29E-15	9.02E-15	9.75E-15	1.05E-14	1.12E-14	1.56E-14	3.02E-14	3.75E-14
rn222	2.76E-05	2.87E-05	3.12E-05	3.35E-05	3.57E-05	3.78E-05	3.97E-05	4.15E-05	5.13E-05	6.03E-05	5.99E-05
fr221	5.14E-09	5.43E-09	6.16E-09	6.87E-09	7.57E-09	8.26E-09	8.93E-09	9.59E-09	1.32E-08	2.34E-08	2.51E-08
fr223	7.70E-11	7.91E-11	8.41E-11	8.86E-11	9.27E-11	9.64E-11	9.97E-11	1.03E-10	1.15E-10	1.28E-10	1.29E-10
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	4.21E-06	4.33E-06	4.60E-06	4.85E-06	5.07E-06	5.27E-06	5.46E-06	5.62E-06	6.31E-06	7.01E-06	7.08E-06
ra224	3.79E-11	3.96E-11	4.38E-11	4.80E-11	5.22E-11	5.65E-11	6.07E-11	6.49E-11	9.02E-11	1.75E-10	2.17E-10
ra225	2.28E-05	2.41E-05	2.73E-05	3.04E-05	3.35E-05	3.66E-05	3.95E-05	4.25E-05	5.85E-05	1.03E-04	1.11E-04
ra226	4.30E+00	4.46E+00	4.85E+00	5.21E+00	5.56E+00	5.88E+00	6.18E+00	6.46E+00	7.98E+00	9.39E+00	9.32E+00
ra228	2.13E-08	2.23E-08	2.48E-08	2.73E-08	2.98E-08	3.23E-08	3.48E-08	3.73E-08	5.22E-08	1.02E-07	1.26E-07
ac225	1.54E-05	1.63E-05	1.84E-05	2.06E-05	2.27E-05	2.47E-05	2.67E-05	2.87E-05	3.95E-05	6.99E-05	7.52E-05
ac227	2.98E-03	3.06E-03	3.26E-03	3.43E-03	3.59E-03	3.73E-03	3.86E-03	3.98E-03	4.47E-03	4.97E-03	5.01E-03
ac228	2.60E-12	2.73E-12	3.03E-12	3.33E-12	3.64E-12	3.94E-12	4.24E-12	4.55E-12	6.36E-12	1.24E-11	1.54E-11
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	6.92E-06	7.11E-06	7.56E-06	7.97E-06	8.34E-06	8.67E-06	8.96E-06	9.23E-06	1.04E-05	1.15E-05	1.16E-05
th228	7.37E-09	7.69E-09	8.51E-09	9.33E-09	1.02E-08	1.10E-08	1.18E-08	1.26E-08	1.75E-08	3.40E-08	4.22E-08
th229	4.50E+00	4.76E+00	5.40E+00	6.02E+00	6.64E+00	7.24E+00	7.83E+00	8.40E+00	1.16E+01	2.05E+01	2.20E+01
th230	2.15E+02	2.23E+02	2.41E+02	2.58E+02	2.74E+02	2.89E+02	3.03E+02	3.16E+02	3.77E+02	4.47E+02	4.41E+02
th231	6.78E-07	6.79E-07	6.80E-07	6.80E-07	6.81E-07	6.82E-07	6.82E-07	6.83E-07	6.84E-07	6.85E-07	6.85E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 162

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
th232	5.31E+01	5.56E+01	6.17E+01	6.79E+01	7.41E+01	8.03E+01	8.65E+01	9.26E+01	1.30E+02	2.53E+02	3.15E+02
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	4.56E+00	4.69E+00	4.99E+00	5.26E+00	5.50E+00	5.71E+00	5.91E+00	6.09E+00	6.84E+00	7.60E+00	7.67E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.32E-04	3.32E-04	3.31E-04	3.31E-04	3.30E-04	3.30E-04	3.29E-04	3.29E-04	3.25E-04	3.15E-04	3.10E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	9.78E-09	9.66E-09	9.38E-09	9.10E-09	8.83E-09	8.57E-09	8.31E-09	8.06E-09	6.73E-09	3.68E-09	2.72E-09
u233	1.23E+02	1.28E+02	1.40E+02	1.53E+02	1.65E+02	1.77E+02	1.88E+02	1.99E+02	2.61E+02	4.12E+02	4.63E+02
u234	2.10E+03	2.09E+03	2.07E+03	2.04E+03	2.02E+03	2.00E+03	1.98E+03	1.96E+03	1.84E+03	1.50E+03	1.36E+03
u235	1.67E+05	1.67E+05	1.67E+05	1.67E+05	1.67E+05	1.68E+05	1.68E+05	1.68E+05	1.68E+05	1.68E+05	1.69E+05
u236	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.24E+04	4.23E+04	4.22E+04
u237	9.62E-24	8.18E-24	5.44E-24	3.62E-24	2.41E-24	1.60E-24	1.06E-24	7.08E-25	6.12E-26	1.76E-29	2.98E-31
u238	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.85E-33	1.95E-33	2.17E-33	2.40E-33	2.62E-33	2.85E-33	3.07E-33	3.28E-33	4.54E-33	8.22E-33	9.79E-33
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	1.84E-04	1.82E-04	1.77E-04	1.71E-04	1.66E-04	1.61E-04	1.56E-04	1.52E-04	1.27E-04	6.94E-05	5.13E-05
np237	9.78E+03	9.77E+03	9.76E+03	9.74E+03	9.72E+03	9.71E+03	9.69E+03	9.68E+03	9.58E+03	9.28E+03	9.13E+03
np238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np239	8.17E-13	6.77E-13	4.23E-13	2.64E-13	1.65E-13	1.03E-13	6.45E-14	4.03E-14	2.40E-15	1.97E-19	1.79E-21
np240m	1.58E-35	1.66E-35	1.86E-35	2.05E-35	2.24E-35	2.43E-35	2.62E-35	2.80E-35	3.88E-35	7.01E-35	8.36E-35
np240	1.62E-37	1.71E-37	1.91E-37	2.11E-37	2.31E-37	2.50E-37	2.68E-37	2.88E-37	3.98E-37	7.21E-37	8.60E-37
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	4.13E-10	4.08E-10	3.96E-10	3.84E-10	3.73E-10	3.62E-10	3.51E-10	3.41E-10	2.84E-10	1.56E-10	1.15E-10
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu239	1.74E+03	1.64E+03	1.42E+03	1.23E+03	1.07E+03	9.23E+02	7.99E+02	6.92E+02	2.92E+02	1.65E+01	3.91E+00
pu240	1.95E+00	1.58E+00	9.31E-01	5.49E-01	3.24E-01	1.91E-01	1.13E-01	6.64E-02	2.79E-03	7.22E-08	3.67E-10
pu241	3.18E-16	2.70E-16	1.80E-16	1.19E-16	7.95E-17	5.28E-17	3.51E-17	2.34E-17	2.02E-18	5.80E-22	9.83E-24
pu242	4.95E-03	4.93E-03	4.88E-03	4.84E-03	4.79E-03	4.75E-03	4.70E-03	4.66E-03	4.41E-03	3.66E-03	3.34E-03
pu243	5.77E-29	5.77E-29	5.77E-29	5.77E-29	5.77E-29	5.77E-29	5.77E-29	5.76E-29	5.76E-29	5.73E-29	5.72E-29
pu244	9.38E-23	9.85E-23	1.10E-22	1.22E-22	1.33E-22	1.44E-22	1.55E-22	1.66E-22	2.30E-22	4.16E-22	4.96E-22
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	1.00E-14	8.50E-15	5.42E-15	3.60E-15	2.40E-15	1.59E-15	1.06E-15	7.05E-16	6.10E-17	1.84E-20	2.96E-22
am242m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am243	9.49E-07	7.86E-07	4.91E-07	3.07E-07	1.92E-07	1.20E-07	7.49E-08	4.68E-08	2.79E-09	2.29E-13	2.08E-15
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 163

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cm242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	1.91E-13	1.62E-13	1.08E-13	7.18E-14	4.78E-14	3.18E-14	2.11E-14	1.41E-14	1.22E-15	3.49E-19	5.91E-21
cm246	7.61E-17	5.67E-17	2.73E-17	1.31E-17	6.30E-18	3.03E-18	1.46E-18	7.00E-19	8.63E-21	3.74E-27	2.46E-30
cm247	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.66E-18	1.65E-18	1.65E-18
cm248	1.27E-21	1.27E-21	1.25E-21	1.24E-21	1.23E-21	1.21E-21	1.20E-21	1.19E-21	1.12E-21	9.13E-22	8.25E-22
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	2.21E-37	2.05E-37	1.68E-37	1.37E-37	1.13E-37	9.22E-38	7.55E-38	6.19E-38	1.87E-38	3.49E-40	4.76E-41
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 164

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	5.61E-06	5.82E-06	6.33E-06	6.80E-06	7.25E-06	7.67E-06	8.06E-06	8.43E-06	1.04E-05	1.23E-05	1.22E-05

tl207	2.15E-01	2.21E-01	2.35E-01	2.48E-01	2.59E-01	2.69E-01	2.79E-01	2.87E-01	3.23E-01	3.58E-01	3.62E-01
tl208	2.17E-06	2.27E-06	2.51E-06	2.75E-06	2.99E-06	3.23E-06	3.48E-06	3.72E-06	5.17E-06	1.00E-05	1.24E-05
tl209	1.87E-02	1.98E-02	2.25E-02	2.51E-02	2.76E-02	3.01E-02	3.26E-02	3.50E-02	4.82E-02	8.52E-02	9.16E-02
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	8.93E-01	9.43E-01	1.07E+00	1.19E+00	1.32E+00	1.43E+00	1.55E+00	1.66E+00	2.30E+00	4.06E+00	4.36E+00
pb210	4.25E+00	4.41E+00	4.79E+00	5.15E+00	5.49E+00	5.81E+00	6.11E+00	6.39E+00	7.89E+00	9.28E+00	9.21E+00
pb211	2.16E-01	2.22E-01	2.36E-01	2.48E-01	2.60E-01	2.70E-01	2.79E-01	2.88E-01	3.23E-01	3.59E-01	3.63E-01
pb212	6.04E-06	6.31E-06	6.98E-06	7.65E-06	8.33E-06	9.00E-06	9.67E-06	1.03E-05	1.44E-05	2.78E-05	3.46E-05
pb214	4.25E+00	4.41E+00	4.79E+00	5.16E+00	5.49E+00	5.81E+00	6.11E+00	6.39E+00	7.89E+00	9.28E+00	9.21E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	4.25E+00	4.41E+00	4.79E+00	5.15E+00	5.49E+00	5.81E+00	6.11E+00	6.39E+00	7.89E+00	9.28E+00	9.21E+00
bi211	2.16E-01	2.22E-01	2.36E-01	2.48E-01	2.60E-01	2.70E-01	2.79E-01	2.88E-01	3.23E-01	3.59E-01	3.63E-01
bi212	6.04E-06	6.31E-06	6.98E-06	7.65E-06	8.33E-06	9.00E-06	9.67E-06	1.03E-05	1.44E-05	2.78E-05	3.46E-05
bi213	8.93E-01	9.43E-01	1.07E+00	1.19E+00	1.32E+00	1.43E+00	1.55E+00	1.66E+00	2.30E+00	4.06E+00	4.36E+00
bi214	4.25E+00	4.41E+00	4.79E+00	5.16E+00	5.49E+00	5.81E+00	6.11E+00	6.39E+00	7.89E+00	9.28E+00	9.21E+00
po210	4.25E+00	4.41E+00	4.79E+00	5.15E+00	5.49E+00	5.81E+00	6.11E+00	6.39E+00	7.89E+00	9.28E+00	9.21E+00
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	5.93E-04	6.10E-04	6.49E-04	6.83E-04	7.15E-04	7.43E-04	7.69E-04	7.92E-04	8.89E-04	9.88E-04	9.97E-04
po212	3.87E-06	4.04E-06	4.47E-06	4.90E-06	5.33E-06	5.76E-06	6.20E-06	6.63E-06	9.21E-06	1.78E-05	2.21E-05
po213	8.74E-01	9.24E-01	1.05E+00	1.17E+00	1.29E+00	1.40E+00	1.52E+00	1.63E+00	2.25E+00	3.97E+00	4.27E+00
po214	4.25E+00	4.41E+00	4.79E+00	5.15E+00	5.49E+00	5.81E+00	6.11E+00	6.39E+00	7.89E+00	9.28E+00	9.21E+00
po215	2.16E-01	2.22E-01	2.36E-01	2.48E-01	2.60E-01	2.70E-01	2.79E-01	2.88E-01	3.23E-01	3.59E-01	3.63E-01
po216	6.04E-06	6.31E-06	6.98E-06	7.65E-06	8.33E-06	9.00E-06	9.67E-06	1.03E-05	1.44E-05	2.78E-05	3.46E-05
po218	4.25E+00	4.41E+00	4.79E+00	5.16E+00	5.50E+00	5.81E+00	6.11E+00	6.39E+00	7.89E+00	9.29E+00	9.21E+00
at217	8.93E-01	9.44E-01	1.07E+00	1.19E+00	1.32E+00	1.43E+00	1.55E+00	1.67E+00	2.30E+00	4.06E+00	4.36E+00
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	2.16E-01	2.22E-01	2.36E-01	2.48E-01	2.60E-01	2.70E-01	2.79E-01	2.88E-01	3.23E-01	3.59E-01	3.63E-01
rn220	6.04E-06	6.31E-06	6.98E-06	7.65E-06	8.33E-06	9.00E-06	9.67E-06	1.03E-05	1.44E-05	2.78E-05	3.46E-05
rn222	4.25E+00	4.41E+00	4.79E+00	5.16E+00	5.50E+00	5.81E+00	6.11E+00	6.39E+00	7.89E+00	9.29E+00	9.21E+00
fr221	8.93E-01	9.44E-01	1.07E+00	1.19E+00	1.32E+00	1.43E+00	1.55E+00	1.67E+00	2.30E+00	4.06E+00	4.36E+00
fr223	2.98E-03	3.06E-03	3.25E-03	3.43E-03	3.59E-03	3.73E-03	3.86E-03	3.97E-03	4.46E-03	4.96E-03	5.01E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	2.16E-01	2.22E-01	2.36E-01	2.48E-01	2.60E-01	2.70E-01	2.79E-01	2.88E-01	3.23E-01	3.59E-01	3.63E-01
ra224	6.04E-06	6.31E-06	6.98E-06	7.65E-06	8.33E-06	9.00E-06	9.67E-06	1.03E-05	1.44E-05	2.78E-05	3.46E-05
ra225	8.93E-01	9.44E-01	1.07E+00	1.19E+00	1.32E+00	1.43E+00	1.55E+00	1.67E+00	2.30E+00	4.06E+00	4.36E+00
ra226	4.25E+00	4.41E+00	4.79E+00	5.16E+00	5.50E+00	5.81E+00	6.11E+00	6.39E+00	7.89E+00	9.29E+00	9.21E+00
ra228	5.82E-06	6.10E-06	6.77E-06	7.45E-06	8.13E-06	8.81E-06	9.49E-06	1.02E-05	1.42E-05	2.78E-05	3.45E-05
ac225	8.93E-01	9.44E-01	1.07E+00	1.19E+00	1.32E+00	1.43E+00	1.55E+00	1.67E+00	2.30E+00	4.06E+00	4.36E+00
ac227	2.16E-01	2.22E-01	2.36E-01	2.48E-01	2.60E-01	2.70E-01	2.79E-01	2.88E-01	3.23E-01	3.59E-01	3.63E-01
ac228	5.82E-06	6.10E-06	6.77E-06	7.45E-06	8.13E-06	8.81E-06	9.49E-06	1.02E-05	1.42E-05	2.78E-05	3.45E-05
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	2.13E-01	2.19E-01	2.33E-01	2.45E-01	2.56E-01	2.66E-01	2.76E-01	2.84E-01	3.19E-01	3.54E-01	3.58E-01
th228	6.04E-06	6.31E-06	6.98E-06	7.65E-06	8.33E-06	9.00E-06	9.67E-06	1.03E-05	1.44E-05	2.78E-05	3.46E-05
th229	8.93E-01	9.44E-01	1.07E+00	1.19E+00	1.32E+00	1.43E+00	1.55E+00	1.67E+00	2.30E+00	4.06E+00	4.36E+00
th230	4.44E+00	4.59E+00	4.97E+00	5.32E+00	5.65E+00	5.96E+00	6.24E+00	6.51E+00	7.78E+00	9.22E+00	9.09E+00
th231	3.61E-01	3.61E-01	3.61E-01	3.62E-01	3.62E-01	3.62E-01	3.63E-01	3.63E-01	3.64E-01	3.64E-01	3.64E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 165

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
th232	5.82E-06	6.10E-06	6.77E-06	7.45E-06	8.13E-06	8.81E-06	9.49E-06	1.02E-05	1.42E-05	2.78E-05	3.45E-05
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	2.16E-01	2.22E-01	2.36E-01	2.48E-01	2.60E-01	2.70E-01	2.79E-01	2.88E-01	3.23E-01	3.59E-01	3.63E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.90E+00	6.89E+00	6.88E+00	6.87E+00	6.86E+00	6.85E+00	6.84E+00	6.82E+00	6.76E+00	6.54E+00	6.44E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	2.16E-07	2.13E-07	2.07E-07	2.01E-07	1.95E-07	1.89E-07	1.84E-07	1.78E-07	1.49E-07	8.13E-08	6.02E-08
u233	1.18E+00	1.23E+00	1.35E+00	1.47E+00	1.59E+00	1.70E+00	1.81E+00	1.92E+00	2.52E+00	3.97E+00	4.47E+00
u234	1.30E+01	1.30E+01	1.29E+01	1.27E+01	1.26E+01	1.24E+01	1.23E+01	1.22E+01	1.14E+01	9.33E+00	8.48E+00
u235	3.61E-01	3.61E-01	3.61E-01	3.62E-01	3.62E-01	3.62E-01	3.63E-01	3.63E-01	3.64E-01	3.64E-01	3.64E-01
u236	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.74E+00	2.73E+00
u237	7.86E-19	6.68E-19	4.44E-19	2.95E-19	1.96E-19	1.31E-19	8.69E-20	5.78E-20	5.00E-21	1.43E-24	2.43E-26
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.72E-27	1.80E-27	2.01E-27	2.22E-27	2.43E-27	2.64E-27	2.84E-27	3.04E-27	4.21E-27	7.61E-27	9.07E-27
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	2.43E-06	2.40E-06	2.33E-06	2.26E-06	2.19E-06	2.13E-06	2.06E-06	2.00E-06	1.67E-06	9.14E-07	6.76E-07
np237	6.90E+00	6.89E+00	6.88E+00	6.87E+00	6.86E+00	6.85E+00	6.84E+00	6.82E+00	6.76E+00	6.54E+00	6.44E+00
np238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np239	1.90E-07	1.57E-07	9.81E-08	6.13E-08	3.83E-08	2.39E-08	1.50E-08	9.35E-09	5.56E-10	4.58E-14	4.16E-16
np240m	1.72E-27	1.80E-27	2.01E-27	2.22E-27	2.43E-27	2.64E-27	2.84E-27	3.04E-27	4.21E-27	7.61E-27	9.07E-27
np240	2.05E-30	2.17E-30	2.42E-30	2.67E-30	2.92E-30	3.17E-30	3.40E-30	3.65E-30	5.04E-30	9.13E-30	1.09E-29
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	2.16E-07	2.13E-07	2.07E-07	2.01E-07	1.95E-07	1.89E-07	1.84E-07	1.78E-07	1.49E-07	8.13E-08	6.02E-08
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu239	1.08E+02	1.02E+02	8.82E+01	7.64E+01	6.61E+01	5.73E+01	4.96E+01	4.30E+01	1.81E+01	1.02E+00	2.43E-01
pu240	4.43E-01	3.59E-01	2.11E-01	1.25E-01	7.35E-02	4.34E-02	2.56E-02	1.51E-02	6.34E-04	1.64E-08	8.34E-11
pu241	3.29E-14	2.79E-14	1.86E-14	1.24E-14	8.22E-15	5.47E-15	3.64E-15	2.42E-15	2.09E-16	6.00E-20	1.02E-21
pu242	1.96E-05	1.95E-05	1.93E-05	1.91E-05	1.90E-05	1.88E-05	1.86E-05	1.84E-05	1.74E-05	1.45E-05	1.32E-05
pu243	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.49E-22	1.49E-22
pu244	1.72E-27	1.80E-27	2.02E-27	2.23E-27	2.43E-27	2.64E-27	2.84E-27	3.05E-27	4.21E-27	7.62E-27	9.08E-27
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	3.43E-14	2.91E-14	1.86E-14	1.24E-14	8.22E-15	5.47E-15	3.64E-15	2.42E-15	2.09E-16	6.32E-20	1.02E-21
am242m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am243	1.90E-07	1.57E-07	9.81E-08	6.13E-08	3.83E-08	2.39E-08	1.50E-08	9.35E-09	5.56E-10	4.58E-14	4.16E-16
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 166

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cm242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	3.28E-14	2.79E-14	1.85E-14	1.23E-14	8.20E-15	5.46E-15	3.63E-15	2.41E-15	2.09E-16	5.99E-20	1.02E-21
cm246	2.34E-17	1.74E-17	8.38E-18	4.03E-18	1.94E-18	9.31E-19	4.47E-19	2.15E-19	2.65E-21	1.15E-27	7.53E-31
cm247	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.50E-22	1.49E-22	1.49E-22
cm248	5.39E-24	5.37E-24	5.31E-24	5.26E-24	5.21E-24	5.15E-24	5.10E-24	5.05E-24	4.75E-24	3.87E-24	3.50E-24
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	2.00E+02	1.96E+02	1.87E+02	1.80E+02	1.74E+02	1.70E+02	1.66E+02	1.63E+02	1.58E+02	1.68E+02	1.68E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 167

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05
li 7	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06
be 9	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06
be 10	2.89E-05	2.89E-05	2.89E-05	2.88E-05	2.87E-05	2.87E-05	2.86E-05	2.85E-05	2.82E-05	2.70E-05	2.64E-05
c 14	4.50E-08	3.53E-08	1.93E-08	1.05E-08	5.76E-09	3.14E-09	1.72E-09	9.37E-10	2.49E-11	1.38E-16	3.26E-19
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08
zn 68	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10	6.92E-10
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08	2.17E-08
zn 70	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10	4.98E-10
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 168

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	1.05E+00	1.04E+00	1.03E+00	1.02E+00	1.01E+00	9.98E-01	9.88E-01	9.78E-01	9.18E-01	7.44E-01	6.70E-01
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	9.29E-02	9.73E-02	1.08E-01	1.19E-01	1.30E-01	1.40E-01	1.51E-01	1.61E-01	2.21E-01	3.95E-01	4.69E-01
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06

cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00
kr 81	1.05E-07	1.04E-07	1.03E-07	1.01E-07	9.94E-08	9.78E-08	9.62E-08	9.47E-08	8.59E-08	6.20E-08	5.27E-08
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 169

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01
rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01
sr 87	1.69E-04	1.71E-04	1.76E-04	1.81E-04	1.86E-04	1.91E-04	1.96E-04	2.01E-04	2.32E-04	3.33E-04	3.84E-04
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 170

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02
nb 91	3.18E-28	4.14E-29	2.53E-31	1.55E-33	9.47E-36	5.79E-38	3.54E-40	2.17E-42	.00E+00	.00E+00	.00E+00
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02
nb 92	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	1.24E+02	1.24E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.22E+02	1.22E+02	1.20E+02	1.15E+02	1.12E+02
nb 93	2.29E+00	2.40E+00	2.68E+00	2.96E+00	3.24E+00	3.52E+00	3.80E+00	4.07E+00	5.72E+00	1.11E+01	1.36E+01
nb 93m	1.31E-03	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.29E-03	1.29E-03	1.29E-03	1.27E-03	1.21E-03	1.19E-03
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 171

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02
nb 94	1.58E-05	1.47E-05	1.24E-05	1.05E-05	8.84E-06	7.45E-06	6.28E-06	5.29E-06	1.90E-06	6.25E-08	1.13E-08
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02
tc 98	3.17E-05	3.17E-05	3.17E-05	3.16E-05	3.16E-05	3.16E-05	3.16E-05	3.15E-05	3.14E-05	3.09E-05	3.06E-05
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	1.73E+02	1.72E+02	1.69E+02	1.66E+02	1.63E+02	1.61E+02	1.58E+02	1.56E+02	1.41E+02	1.01E+02	8.61E+01
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	2.46E+01	2.57E+01	2.85E+01	3.12E+01	3.40E+01	3.66E+01	3.92E+01	4.18E+01	5.64E+01	9.58E+01	1.11E+02

rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 172

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 173

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	9.77E+00	9.77E+00	9.77E+00	9.76E+00	9.76E+00	9.75E+00	9.75E+00	9.74E+00	9.71E+00	9.61E+00	9.56E+00
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	4.20E-02	4.41E-02	4.93E-02	5.45E-02	5.97E-02	6.49E-02	7.01E-02	7.53E-02	1.06E-01	2.09E-01	2.61E-01
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00
ag108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd108	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00
ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 174

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cd110	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01
cd113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 175

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sn115	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02

tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 176

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01	5.84E-01
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01
te123	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08	4.75E-08
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	1.54E+00	1.52E+00	1.47E+00	1.42E+00	1.37E+00	1.32E+00	1.28E+00	1.23E+00	1.00E+00	5.01E-01	3.54E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 177

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sb126	7.31E-08	7.21E-08	6.97E-08	6.73E-08	6.50E-08	6.28E-08	6.07E-08	5.86E-08	4.76E-08	2.38E-08	1.68E-08
sb126m	5.56E-10	5.48E-10	5.30E-10	5.12E-10	4.94E-10	4.77E-10	4.61E-10	4.46E-10	3.62E-10	1.81E-10	1.28E-10
te126	5.13E-01	5.34E-01	5.86E-01	6.36E-01	6.84E-01	7.31E-01	7.76E-01	8.19E-01	1.05E+00	1.55E+00	1.70E+00
xe126	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10	2.36E-10
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.29E+01	3.29E+01	3.29E+01	3.29E+01	3.27E+01	3.27E+01
xe129	5.90E-02	6.19E-02	6.92E-02	7.65E-02	8.37E-02	9.10E-02	9.83E-02	1.06E-01	1.49E-01	2.94E-01	3.66E-01
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 178
0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07

in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02
ba133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01	7.98E-01
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	2.87E+02	2.87E+02	2.86E+02	2.86E+02	2.85E+02	2.85E+02	2.85E+02	2.84E+02	2.82E+02	2.73E+02	2.69E+02
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	3.52E+00	3.70E+00	4.13E+00	4.56E+00	4.99E+00	5.42E+00	5.85E+00	6.28E+00	8.83E+00	1.72E+01	2.13E+01
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 179

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02	2.82E+02
ba137m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02
la138	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 180

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02

i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02
pm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02
pm146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.37E-05	6.37E-05
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 181

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sm148	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01
eu150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu151	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01	1.71E+01
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01
eu152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 182

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sm154	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00
eu154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01	7.02E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 183

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
dy161	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	8.69E-17	2.74E-17	1.52E-18	8.48E-20	4.72E-21	2.63E-22	1.46E-23	8.15E-25	2.43E-32	.00E+00	.00E+00
er166	4.73E-05	4.73E-05	4.73E-05	4.73E-05	4.73E-05	4.73E-05	4.73E-05	4.73E-05	4.73E-05	4.73E-05	4.73E-05
er167	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08	5.75E-08
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08	3.50E-08
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08	7.86E-08
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08	8.42E-08
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10	4.53E-10
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08	8.13E-08
total	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 184

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	6.47E-07	6.47E-07	6.45E-07	6.44E-07	6.42E-07	6.41E-07	6.40E-07	6.38E-07	6.30E-07	6.03E-07	5.90E-07
c 14	2.01E-07	1.58E-07	8.61E-08	4.70E-08	2.57E-08	1.40E-08	7.65E-09	4.18E-09	1.11E-10	6.17E-16	1.45E-18
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 185

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	1.44E-02	1.43E-02	1.41E-02	1.40E-02	1.38E-02	1.37E-02	1.36E-02	1.34E-02	1.26E-02	1.02E-02	9.19E-03
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	2.18E-09	2.16E-09	2.13E-09	2.09E-09	2.06E-09	2.03E-09	1.99E-09	1.96E-09	1.78E-09	1.29E-09	1.09E-09
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 186

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 187

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	1.84E-27	2.39E-28	1.46E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.63E-12	1.62E-12	1.62E-12	1.62E-12
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	3.11E-01	3.11E-01	3.10E-01	3.09E-01	3.09E-01	3.08E-01	3.07E-01	3.07E-01	3.03E-01	2.89E-01	2.83E-01
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	3.11E-01	3.11E-01	3.10E-01	3.09E-01	3.09E-01	3.08E-01	3.07E-01	3.07E-01	3.03E-01	2.89E-01	2.83E-01
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 188

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	2.96E-06	2.76E-06	2.33E-06	1.96E-06	1.66E-06	1.40E-06	1.18E-06	9.92E-07	3.56E-07	1.17E-08	2.12E-09
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	2.76E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08	2.74E-08	2.74E-08	2.73E-08	2.68E-08	2.66E-08
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	2.96E+00	2.94E+00	2.89E+00	2.84E+00	2.80E+00	2.75E+00	2.71E+00	2.66E+00	2.41E+00	1.74E+00	1.47E+00
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 189

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 190

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	5.03E-03	5.03E-03	5.02E-03	5.02E-03	5.02E-03	5.02E-03	5.01E-03	5.01E-03	4.99E-03	4.94E-03	4.91E-03
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 191

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14	6.45E-14
cd113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12	3.17E-12
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 192

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 193

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17	1.11E-17
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	4.37E-02	4.31E-02	4.16E-02	4.02E-02	3.88E-02	3.75E-02	3.62E-02	3.50E-02	2.84E-02	1.42E-02	1.01E-02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 194

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sb126	6.12E-03	6.03E-03	5.83E-03	5.63E-03	5.44E-03	5.25E-03	5.07E-03	4.90E-03	3.98E-03	1.99E-03	1.41E-03
sb126m	4.37E-02	4.31E-02	4.16E-02	4.02E-02	3.88E-02	3.75E-02	3.62E-02	3.50E-02	2.84E-02	1.42E-02	1.01E-02

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.81E-03	5.78E-03	5.77E-03
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 195

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	3.30E-01	3.30E-01	3.30E-01	3.29E-01	3.29E-01	3.28E-01	3.28E-01	3.27E-01	3.24E-01	3.15E-01	3.10E-01
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 196

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11	3.84E-11
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 197

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10	3.06E-10
i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 198

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sm148	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13	1.99E-13
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.89E-12
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11	4.35E-11
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 199

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 200

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	1.56E-16	4.91E-17	2.73E-18	1.52E-19	8.48E-21	4.72E-22	2.63E-23	1.46E-24	4.56E-32	.00E+00	.00E+00
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	4.03E+00	4.01E+00	3.95E+00	3.90E+00	3.85E+00	3.80E+00	3.75E+00	3.70E+00	3.43E+00	2.68E+00	2.39E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 201

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
he 4	2.65E+02	3.06E+02	4.60E+02	7.78E+02
tl206	5.59E-14	5.37E-14	4.08E-14	2.35E-14
tl207	1.90E-09	1.90E-09	1.91E-09	1.91E-09
tl208	4.19E-14	5.01E-14	8.26E-14	1.63E-13
tl209	2.24E-10	2.44E-10	2.92E-10	2.77E-10
pb206	7.30E+02	9.10E+02	1.53E+03	2.53E+03
pb207	3.03E+01	3.76E+01	6.68E+01	1.40E+02
pb208	8.31E-03	9.07E-03	1.35E-02	3.39E-02
pb209	9.46E-07	1.03E-06	1.23E-06	1.17E-06
pb210	1.21E-01	1.16E-01	8.80E-02	5.08E-02
pb211	1.47E-08	1.47E-08	1.48E-08	1.47E-08
pb212	2.49E-11	2.97E-11	4.90E-11	9.68E-11
pb214	2.81E-07	2.70E-07	2.05E-07	1.18E-07
bi208	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.63E+02	3.56E+02	7.90E+02	1.94E+03
bi210m	.00E+00	.00E+00	.00E+00	.00E+00
bi210	7.42E-05	7.12E-05	5.42E-05	3.12E-05
bi211	8.71E-10	8.73E-10	8.74E-10	8.74E-10
bi212	2.36E-12	2.82E-12	4.65E-12	9.18E-12
bi213	2.25E-07	2.46E-07	2.93E-07	2.78E-07
bi214	2.09E-07	2.00E-07	1.52E-07	8.78E-08
po210	2.05E-03	1.97E-03	1.50E-03	8.63E-04
po211m	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.62E-15	9.65E-15	9.66E-15	9.66E-15
po212	1.24E-22	1.48E-22	2.44E-22	4.82E-22
po213	3.39E-16	3.69E-16	4.41E-16	4.18E-16
po214	2.87E-14	2.75E-14	2.09E-14	1.21E-14

po215	1.23E-14	1.23E-14	1.24E-14	1.23E-14
po216	9.59E-17	1.15E-16	1.89E-16	3.73E-16
po218	3.31E-08	3.18E-08	2.42E-08	1.39E-08
at217	2.71E-12	2.96E-12	3.53E-12	3.35E-12
rn218	.00E+00	.00E+00	.00E+00	.00E+00
rn219	2.79E-11	2.80E-11	2.80E-11	2.80E-11
rn220	3.75E-14	4.47E-14	7.38E-14	1.46E-13
rn222	5.99E-05	5.75E-05	4.37E-05	2.52E-05
fr221	2.51E-08	2.74E-08	3.27E-08	3.10E-08
fr223	1.29E-10	1.30E-10	1.30E-10	1.30E-10
ra222	.00E+00	.00E+00	.00E+00	.00E+00
ra223	7.08E-06	7.10E-06	7.11E-06	7.11E-06
ra224	2.17E-10	2.59E-10	4.27E-10	8.44E-10
ra225	1.11E-04	1.21E-04	1.45E-04	1.38E-04
ra226	9.32E+00	8.94E+00	6.80E+00	3.92E+00
ra228	1.26E-07	1.51E-07	2.50E-07	4.93E-07
ac225	7.52E-05	8.20E-05	9.79E-05	9.29E-05
ac227	5.01E-03	5.03E-03	5.03E-03	5.03E-03
ac228	1.54E-11	1.84E-11	3.05E-11	6.02E-11
th226	.00E+00	.00E+00	.00E+00	.00E+00
th227	1.16E-05	1.17E-05	1.17E-05	1.17E-05
th228	4.22E-08	5.04E-08	8.31E-08	1.64E-07
th229	2.20E+01	2.40E+01	2.87E+01	2.72E+01
th230	4.41E+02	4.23E+02	3.25E+02	1.88E+02
th231	6.85E-07	6.85E-07	6.85E-07	6.85E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 202

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
th232	3.15E+02	3.76E+02	6.21E+02	1.23E+03
th233	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	7.67E+00	7.70E+00	7.71E+00	7.71E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.10E-04	3.05E-04	2.86E-04	2.43E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00
u232	2.72E-09	2.02E-09	6.04E-10	2.96E-11
u233	4.63E+02	5.02E+02	5.78E+02	5.56E+02
u234	1.36E+03	1.25E+03	9.10E+02	5.76E+02
u235	1.69E+05	1.68E+05	1.68E+05	1.68E+05
u236	4.22E+04	4.22E+04	4.19E+04	4.13E+04
u237	2.98E-31	5.04E-33	4.15E-40	.00E+00
u238	8.65E+06	8.65E+06	8.65E+06	8.65E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00
u240	9.79E-33	1.12E-32	1.56E-32	2.12E-32
u241	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00
np236	5.13E-05	3.80E-05	1.14E-05	5.58E-07
np237	9.13E+03	8.98E+03	8.42E+03	7.16E+03
np238	.00E+00	.00E+00	.00E+00	.00E+00
np239	1.79E-21	1.62E-23	6.35E-28	6.21E-28
np240m	8.36E-35	9.57E-35	1.33E-34	1.81E-34
np240	8.60E-37	9.84E-37	1.37E-36	1.86E-36
np241	.00E+00	.00E+00	.00E+00	.00E+00

pu236	1.15E-10	8.52E-11	2.55E-11	1.25E-12
pu237	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00
pu239	3.91E+00	9.29E-01	2.96E-03	1.69E-09
pu240	3.67E-10	1.87E-12	1.25E-21	8.65E-26
pu241	9.83E-24	1.66E-25	1.37E-32	.00E+00
pu242	3.34E-03	3.04E-03	2.10E-03	8.30E-04
pu243	5.72E-29	5.71E-29	5.66E-29	5.54E-29
pu244	4.96E-22	5.68E-22	7.92E-22	1.07E-21
pu245	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00
am241	2.96E-22	5.02E-24	4.35E-31	.00E+00
am242m	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00
am243	2.08E-15	1.89E-17	7.38E-22	7.22E-22
am244m	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 203
0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
cm242	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00
cm245	5.91E-21	1.00E-22	8.24E-30	.00E+00
cm246	2.46E-30	1.62E-33	.00E+00	.00E+00
cm247	1.65E-18	1.64E-18	1.63E-18	1.59E-18
cm248	8.25E-22	7.45E-22	4.95E-22	1.79E-22
cm249	.00E+00	.00E+00	.00E+00	.00E+00
cm250	4.76E-41	6.66E-42	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00
total	8.87E+06	8.87E+06	8.87E+06	8.87E+06

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 204
0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
he 4	.00E+00	.00E+00	.00E+00	.00E+00
tl206	1.22E-05	1.17E-05	8.87E-06	5.12E-06

tl207	3.62E-01	3.63E-01	3.63E-01	3.63E-01
tl208	1.24E-05	1.48E-05	2.45E-05	4.84E-05
tl209	9.16E-02	1.00E-01	1.19E-01	1.13E-01
pb206	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00
pb209	4.36E+00	4.76E+00	5.68E+00	5.39E+00
pb210	9.21E+00	8.84E+00	6.72E+00	3.88E+00
pb211	3.63E-01	3.64E-01	3.64E-01	3.64E-01
pb212	3.46E-05	4.13E-05	6.81E-05	1.35E-04
pb214	9.21E+00	8.84E+00	6.72E+00	3.88E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00
bi210	9.21E+00	8.84E+00	6.72E+00	3.88E+00
bi211	3.63E-01	3.64E-01	3.64E-01	3.64E-01
bi212	3.46E-05	4.13E-05	6.81E-05	1.35E-04
bi213	4.36E+00	4.76E+00	5.68E+00	5.39E+00
bi214	9.21E+00	8.84E+00	6.72E+00	3.88E+00
po210	9.21E+00	8.84E+00	6.72E+00	3.88E+00
po211m	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.97E-04	1.00E-03	1.00E-03	1.00E-03
po212	2.21E-05	2.65E-05	4.36E-05	8.62E-05
po213	4.27E+00	4.66E+00	5.56E+00	5.28E+00
po214	9.21E+00	8.84E+00	6.72E+00	3.88E+00
po215	3.63E-01	3.64E-01	3.64E-01	3.64E-01
po216	3.46E-05	4.13E-05	6.81E-05	1.35E-04
po218	9.21E+00	8.84E+00	6.73E+00	3.88E+00
at217	4.36E+00	4.76E+00	5.68E+00	5.39E+00
rn218	.00E+00	.00E+00	.00E+00	.00E+00
rn219	3.63E-01	3.64E-01	3.64E-01	3.64E-01
rn220	3.46E-05	4.13E-05	6.81E-05	1.35E-04
rn222	9.21E+00	8.84E+00	6.73E+00	3.88E+00
fr221	4.36E+00	4.76E+00	5.68E+00	5.39E+00
fr223	5.01E-03	5.02E-03	5.03E-03	5.02E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00
ra223	3.63E-01	3.64E-01	3.64E-01	3.64E-01
ra224	3.46E-05	4.13E-05	6.81E-05	1.35E-04
ra225	4.36E+00	4.76E+00	5.68E+00	5.39E+00
ra226	9.21E+00	8.84E+00	6.73E+00	3.88E+00
ra228	3.45E-05	4.12E-05	6.81E-05	1.35E-04
ac225	4.36E+00	4.76E+00	5.68E+00	5.39E+00
ac227	3.63E-01	3.64E-01	3.64E-01	3.64E-01
ac228	3.45E-05	4.12E-05	6.81E-05	1.35E-04
th226	.00E+00	.00E+00	.00E+00	.00E+00
th227	3.58E-01	3.59E-01	3.59E-01	3.59E-01
th228	3.46E-05	4.13E-05	6.81E-05	1.35E-04
th229	4.36E+00	4.76E+00	5.68E+00	5.39E+00
th230	9.09E+00	8.72E+00	6.70E+00	3.88E+00
th231	3.64E-01	3.64E-01	3.64E-01	3.64E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 205

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
th232	3.45E-05	4.12E-05	6.81E-05	1.35E-04
th233	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	3.63E-01	3.64E-01	3.64E-01	3.64E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.44E+00	6.33E+00	5.94E+00	5.05E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00
u232	6.02E-08	4.45E-08	1.33E-08	6.55E-10
u233	4.47E+00	4.84E+00	5.58E+00	5.36E+00
u234	8.48E+00	7.75E+00	5.66E+00	3.58E+00
u235	3.64E-01	3.64E-01	3.64E-01	3.64E-01
u236	2.73E+00	2.73E+00	2.71E+00	2.67E+00
u237	2.43E-26	4.12E-28	.00E+00	.00E+00
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00
u240	9.07E-27	1.04E-26	1.45E-26	1.96E-26
u241	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00
np236	6.76E-07	5.00E-07	1.50E-07	7.35E-09
np237	6.44E+00	6.33E+00	5.94E+00	5.05E+00
np238	.00E+00	.00E+00	.00E+00	.00E+00
np239	4.16E-16	3.77E-18	1.47E-22	1.44E-22
np240m	9.07E-27	1.04E-26	1.45E-26	1.96E-26
np240	1.09E-29	1.25E-29	1.74E-29	2.36E-29
np241	.00E+00	.00E+00	.00E+00	.00E+00
pu236	6.02E-08	4.45E-08	1.33E-08	6.55E-10
pu237	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00
pu239	2.43E-01	5.77E-02	1.83E-04	1.05E-10
pu240	8.34E-11	4.24E-13	2.83E-22	1.96E-26
pu241	1.02E-21	1.72E-23	1.41E-30	.00E+00
pu242	1.32E-05	1.20E-05	8.30E-06	3.28E-06
pu243	1.49E-22	1.49E-22	1.47E-22	1.44E-22
pu244	9.08E-27	1.04E-26	1.45E-26	1.97E-26
pu245	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00
am241	1.02E-21	1.72E-23	1.48E-30	.00E+00
am242m	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00
am243	4.16E-16	3.77E-18	1.47E-22	1.44E-22
am244m	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn actinides page 206

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
cm242	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00
cm245	1.02E-21	1.72E-23	1.41E-30	.00E+00
cm246	7.53E-31	.00E+00	.00E+00	.00E+00
cm247	1.49E-22	1.49E-22	1.47E-22	1.44E-22
cm248	3.50E-24	3.16E-24	2.10E-24	7.58E-25
cm249	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00
total	1.68E+02	1.67E+02	1.51E+02	1.16E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 207

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00
li 6	9.49E-05	9.49E-05	9.49E-05	9.49E-05
li 7	2.29E-06	2.29E-06	2.29E-06	2.29E-06
be 9	4.42E-06	4.42E-06	4.42E-06	4.42E-06
be 10	2.64E-05	2.58E-05	2.37E-05	1.91E-05
c 14	3.26E-19	7.69E-22	2.38E-32	.00E+00
ni 66	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	7.52E-08	7.52E-08	7.52E-08	7.52E-08
cu 67	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	1.28E-08	1.28E-08	1.28E-08	1.28E-08
zn 68	6.92E-10	6.92E-10	6.92E-10	6.92E-10
zn 69	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	2.17E-08	2.17E-08	2.17E-08	2.17E-08
zn 70	5.31E-07	5.31E-07	5.31E-07	5.31E-07
ga 70	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	4.98E-10	4.98E-10	4.98E-10	4.98E-10
zn 71	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	6.77E-06	6.77E-06	6.77E-06	6.77E-06
ge 71	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	6.82E-04	6.82E-04	6.82E-04	6.82E-04
co 73	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	2.85E-03	2.85E-03	2.85E-03	2.85E-03
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	2.47E-03	2.47E-03	2.47E-03	2.47E-03
co 75	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00
as 75	2.82E-02	2.82E-02	2.82E-02	2.82E-02
ni 76	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 208

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr500000. yr999999. yr			
zn 76	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	9.28E-02	9.28E-02	9.28E-02	9.28E-02
as 76	.00E+00	.00E+00	.00E+00	.00E+00
se 76	1.17E-05	1.17E-05	1.17E-05	1.17E-05
ni 77	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00
se 77	2.07E-01	2.07E-01	2.07E-01	2.07E-01
se 77m	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00
se 78	5.54E-01	5.54E-01	5.54E-01	5.54E-01
cu 79	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00
se 79	6.70E-01	6.03E-01	3.96E-01	1.38E-01
se 79m	.00E+00	.00E+00	.00E+00	.00E+00
br 79	4.69E-01	5.36E-01	7.43E-01	1.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00
se 80	3.37E+00	3.37E+00	3.37E+00	3.37E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	5.14E-06	5.14E-06	5.14E-06	5.14E-06

cu 81	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00
br 81	5.03E+00	5.03E+00	5.03E+00	5.03E+00
kr 81	5.27E-08	4.48E-08	2.34E-08	4.59E-09
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 209

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00
se 82	8.60E+00	8.60E+00	8.60E+00	8.60E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	5.27E-03	5.27E-03	5.27E-03	5.27E-03
zn 83	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	1.42E+01	1.42E+01	1.42E+01	1.42E+01
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	2.89E+01	2.89E+01	2.89E+01	2.89E+01
ga 85	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	3.33E+01	3.33E+01	3.33E+01	3.33E+01
ge 86	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	5.38E+01	5.38E+01	5.38E+01	5.38E+01
rb 86	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	1.14E-03	1.14E-03	1.14E-03	1.14E-03
ge 87	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	7.04E+01	7.04E+01	7.04E+01	7.04E+01
sr 87	3.84E-04	4.35E-04	6.38E-04	1.15E-03
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 210

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

initial300000. yr500000. yr999999. yr

br 88	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	1.01E+02	1.01E+02	1.01E+02	1.01E+02
as 89	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00
y 89	1.37E+02	1.37E+02	1.37E+02	1.37E+02
y 89m	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	1.68E+02	1.68E+02	1.68E+02	1.68E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	1.72E+02	1.72E+02	1.72E+02	1.72E+02
nb 91	.00E+00	.00E+00	.00E+00	.00E+00
se 92	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	1.76E+02	1.76E+02	1.76E+02	1.76E+02
nb 92	1.46E-08	1.46E-08	1.45E-08	1.44E-08
se 93	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	1.12E+02	1.10E+02	1.00E+02	8.01E+01
nb 93	1.36E+01	1.61E+01	2.57E+01	4.60E+01
nb 93m	1.19E-03	1.16E-03	1.06E-03	8.44E-04
br 94	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 211

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	1.95E+02	1.95E+02	1.95E+02	1.95E+02
nb 94	1.13E-08	2.05E-09	2.22E-12	8.54E-20
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	1.99E+02	1.99E+02	1.99E+02	1.99E+02
br 96	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	1.95E+02	1.95E+02	1.95E+02	1.95E+02
nb 96	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	2.44E-01	2.44E-01	2.44E-01	2.44E-01
kr 97	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	1.78E+02	1.78E+02	1.78E+02	1.78E+02
kr 98	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	1.86E+02	1.86E+02	1.86E+02	1.86E+02
tc 98	3.06E-05	3.04E-05	2.94E-05	2.70E-05
rb 99	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	8.61E+01	7.31E+01	3.79E+01	7.34E+00
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	1.11E+02	1.24E+02	1.59E+02	1.90E+02

rb100	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 212

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
zr100	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00
mo100	2.05E+02	2.05E+02	2.05E+02	2.05E+02
tc100	.00E+00	.00E+00	.00E+00	.00E+00
ru100	4.36E-01	4.36E-01	4.36E-01	4.36E-01
rb101	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00
ru101	1.70E+02	1.70E+02	1.70E+02	1.70E+02
sr102	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00
ru102	1.45E+02	1.45E+02	1.45E+02	1.45E+02
rh102	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00
rh103	1.09E+02	1.09E+02	1.09E+02	1.09E+02
rh103m	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00
ru104	7.03E+01	7.03E+01	7.03E+01	7.03E+01
rh104	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00
pd104	1.19E+00	1.19E+00	1.19E+00	1.19E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00
pd105	4.14E+01	4.14E+01	4.14E+01	4.14E+01

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 213
0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	300000. yr	500000. yr	999999. yr
y106	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00
pd106	2.06E+01	2.06E+01	2.06E+01	2.06E+01
ag106	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00
pd107	9.56E+00	9.51E+00	9.30E+00	8.82E+00
pd107m	.00E+00	.00E+00	.00E+00	.00E+00
ag107	2.61E-01	3.11E-01	5.12E-01	9.95E-01
zr108	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00
pd108	5.35E+00	5.35E+00	5.35E+00	5.35E+00
ag108	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00
cd108	2.38E-06	2.38E-06	2.38E-06	2.38E-06
zr109	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00
ag109	3.58E+00	3.58E+00	3.58E+00	3.58E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00
pd110	1.87E+00	1.87E+00	1.87E+00	1.87E+00
ag110	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 214
0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
cd110	2.78E-02	2.78E-02	2.78E-02	2.78E-02
nb111	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00
cd111	1.13E+00	1.13E+00	1.13E+00	1.13E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00
cd112	7.83E-01	7.83E-01	7.83E-01	7.83E-01
mo113	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00
cd113	1.90E-01	1.90E-01	1.90E-01	1.90E-01
cd113m	.00E+00	.00E+00	.00E+00	.00E+00
in113	1.15E-02	1.15E-02	1.15E-02	1.15E-02
in113m	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00
cd114	1.12E+00	1.12E+00	1.12E+00	1.12E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00
sn114	7.66E-06	7.66E-06	7.66E-06	7.66E-06
mo115	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00
in115	4.50E-01	4.50E-01	4.50E-01	4.50E-01
in115m	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 215
0
nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sn115	2.29E-02	2.29E-02	2.29E-02	2.29E-02

tc116	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00
cd116	7.12E-01	7.12E-01	7.12E-01	7.12E-01
in116	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00
sn116	5.47E-03	5.47E-03	5.47E-03	5.47E-03
tc117	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00
sn117	5.02E-01	5.02E-01	5.02E-01	5.02E-01
sn117m	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00
sn118	4.89E-01	4.89E-01	4.89E-01	4.89E-01
ru119	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00
sn119	5.36E-01	5.36E-01	5.36E-01	5.36E-01
sn119m	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00
sn120	5.36E-01	5.36E-01	5.36E-01	5.36E-01
rh121	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 216

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr500000. yr999999. yr			
pd121	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00
sb121	5.84E-01	5.84E-01	5.84E-01	5.84E-01
rh122	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00
sn122	6.85E-01	6.85E-01	6.85E-01	6.85E-01
sb122	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00
te122	2.57E-04	2.57E-04	2.57E-04	2.57E-04
rh123	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00
sb123	7.06E-01	7.06E-01	7.06E-01	7.06E-01
te123	4.75E-08	4.75E-08	4.75E-08	4.75E-08
te123m	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00
sn124	1.16E+00	1.16E+00	1.16E+00	1.16E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00
te124	7.94E-04	7.94E-04	7.94E-04	7.94E-04
pd125	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00
te125	1.34E+00	1.34E+00	1.34E+00	1.34E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00
sn126	3.54E-01	2.50E-01	6.26E-02	1.96E-03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 217

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sb126	1.68E-08	1.19E-08	2.97E-09	9.30E-11
sb126m	1.28E-10	9.05E-11	2.26E-11	7.07E-13
te126	1.70E+00	1.80E+00	1.99E+00	2.05E+00
xe126	2.36E-10	2.36E-10	2.36E-10	2.36E-10
ag127	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00
i127	5.66E+00	5.66E+00	5.66E+00	5.66E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00
te128	1.54E+01	1.54E+01	1.54E+01	1.54E+01
i128	.00E+00	.00E+00	.00E+00	.00E+00
xe128	2.31E-03	2.31E-03	2.31E-03	2.31E-03
cd129	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00
i129	3.27E+01	3.26E+01	3.23E+01	3.16E+01
xe129	3.66E-01	4.38E-01	7.25E-01	1.43E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00
te130	7.56E+01	7.56E+01	7.56E+01	7.56E+01
i130	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00
xe130	4.97E-02	4.97E-02	4.97E-02	4.97E-02
cd131	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00
xe131	1.24E+02	1.24E+02	1.24E+02	1.24E+02
xe131m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 218

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
cd132	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00
xe132	1.90E+02	1.90E+02	1.90E+02	1.90E+02
cs132	.00E+00	.00E+00	.00E+00	.00E+00
ba132	4.14E-07	4.14E-07	4.14E-07	4.14E-07

in133	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00
cs133	2.91E+02	2.91E+02	2.91E+02	2.91E+02
ba133	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00
xe134	3.43E+02	3.43E+02	3.43E+02	3.43E+02
xe134m	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00
ba134	7.98E-01	7.98E-01	7.98E-01	7.98E-01
sn135	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00
cs135	2.69E+02	2.65E+02	2.50E+02	2.15E+02
cs135m	.00E+00	.00E+00	.00E+00	.00E+00
ba135	2.13E+01	2.53E+01	4.08E+01	7.57E+01
ba135m	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00
xe136	2.81E+02	2.81E+02	2.81E+02	2.81E+02
cs136	.00E+00	.00E+00	.00E+00	.00E+00
ba136	5.29E-01	5.29E-01	5.29E-01	5.29E-01
ba136m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 219

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sb137	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00
ba137	2.82E+02	2.82E+02	2.82E+02	2.82E+02
ba137m	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00

ba138	3.00E+02	3.00E+02	3.00E+02	3.00E+02
la138	1.56E-03	1.56E-03	1.56E-03	1.56E-03
sb139	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00
la139	2.87E+02	2.87E+02	2.87E+02	2.87E+02
ce139	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00
ce140	2.87E+02	2.87E+02	2.87E+02	2.87E+02
pr140	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00
pr141	2.66E+02	2.66E+02	2.66E+02	2.66E+02
nd141	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00
ce142	2.70E+02	2.70E+02	2.70E+02	2.70E+02
pr142	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00
nd142	1.41E-01	1.41E-01	1.41E-01	1.41E-01
i143	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 220

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
xe143	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00
nd143	2.70E+02	2.70E+02	2.70E+02	2.70E+02
i144	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00
nd144	2.57E+02	2.57E+02	2.57E+02	2.57E+02

i145	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00
nd145	1.84E+02	1.84E+02	1.84E+02	1.84E+02
pm145	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00
nd146	1.43E+02	1.43E+02	1.43E+02	1.43E+02
pm146	.00E+00	.00E+00	.00E+00	.00E+00
sm146	6.37E-05	6.37E-05	6.36E-05	6.34E-05
xe147	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00
sm147	1.08E+02	1.08E+02	1.08E+02	1.08E+02
cs148	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00
nd148	8.14E+01	8.14E+01	8.14E+01	8.14E+01
pm148	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 221

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sm148	6.52E-01	6.52E-01	6.52E-01	6.52E-01
cs149	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00
sm149	7.89E+00	7.89E+00	7.89E+00	7.89E+00
eu149	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00
nd150	3.33E+01	3.33E+01	3.33E+01	3.33E+01
pm150	.00E+00	.00E+00	.00E+00	.00E+00
sm150	4.54E+01	4.54E+01	4.54E+01	4.54E+01
eu150	.00E+00	.00E+00	.00E+00	.00E+00

ba151	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00
eu151	1.71E+01	1.71E+01	1.71E+01	1.71E+01
ba152	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00
sm152	1.69E+01	1.69E+01	1.69E+01	1.69E+01
eu152	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00
gd152	2.00E+00	2.00E+00	2.00E+00	2.00E+00
la153	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00
eu153	8.99E+00	8.99E+00	8.99E+00	8.99E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 222

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sm154	4.24E+00	4.24E+00	4.24E+00	4.24E+00
eu154	.00E+00	.00E+00	.00E+00	.00E+00
gd154	1.45E-01	1.45E-01	1.45E-01	1.45E-01
la155	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00
gd155	7.02E-01	7.02E-01	7.02E-01	7.02E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00
gd156	2.25E+00	2.25E+00	2.25E+00	2.25E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00
gd157	5.42E-02	5.42E-02	5.42E-02	5.42E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00
gd158	6.67E-01	6.67E-01	6.67E-01	6.67E-01
pr159	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00
tb159	9.66E-02	9.66E-02	9.66E-02	9.66E-02
nd160	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00
gd160	3.72E-02	3.72E-02	3.72E-02	3.72E-02
tb160	.00E+00	.00E+00	.00E+00	.00E+00
dy160	1.48E-04	1.48E-04	1.48E-04	1.48E-04
nd161	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 223

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
dy161	1.43E-02	1.43E-02	1.43E-02	1.43E-02
pm162	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00
dy162	6.06E-03	6.06E-03	6.06E-03	6.06E-03
sm163	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00
dy163	2.28E-03	2.28E-03	2.28E-03	2.28E-03
sm164	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00
dy164	7.78E-04	7.78E-04	7.78E-04	7.78E-04
sm165	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00

ho165	3.77E-04	3.77E-04	3.77E-04	3.77E-04
dy166	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	.00E+00	.00E+00	.00E+00	.00E+00
er166	4.73E-05	4.73E-05	4.73E-05	4.73E-05
er167	5.75E-08	5.75E-08	5.75E-08	5.75E-08
er167m	.00E+00	.00E+00	.00E+00	.00E+00
er168	3.50E-08	3.50E-08	3.50E-08	3.50E-08
yb168	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00
tm169	7.86E-08	7.86E-08	7.86E-08	7.86E-08
yb169	.00E+00	.00E+00	.00E+00	.00E+00
er170	8.42E-08	8.42E-08	8.42E-08	8.42E-08
tm170	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00
yb170	4.53E-10	4.53E-10	4.53E-10	4.53E-10
er171	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00
yb171	1.19E-07	1.19E-07	1.19E-07	1.19E-07
er172	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00
yb172	8.13E-08	8.13E-08	8.13E-08	8.13E-08
total	7.57E+03	7.57E+03	7.57E+03	7.57E+03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 224

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00
li 6	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00
be 10	5.90E-07	5.78E-07	5.30E-07	4.27E-07
c 14	1.45E-18	3.43E-21	1.14E-31	.00E+00
ni 66	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn

0 nuclide radioactivity, curies fission products page 225

basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
zn 76	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00
se 79	9.19E-03	8.28E-03	5.44E-03	1.90E-03
se 79m	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	1.09E-09	9.28E-10	4.84E-10	9.51E-11
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 226

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr500000. yr999999. yr			
ge 82	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	6.02E-06	6.02E-06	6.02E-06	6.02E-06
sr 87	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 227
0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
br 88	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	.00E+00	.00E+00	.00E+00	.00E+00
se 92	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	1.62E-12	1.62E-12	1.61E-12	1.60E-12
se 93	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	2.83E-01	2.76E-01	2.52E-01	2.01E-01
nb 93	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	2.83E-01	2.76E-01	2.52E-01	2.01E-01
br 94	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 228

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sr 94	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	2.12E-09	3.85E-10	4.16E-13	1.60E-20
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	2.66E-08	2.64E-08	2.55E-08	2.35E-08
rb 99	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	1.47E+00	1.25E+00	6.48E-01	1.26E-01
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 229

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
zr100	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00
rh102	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 230

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
y106	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00
pd107	4.91E-03	4.89E-03	4.79E-03	4.54E-03
pd107m	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00
ag108	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00
cd108	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00

ag110	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 231

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
cd110	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00
cd113	6.45E-14	6.45E-14	6.45E-14	6.45E-14
cd113m	.00E+00	.00E+00	.00E+00	.00E+00
in113	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00
in115	3.17E-12	3.17E-12	3.17E-12	3.17E-12
in115m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 232

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 233

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00
sb121	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00
te123	1.11E-17	1.11E-17	1.11E-17	1.11E-17
te123m	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00
sn126	1.01E-02	7.11E-03	1.78E-03	5.55E-05

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 234

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sb126	1.41E-03	9.95E-04	2.49E-04	7.77E-06
sb126m	1.01E-02	7.11E-03	1.78E-03	5.55E-05

te126	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00
i129	5.77E-03	5.76E-03	5.71E-03	5.58E-03
xe129	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 235
0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
cd132	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00
ba133	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00
cs135	3.10E-01	3.05E-01	2.87E-01	2.47E-01
cs135m	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 236

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sb137	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00
ba137	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00
la138	3.84E-11	3.84E-11	3.84E-11	3.84E-11
sb139	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00
ce139	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00
ce142	6.49E-06	6.49E-06	6.49E-06	6.49E-06
pr142	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 237

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
xe143	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00
nd144	3.06E-10	3.06E-10	3.06E-10	3.06E-10
i145	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00
pm145	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00
pm146	.00E+00	.00E+00	.00E+00	.00E+00
sm146	1.52E-09	1.51E-09	1.51E-09	1.51E-09
xe147	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00
sm147	2.48E-06	2.48E-06	2.48E-06	2.48E-06
cs148	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00
pm148	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 238

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sm148	1.99E-13	1.99E-13	1.99E-13	1.99E-13
cs149	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.89E-12	1.89E-12	1.89E-12	1.89E-12
eu149	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00
eu150	.00E+00	.00E+00	.00E+00	.00E+00
ba151	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00
eu151	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00
eu152	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00
gd152	4.35E-11	4.35E-11	4.35E-11	4.35E-11
la153	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 239

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sm154	.00E+00	.00E+00	.00E+00	.00E+00
eu154	.00E+00	.00E+00	.00E+00	.00E+00
gd154	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00
tb160	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 5K yr burn fission products page 240

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
dy161	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00

```
     eu165    .00E+00   .00E+00   .00E+00   .00E+00
     gd165    .00E+00   .00E+00   .00E+00   .00E+00
     tb165    .00E+00   .00E+00   .00E+00   .00E+00
     dy165    .00E+00   .00E+00   .00E+00   .00E+00
     dy165m   .00E+00   .00E+00   .00E+00   .00E+00
     ho165    .00E+00   .00E+00   .00E+00   .00E+00
     dy166    .00E+00   .00E+00   .00E+00   .00E+00
     ho166    .00E+00   .00E+00   .00E+00   .00E+00
     ho166m   .00E+00   .00E+00   .00E+00   .00E+00
     er166    .00E+00   .00E+00   .00E+00   .00E+00
     er167    .00E+00   .00E+00   .00E+00   .00E+00
     er167m   .00E+00   .00E+00   .00E+00   .00E+00
     er168    .00E+00   .00E+00   .00E+00   .00E+00
     yb168    .00E+00   .00E+00   .00E+00   .00E+00
     er169    .00E+00   .00E+00   .00E+00   .00E+00
     tm169    .00E+00   .00E+00   .00E+00   .00E+00
     yb169    .00E+00   .00E+00   .00E+00   .00E+00
     er170    .00E+00   .00E+00   .00E+00   .00E+00
     tm170    .00E+00   .00E+00   .00E+00   .00E+00
     tm170m   .00E+00   .00E+00   .00E+00   .00E+00
     yb170    .00E+00   .00E+00   .00E+00   .00E+00
     er171    .00E+00   .00E+00   .00E+00   .00E+00
     tm171    .00E+00   .00E+00   .00E+00   .00E+00
     yb171    .00E+00   .00E+00   .00E+00   .00E+00
     er172    .00E+00   .00E+00   .00E+00   .00E+00
     tm172    .00E+00   .00E+00   .00E+00   .00E+00
     yb172    .00E+00   .00E+00   .00E+00   .00E+00
   total     2.39E+00  2.14E+00  1.46E+00  7.87E-01
1  * normal termination of execution *
0                                        table of contents for material tables
0                                          case or subcase printed      page

                                                  1                   1
                                                  2                  41
                                                  3                  81
                                                  4                 121
                                                  5                 161
                                                  6                 201
0ndset          33
           21          4          1         27          6          0          0          0          0          0
            0          0          0          0          0          0         -1       1698        690        130
          880       7935          0          5         99          3         13         96         18         18
           18          0         71
0   35$ array      1 entries read
0    0t
   54$$ a8 1 e
    56$$ 0 7 a5 1 a13 -1 a15 3 0 4 e   5t
0   56$ array     20 entries read
0    5t
     l90   97344
     l116  60787
     l32   33663 nudata (library) storage size
     l44   33734
     l103  75921
   61** f1-20
   65$$ a4 1 2z 1 2z 1 5z 1 2z 1
    a25 1 2z 1 2z 1 5z 1 2z 1
    a46 1 2z 1 2z 1 5z 1 2z 1 e
0   60* array      7 entries read
0   65$ array     63 entries read
```

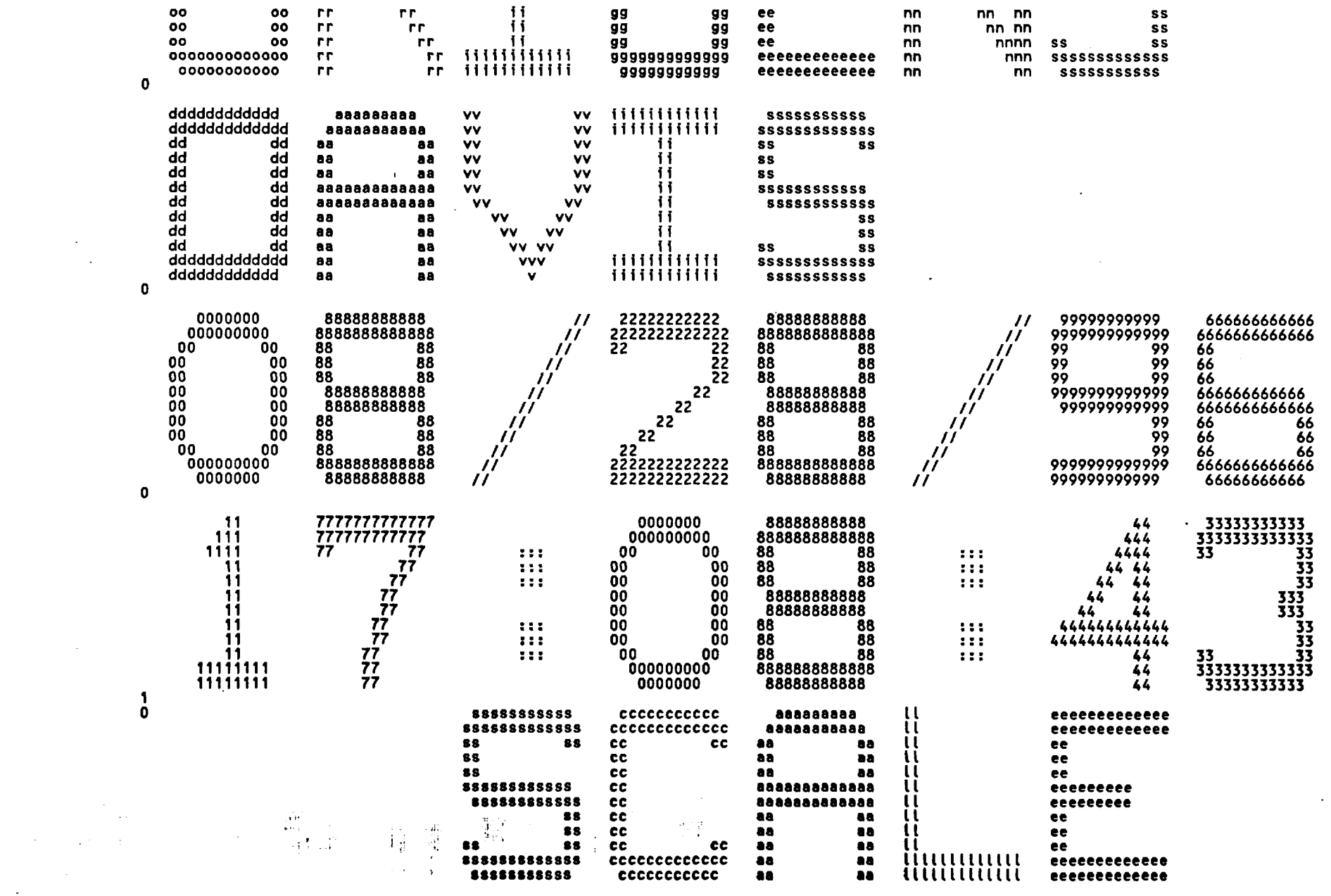
```
0    6t
     l140  66851
     used   100723 in size   150000
0jopt          12
               0            0            0            0            0            0            0            0            0            0
               0            0
0therm          4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non            5
          7935           20            6           18         1697
0mmn           19
               0            7            0            0            1            1            0            0            0            0
              21          100           -1            4            3            0            4            0            0
0tconst         5
  8.640000E+04  .000000E+00  .000000E+00  .000000E+00 5.000000E-02
0mzero          4
               0          689          129          879
0pow            3
   .000000E+00  .000000E+00  .000000E+00
0 linp          9
               6            0           51           26            2         3000         1000         1697            5
0 case or subcase    1  Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel  5K yr burn
    56$$ 0 -6 a10 1  e  t
0   56$ array     20 entries read
0   57* array      5 entries read
0    5t
     l90  102444
     l116  66199
     l32   33663 nudata (library) storage size
     l44   33734
     l103  81099
   61** f1-20
   65$$ a4 1 2z 1 2z 1 5z 1 2z 1
    a25 1 2z 1 2z 1 5z 1 2z 1
    a46 1 2z 1 2z 1 5z 1 2z 1 e
0   60* array     10 entries read
0   65$ array     63 entries read
0    6t
     l140  71957
     used   107068 in size   150000
0jopt          12
               0            0            0            0            0            0            0            0            0            0
               0            0
0therm          4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non            5
          7935           20            6           18         1697
0mmn           19
               0           10            0            0            1            1            0            0            0            7
              21          100            0            5            0            0            4            0            0
0tconst         5
  3.156000E+07 1.000000E+01 2.300000E+01  .000000E+00 5.000000E-02
0mzero          4
              18          689          129          879
0pow            3
   .000000E+00  .000000E+00  .000000E+00
0 linp          9
               6            0           51           26            2         3000         1000         1697            5
0 case or subcase    2  Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel  5K yr burn
0   56$ array     20 entries read
```

```
0   57* array      5 entries read
0    5t
     l90  102444
     l116  66199
     l32   33663 nudata (library) storage size
     l44   33734
     l103  81099
     61** f1-20
0   60* array     10 entries read
0   65$ array     63 entries read
0    6t
     l140  71957
     used   107068 in size   150000
0jopt          12
             0            0            0            0            0            0            0            0            0            0
             0            0
0therm          4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non            5
          7935           20            6           18         1697
0mmn           19
             0           10            0            0            1            1            0            0            0           10
            21          100            0            5            0            0            4            0            0
0tconst         5
  3.156000E+07 4.000000E+02 2.800000E+01  .000000E+00 5.000000E-02
0mzero          4
            21          689          129          879
0pow            3
   .000000E+00  .000000E+00  .000000E+00
0 linp          9
             6            0           51           26            2         3000         1000         1697            5
0 case or subcase    3  Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel  5K yr burn
0   56$ array     20 entries read
0   57* array      5 entries read
0    5t
     l90  102444
     l116  66199
     l32   33663 nudata (library) storage size
     l44   33734
     l103  81099
   61** f1-20
0   60* array     10 entries read
0   65$ array     63 entries read
0    6t
     l140  71957
     used   107068 in size   150000
0jopt          12
             0            0            0            0            0            0            0            0            0            0
             0            0
0therm          4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non            5
          7935           20            6           18         1697
0mmn           19
             0           10            0            0            1            1            0            0            0           10
            21          100            0            5            0            0            4            0            0
0tconst         5
  3.156000E+07 1.600000E+04 2.500000E+01  .000000E+00 5.000000E-02
0mzero          4
            21          689          129          879
```

```
Opow              3
   .000000E+00  .000000E+00  .000000E+00
0 linp            9
             6            0           51           26            2         3000         1000         1697            5
0 case or subcase    4  Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel  5K yr burn
0   56$ array     20 entries read
0   57* array      5 entries read
0    5t
     l90  102444
     l116  66199
     l32   33663 nudata (library) storage size
     l44   33734
     l103  81099
     61** f1-20
0   60* array     10 entries read
0   65$ array     63 entries read
0    6t
     l140  71957
     used   107068 in size   150000
Ojopt            12
             0            0            0            0            0            0            0            0            0            0
             0            0
Otherm           4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
Onon             5
          7935           20            6           18         1697
Ommn            19
             0           10            0            0            1            1            0            0            0           10
            21          100            0            5            0            0            4            0            0
Otconst          5
  3.156000E+07 3.800000E+04 2.500000E+01  .000000E+00 5.000000E-02
Omzero           4
            21          689          129          879
Opow             3
   .000000E+00  .000000E+00  .000000E+00
0 linp           9
             6            0           51           26            2         3000         1000         1697            5
0 case or subcase    5  Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel  5K yr burn
0   56$ array     20 entries read
0   57* array      5 entries read
0    5t
     l90   90544
     l116  53571
     l32   33663 nudata (library) storage size
     l44   33734
     l103  69017
   61** f1-20
0   60* array      3 entries read
0   65$ array     63 entries read
0    6t
     l140  60057
     used    92263 in size   150000
Ojopt            12
             0            0            0            0            0            0            0            0            0            0
             0            0
Otherm           4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
Onon             5
          7935           20            6           18         1697
Ommn            19
```

```
            0           3           0           0           1           1           0           0           0          10
           21         100           0           5           0           0           4           0           0
Otconst           5
  3.156000E+07 2.500000E+05 2.600000E+01  .000000E+00 5.000000E-02
Omzero            4
           21         689         129         879
Opow              3
   .000000E+00  .000000E+00  .000000E+00
0 linp            9
            6           0          51          26           2        3000        1000        1697           5
0 case or subcase    6  Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel  5K yr burn
    56$$ 0 -10 a10 1 e  t
0   56$ array     20 entries read
0    Ot
```

```
1          primary module access and input record ( scale driver - 95/03/29 - 09:06:37 )
-    module origens  will be called
       0$$  a8 26 a11 71 e
       1$$ 1  1t
        DBF Fuel 8% UO2 in Tuff (47% water)
       3$$ 21 0 1 e
       '   3$$ 21 0 1  a33  -88
       2t
       35$$ 0  t
       '  54$$ a8 1 e
       '   56$$ 0 7 a5 1 a13 -1 a15 3 0 4 e   5t
       56$$ 0 7 a13 -1 a15 3 0 4 e   5t
       Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel
       per critical mass 10.1 MT UO2
       60**  0 1 90 365.25 730.5 1826.25  3652.5
       '  61** f1-20
       '  65$$ a4 1 2z 1 2z 1 5z 1 2z 1
       '   a25 1 2z 1 2z 1 5z 1 2z 1
       '   a46 1 2z 1 2z 1 5z 1 2z 1 e
       65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
       6t
       '   56$$ 0 -6 a10 1  e  t
       56$$ 0 10 a10 7 a14 5 a17 4 e  57** 10  e  5t
       60**  15 20 30 50 100 150 200 250 300 400
       '  61** f1-20
       '  65$$ a4 1 2z 1 2z 1 5z 1 2z 1
       '   a25 1 2z 1 2z 1 5z 1 2z 1
       '   a46 1 2z 1 2z 1 5z 1 2z 1 e
       65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
       6t
       56$$ 0 10 a10 10 a14 5 a17 4 e  57** 400  e  5t
       60**  500 1+3 2+3 4+3 6+3 8+3 1+4 1.2+4 1.4+4 1.6+4
       '   61** f1-20
       65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
       6t
       56$$ 0 10 a10 10 a14 5 a17 4 e  57** 1.6+4  e  5t
       60**  1.8+4 2.0+4 2.2+4 2.4+4 2.6+4 2.8+4 3+4 3.2+4 3.6+4 3.8+4
       '  61** f1-20
       65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
       6t
       56$$ 0 10 a10 10 a14 5 a17 4 e  57** 3.8+4  e  5t
       60**  4+4 4.5+4 5+4 5.5+4 6+4 6.5+4 7+4 1+5 2+5 2.5+5
       '   61** f1-20
       65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
       6t
       56$$ 0 3 a10 10 a14 5 a17 4 e  57** 2.5+5  e  5t
       60**  3+5 5+5 999999
       '  61** f1-20
       65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
       6t
       '   56$$ 0 -10 a10 1 e  t
       56$$ f0  t
0    module origens  is finished. completion code     0. cpu time used     7.00 (seconds).
1     oooooooooo     rrrrrrrrrrr    iiiiiiiiiii     ggggggggggg    eeeeeeeeeeee   nn          nn   sssssssssss
    oooooooooooo    rrrrrrrrrrrr   iiiiiiiiiiii    gggggggggggg   eeeeeeeeeeee   nnn         nn  sssssssssssss
    oo          oo  rr         rr       ii        gg          gg  ee             nnnn        nn  ss          ss
    oo          oo  rr         rr       ii        gg              ee             nn nn       nn  ss
    oo          oo  rr         rr       ii        gg              ee             nn  nn      nn  ss
    oo          oo  rrrrrrrrrrrr        ii        gg    ggggggg   eeeeeeeee      nn   nn     nn  sssssssssss
    oo          oo  rrrrrrrrrrr         ii        gg    ggggggg   eeeeeeeee      nn    nn    nn   sssssssssss
```



```
*********************************************************************************
*********************************************************************************
*********************************************************************************
*****                                                                       *****
*****                  program verification information                  *****
*****                                                                       *****
*****                 code system:    scale  version:    4.3             *****
*****                                                                       *****
*********************************************************************************
*********************************************************************************
*****                                                                       *****
*****                                                                       *****
*****              program:  origen                                         *****
*****                                                                       *****
*****         creation date:  03/13/96                                      *****
*****                                                                       *****
*****              library:  /usr1/ornl/Scale/bin                           *****
*****                                                                       *****
*****                                                                       *****
*****            test code:  origens                                        *****
*****                                                                       *****
*****              version:  3.0                                            *****
*****                                                                       *****
*****              jobname:  davis                                          *****
*****                                                                       *****
*****    date of execution:  08/28/96                                       *****
*****                                                                       *****
*****    time of execution:  17:08:44                                       *****
*****                                                                       *****
*****                                                                       *****
*********************************************************************************
*********************************************************************************
*********************************************************************************
```

```
1
1             * input echo * (with break between col. 1-72 and 73-80)
0        note:  only comments are permitted after column 72.
0-------------------only this is used as input data.--------------------          comment or title end
0.............................columns 1-72.............................               ..73-80.

 0$$  a8 26 a11 71 e
 1$$ 1  1t
  DBF Fuel 8% UO2 in Tuff (47% water)
 3$$ 21 0 1 e
 '   3$$ 21 0 1  a33  -88
 2t
 35$$ 0  t
 '  54$$ a8 1 e
 '   56$$ 0 7 a5 1 a13 -1 a15 3 0 4 e   5t
 56$$ 0 7 a13 -1 a15 3 0 4 e   5t
 Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel
 per critical mass 10.1 MT UO2
 60**  0 1 90 365.25 730.5 1826.25  3652.5
 '  61** f1-20
 '  65$$ a4 1 2z 1 2z 1 5z 1 2z 1
 '   a25 1 2z 1 2z 1 5z 1 2z 1
```

```
'   a46 1 2z 1 2z 1 5z 1 2z 1 e
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
'   56$$ 0 -6 a10 1  e  t
56$$ 0 10 a10 7 a14 5 a17 4 e  57** 10  e  5t
60**  15 20 30 50 100 150 200 250 300 400
'  61** f1-20
'  65$$ a4 1 2z 1 2z 1 5z 1 2z 1
'   a25 1 2z 1 2z 1 5z 1 2z 1
'   a46 1 2z 1 2z 1 5z 1 2z 1 e
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
56$$ 0 10 a10 10 a14 5 a17 4 e  57** 400  e  5t
60**  500 1+3 2+3 4+3 6+3 8+3 1+4 1.2+4 1.4+4 1.6+4
'   61** f1-20
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
56$$ 0 10 a10 10 a14 5 a17 4 e  57** 1.6+4  e  5t
60**  1.8+4 2.0+4 2.2+4 2.4+4 2.6+4 2.8+4 3+4 3.2+4 3.6+4 3.8+4
'  61** f1-20
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
56$$ 0 10 a10 10 a14 5 a17 4 e  57** 3.8+4  e  5t
60**  4+4 4.5+4 5+4 5.5+4 6+4 6.5+4 7+4 1+5 2+5 2.5+5
'   61** f1-20
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
56$$ 0 3 a10 10 a14 5 a17 4 e  57** 2.5+5  e  5t
60**  3+5 5+5 999999
'  61** f1-20
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
'   56$$ 0 -10 a10 1 e  t
56$$ f0  t
0when job "fails", make sure no fido input.....................................is out here!

0    0$ array     12 entries read
0    1$ array      1 entries read
0    1t
0         dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0             short-lived split test fraction, qxn =    9.1188E-04
0             half-norm of matrix used, axn =    7.0000E+00
0             4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
   3$$ 21 0 1  a33  -88
0    3$ array     33 entries read
0    2t
1library information...

          cross-section data taken from position number  1 of library on unit 21.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *           prelim lwr origen-s binary working library--id = 1143              *
```

```
          *        made from modified card-image origen-s libraries of scale 4.2        *
          *      data from the light element, actinide, and fission product libraries    *
          *        decay data, including gamma and total energy, are from endf/b-vi      *
          *                                                                              *
          *      neutron flux spectrum factors and cross sections were produced from     *
          *     the "presas2" case updating all nuclides on the scale "burnup" library   *
          *                                                                              *
          *                    fission product yields are from endf/b-v                  *
          *                                                                              *
          *              photon libraries use an 18-energy-group structure               *
          *             the photon data are from the master photon data base,            *
          *              produced to include bremsstrahlung from uo2 matrix              *
          *                                                                              *
          *         see information above this box (if present) for later updates        *
          *                                                                              *
          ********************************************************************************
          *                                                                              *
0         ********************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  /usr1/ornl/Scale/data/prlimlwr
0                 3/13/1996    date library was produced
0                      1697    total number of nuclides in library
                        689    number of light-element nuclides
                        129    number of actinide nuclides
                        879    number of fission product nuclides
0                      7935    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
0obtaining data from position no.    1 on unit no.   71
1
     Part B 8% UO2 in Tuff (47% H2O) DBF Fuel                                    actinides        page    1
0                                    nuclide concentrations, grams
                                     basis =per critical mass 10.1 MT UO2
            charge  discharge     .0 d     1.0 d    90.0 d   365.3 d   730.5 d  1826.3 d  3652.5 d
     he  4 3.60E+01  3.60E+01  3.60E+01  3.60E+01  3.60E+01  3.60E+01  3.60E+01  3.60E+01  3.61E+01
     tl206 5.79E-15  5.79E-15  5.79E-15  5.79E-15  5.79E-15  5.79E-15  5.79E-15  5.79E-15  5.79E-15
     tl207 4.21E-10  4.21E-10  4.21E-10  4.21E-10  4.21E-10  4.22E-10  4.22E-10  4.22E-10  4.22E-10
     tl208 1.50E-11  1.50E-11  1.50E-11  1.53E-11  1.50E-11  1.50E-11  1.49E-11  1.46E-11  1.39E-11
     tl209 4.99E-12  4.99E-12  4.99E-12  5.00E-12  4.99E-12  4.99E-12  5.00E-12  5.00E-12  5.00E-12
     pb206 1.58E+00  1.58E+00  1.58E+00  1.58E+00  1.58E+00  1.58E+00  1.58E+00  1.58E+00  1.58E+00
     pb207 1.59E-01  1.59E-01  1.59E-01  1.59E-01  1.59E-01  1.60E-01  1.60E-01  1.60E-01  1.60E-01
     pb208 2.50E-02  2.50E-02  2.50E-02  2.50E-02  2.50E-02  2.50E-02  2.50E-02  2.50E-02  2.50E-02
     pb209 2.11E-08  2.11E-08  2.11E-08  2.01E-08  2.11E-08  2.11E-08  2.11E-08  2.11E-08  2.11E-08
     pb210 1.25E-02  1.25E-02  1.25E-02  1.25E-02  1.25E-02  1.25E-02  1.25E-02  1.25E-02  1.25E-02
     pb211 3.26E-09  3.26E-09  3.26E-09  3.26E-09  3.26E-09  3.27E-09  3.27E-09  3.27E-09  3.27E-09
     pb212 8.88E-09  8.88E-09  8.88E-09  8.88E-09  8.92E-09  8.90E-09  8.85E-09  8.65E-09  8.25E-09
     pb214 2.90E-08  2.90E-08  2.90E-08  2.91E-08  2.90E-08  2.91E-08  2.91E-08  2.91E-08  2.91E-08
     bi208  .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     bi209 1.42E-01  1.42E-01  1.42E-01  1.42E-01  1.42E-01  1.42E-01  1.42E-01  1.43E-01  1.43E-01
     bi210m  .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     bi210 7.68E-06  7.68E-06  7.68E-06  7.68E-06  7.68E-06  7.68E-06  7.68E-06  7.68E-06  7.68E-06
     bi211 1.93E-10  1.93E-10  1.93E-10  1.93E-10  1.93E-10  1.94E-10  1.94E-10  1.94E-10  1.94E-10
     bi212 8.42E-10  8.42E-10  8.42E-10  8.61E-10  8.46E-10  8.44E-10  8.40E-10  8.20E-10  7.83E-10
     bi213 5.02E-09  5.02E-09  5.02E-09  5.02E-09  5.02E-09  5.02E-09  5.02E-09  5.03E-09  5.03E-09
     bi214 2.16E-08  2.16E-08  2.16E-08  2.16E-08  2.16E-08  2.16E-08  2.16E-08  2.16E-08  2.16E-08
     po210 2.12E-04  2.12E-04  2.12E-04  2.12E-04  2.11E-04  2.10E-04  2.10E-04  2.11E-04  2.12E-04
     po211m  .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     po211 2.14E-15  2.14E-15  2.14E-15  2.14E-15  2.14E-15  2.14E-15  2.14E-15  2.14E-15  2.14E-15
     po212 4.43E-20  4.43E-20  4.43E-20  4.52E-20  4.45E-20  4.43E-20  4.41E-20  4.31E-20  4.11E-20
     po213 7.55E-18  7.55E-18  7.55E-18  7.55E-18  7.55E-18  7.55E-18  7.55E-18  7.56E-18  7.56E-18
     po214 2.97E-15  2.97E-15  2.97E-15  2.97E-15  2.97E-15  2.97E-15  2.97E-15  2.97E-15  2.97E-15
```

po215	2.73E-15	2.73E-15	2.73E-15	2.73E-15	2.73E-15	2.74E-15	2.74E-15	2.73E-15	2.73E-15
po216	3.43E-14	3.43E-14	3.43E-14	3.43E-14	3.44E-14	3.43E-14	3.42E-14	3.34E-14	3.18E-14
po218	3.42E-09	3.42E-09	3.42E-09	3.43E-09	3.42E-09	3.42E-09	3.42E-09	3.43E-09	3.43E-09
at217	6.04E-14	6.04E-14	6.04E-14	6.04E-14	6.04E-14	6.04E-14	6.04E-14	6.05E-14	6.05E-14
rn218	1.34E-25	1.34E-25	1.34E-25	1.30E-25	6.70E-27	6.95E-31	3.59E-36	.00E+00	.00E+00
rn219	6.18E-12	6.18E-12	6.18E-12	6.18E-12	6.18E-12	6.20E-12	6.20E-12	6.20E-12	6.20E-12
rn220	1.34E-11	1.34E-11	1.34E-11	1.34E-11	1.34E-11	1.34E-11	1.33E-11	1.30E-11	1.24E-11
rn222	6.19E-06	6.19E-06	6.19E-06	6.19E-06	6.19E-06	6.19E-06	6.19E-06	6.20E-06	6.20E-06
fr221	5.60E-10	5.60E-10	5.60E-10	5.60E-10	5.60E-10	5.60E-10	5.60E-10	5.61E-10	5.61E-10
fr223	2.87E-11	2.87E-11	2.87E-11	2.87E-11	2.87E-11	2.87E-11	2.87E-11	2.87E-11	2.87E-11
ra222	1.48E-22	1.48E-22	1.48E-22	1.44E-22	7.40E-24	7.68E-28	3.97E-33	.00E+00	.00E+00
ra223	1.57E-06	1.57E-06	1.57E-06	1.57E-06	1.57E-06	1.57E-06	1.57E-06	1.57E-06	1.57E-06
ra224	7.75E-08	7.75E-08	7.75E-08	7.75E-08	7.78E-08	7.76E-08	7.72E-08	7.55E-08	7.20E-08
ra225	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06
ra226	9.63E-01	9.63E-01	9.63E-01	9.63E-01	9.63E-01	9.64E-01	9.64E-01	9.64E-01	9.65E-01
ra228	4.96E-09	4.96E-09	4.96E-09	4.96E-09	4.96E-09	4.96E-09	4.96E-09	4.96E-09	4.96E-09
ac225	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.68E-06
ac227	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03
ac228	6.06E-13	6.06E-13	6.06E-13	6.06E-13	6.06E-13	6.06E-13	6.06E-13	6.06E-13	6.06E-13
th226	7.37E-21	7.37E-21	7.37E-21	7.14E-21	3.68E-22	3.82E-26	1.97E-31	.00E+00	.00E+00
th227	2.58E-06	2.58E-06	2.58E-06	2.58E-06	2.58E-06	2.59E-06	2.59E-06	2.59E-06	2.59E-06
th228	1.51E-05	1.51E-05	1.51E-05	1.51E-05	1.51E-05	1.50E-05	1.50E-05	1.46E-05	1.40E-05
th229	4.91E-01	4.91E-01	4.91E-01	4.91E-01	4.91E-01	4.91E-01	4.91E-01	4.91E-01	4.92E-01
th230	6.00E+01	6.00E+01	6.00E+01	6.00E+01	6.00E+01	6.00E+01	6.01E+01	6.01E+01	6.01E+01
th231	9.09E-07	9.09E-07	9.09E-07	7.78E-07	6.36E-07	6.36E-07	6.36E-07	6.36E-07	6.36E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 2

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
th232	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.24E+01
th233	1.12E-10	1.12E-10	1.12E-10	4.06E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.26E-04	1.25E-04	1.25E-04	1.25E-04
pa231	1.70E+00	1.70E+00	1.70E+00	1.70E+00	1.70E+00	1.70E+00	1.70E+00	1.70E+00	1.70E+00
pa232	2.86E-08	2.86E-08	2.86E-08	1.69E-08	6.00E-29	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	7.27E-18	7.27E-18	7.27E-18	7.03E-18	3.62E-19	3.76E-23	1.94E-28	.00E+00	.00E+00
u231	2.26E-14	2.26E-14	2.26E-14	1.92E-14	8.04E-21	1.53E-40	.00E+00	.00E+00	.00E+00
u232	5.58E-04	5.58E-04	5.58E-04	5.58E-04	5.56E-04	5.52E-04	5.47E-04	5.31E-04	5.05E-04
u233	2.95E+01	2.95E+01	2.95E+01	2.95E+01	2.96E+01	2.96E+01	2.96E+01	2.96E+01	2.96E+01
u234	2.43E+03	2.43E+03	2.43E+03	2.43E+03	2.43E+03	2.43E+03	2.43E+03	2.43E+03	2.43E+03
u235	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05
u236	4.37E+04	4.37E+04	4.37E+04	4.37E+04	4.37E+04	4.37E+04	4.37E+04	4.37E+04	4.37E+04
u237	7.80E-04	7.80E-04	7.80E-04	7.03E-04	7.95E-08	3.81E-09	3.63E-09	3.14E-09	2.47E-09
u238	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06
u239	7.57E-05	7.57E-05	7.57E-05	2.55E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	9.98E-33	9.98E-33	9.98E-33	9.98E-33	9.98E-33	9.99E-33	1.00E-32	1.00E-32	1.01E-32
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	2.07E-09	2.07E-09	2.07E-09	2.06E-09	1.77E-09	1.09E-09	5.76E-10	8.47E-11	3.47E-12
np236m	4.93E-10	4.93E-10	4.93E-10	2.35E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.54E-04
np237	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03
np238	3.58E-04	3.58E-04	3.58E-04	2.58E-04	3.11E-10	3.10E-10	3.08E-10	3.04E-10	2.96E-10
np239	1.09E-02	1.09E-02	1.09E-02	8.21E-03	2.98E-10	2.98E-10	2.98E-10	2.98E-10	2.97E-10
np240m	8.52E-35	8.52E-35	8.52E-35	8.54E-35	8.52E-35	8.53E-35	8.53E-35	8.55E-35	8.59E-35
np240	2.19E-12	2.19E-12	2.19E-12	2.18E-19	8.76E-37	8.78E-37	8.78E-37	8.79E-37	8.83E-37
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	2.68E-07	2.68E-07	2.68E-07	2.68E-07	2.53E-07	2.12E-07	1.67E-07	8.20E-08	2.55E-08
pu237	1.34E-10	1.34E-10	1.34E-10	1.32E-10	3.36E-11	4.92E-13	1.81E-15	9.04E-23	6.11E-35
pu238	5.43E+00	5.43E+00	5.43E+00	5.43E+00	5.42E+00	5.38E+00	5.34E+00	5.22E+00	5.01E+00
pu239	9.03E+03	9.03E+03	9.03E+03	9.03E+03	9.03E+03	9.03E+03	9.03E+03	9.03E+03	9.03E+03
pu240	3.21E+02	3.21E+02	3.21E+02	3.21E+02	3.21E+02	3.21E+02	3.21E+02	3.21E+02	3.20E+02
pu241	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.30E-01	1.26E-01	1.20E-01	1.04E-01	8.13E-02
pu242	3.82E-02	3.82E-02	3.82E-02	3.82E-02	3.82E-02	3.82E-02	3.82E-02	3.82E-02	3.82E-02
pu243	8.12E-11	8.12E-11	8.12E-11	2.83E-12	4.55E-27	4.55E-27	4.55E-27	4.55E-27	4.55E-27
pu244	5.05E-22	5.05E-22	5.05E-22	5.05E-22	5.06E-22	5.06E-22	5.06E-22	5.08E-22	5.10E-22
pu245	2.02E-32	2.02E-32	2.02E-32	4.14E-33	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	8.62E-42	1.41E-40	.00E+00	.00E+00	.00E+00	.00E+00
am239	9.94E-16	9.94E-16	9.94E-16	2.45E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	4.56E-13	4.56E-13	4.56E-13	3.29E-13	7.62E-26	.00E+00	.00E+00	.00E+00	.00E+00
am241	3.54E+00	3.54E+00	3.54E+00	3.54E+00	3.54E+00	3.54E+00	3.54E+00	3.54E+00	3.53E+00
am242m	1.71E-03	1.71E-03	1.71E-03	1.71E-03	1.71E-03	1.70E-03	1.70E-03	1.67E-03	1.63E-03
am242	1.43E-07	1.43E-07	1.43E-07	6.47E-08	2.21E-08	2.20E-08	2.19E-08	2.16E-08	2.10E-08
am243	3.46E-04	3.46E-04	3.46E-04	3.46E-04	3.46E-04	3.46E-04	3.46E-04	3.46E-04	3.46E-04
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	2.64E-12	2.64E-12	2.64E-12	5.08E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	4.14E-33	4.14E-33	4.14E-33	1.20E-33	1.61E-34	8.84E-35	4.01E-35	3.74E-36	7.31E-38
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	8.53E-18	8.53E-18	8.53E-18	8.35E-18	1.27E-18	3.79E-21	1.69E-24	1.48E-34	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 3

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cm242	2.88E-05	2.88E-05	2.88E-05	2.87E-05	2.11E-05	9.61E-06	5.52E-06	4.37E-06	4.25E-06
cm243	2.28E-14	2.28E-14	2.28E-14	2.28E-14	2.27E-14	2.23E-14	2.17E-14	2.02E-14	1.79E-14
cm244	4.14E-08	4.14E-08	4.14E-08	4.14E-08	4.10E-08	3.99E-08	3.84E-08	3.42E-08	2.82E-08
cm245	8.33E-11	8.33E-11	8.33E-11	8.33E-11	8.33E-11	8.33E-11	8.33E-11	8.33E-11	8.33E-11
cm246	7.36E-13	7.36E-13	7.36E-13	7.36E-13	7.36E-13	7.35E-13	7.35E-13	7.35E-13	7.34E-13
cm247	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16
cm248	2.26E-19	2.26E-19	2.26E-19	2.26E-19	2.26E-19	2.26E-19	2.26E-19	2.26E-19	2.26E-19
cm249	7.13E-30	7.13E-30	7.13E-30	1.25E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	3.36E-34	3.36E-34	3.36E-34	3.36E-34	3.36E-34	3.36E-34	3.36E-34	3.36E-34	3.36E-34
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	5.12E-26	5.12E-26	5.12E-26	5.11E-26	4.21E-26	2.32E-26	1.05E-26	9.81E-28	1.88E-29
bk250	5.93E-34	5.93E-34	5.93E-34	3.37E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	1.47E-23	1.47E-23	1.47E-23	1.47E-23	1.47E-23	1.47E-23	1.47E-23	1.46E-23	1.44E-23
cf250	1.86E-27	1.86E-27	1.86E-27	1.86E-27	1.83E-27	1.76E-27	1.67E-27	1.42E-27	1.09E-27
cf251	3.91E-29	3.91E-29	3.91E-29	3.91E-29	3.91E-29	3.91E-29	3.90E-29	3.90E-29	3.88E-29
cf252	6.34E-33	6.34E-33	6.34E-33	6.33E-33	5.94E-33	4.88E-33	3.75E-33	1.71E-33	4.61E-34
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 4

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06

tl207	8.03E-02	8.03E-02	8.03E-02	8.03E-02	8.03E-02	8.05E-02	8.04E-02	8.04E-02	8.04E-02
tl208	4.44E-03	4.44E-03	4.44E-03	4.53E-03	4.46E-03	4.44E-03	4.42E-03	4.32E-03	4.12E-03
tl209	2.04E-03	2.04E-03	2.04E-03	2.04E-03	2.04E-03	2.04E-03	2.04E-03	2.04E-03	2.05E-03
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	9.73E-02	9.73E-02	9.73E-02	9.27E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.74E-02
pb210	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01
pb211	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.07E-02	8.07E-02	8.06E-02	8.06E-02
pb212	1.23E-02	1.23E-02	1.23E-02	1.23E-02	1.24E-02	1.24E-02	1.23E-02	1.20E-02	1.15E-02
pb214	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.54E-01
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.54E-01	9.54E-01	9.53E-01	9.53E-01	9.53E-01
bi211	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.07E-02	8.07E-02	8.06E-02	8.06E-02
bi212	1.23E-02	1.23E-02	1.23E-02	1.26E-02	1.24E-02	1.24E-02	1.23E-02	1.20E-02	1.15E-02
bi213	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.74E-02
bi214	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.54E-01
po210	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.48E-01	9.42E-01	9.42E-01	9.47E-01	9.54E-01
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.21E-04	2.21E-04	2.21E-04	2.21E-04	2.21E-04	2.22E-04	2.22E-04	2.22E-04	2.22E-04
po212	7.91E-03	7.91E-03	7.91E-03	8.08E-03	7.94E-03	7.92E-03	7.88E-03	7.70E-03	7.35E-03
po213	9.52E-02	9.52E-02	9.52E-02	9.53E-02	9.52E-02	9.53E-02	9.53E-02	9.53E-02	9.54E-02
po214	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.54E-01
po215	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.07E-02	8.07E-02	8.06E-02	8.06E-02
po216	1.23E-02	1.23E-02	1.23E-02	1.23E-02	1.24E-02	1.24E-02	1.23E-02	1.20E-02	1.15E-02
po218	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.54E-01	9.54E-01
at217	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.75E-02
rn218	1.99E-13	1.99E-13	1.99E-13	1.92E-13	9.90E-15	1.03E-18	5.31E-24	.00E+00	.00E+00
rn219	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.07E-02	8.07E-02	8.06E-02	8.06E-02
rn220	1.23E-02	1.23E-02	1.23E-02	1.23E-02	1.24E-02	1.24E-02	1.23E-02	1.20E-02	1.15E-02
rn222	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.54E-01	9.54E-01
fr221	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.75E-02
fr223	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03
ra222	1.99E-13	1.99E-13	1.99E-13	1.92E-13	9.90E-15	1.03E-18	5.31E-24	.00E+00	.00E+00
ra223	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.07E-02	8.07E-02	8.06E-02	8.06E-02
ra224	1.23E-02	1.23E-02	1.23E-02	1.23E-02	1.24E-02	1.24E-02	1.23E-02	1.20E-02	1.15E-02
ra225	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.75E-02
ra226	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.54E-01	9.54E-01
ra228	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06
ac225	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.75E-02
ac227	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.05E-02
ac228	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06
th226	1.99E-13	1.99E-13	1.99E-13	1.92E-13	9.90E-15	1.03E-18	5.31E-24	.00E+00	.00E+00
th227	7.94E-02	7.94E-02	7.94E-02	7.94E-02	7.94E-02	7.96E-02	7.96E-02	7.95E-02	7.95E-02
th228	1.23E-02	1.23E-02	1.23E-02	1.23E-02	1.23E-02	1.23E-02	1.23E-02	1.20E-02	1.15E-02
th229	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.75E-02
th230	1.24E+00	1.24E+00	1.24E+00	1.24E+00	1.24E+00	1.24E+00	1.24E+00	1.24E+00	1.24E+00
th231	4.83E-01	4.83E-01	4.83E-01	4.14E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 5

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
th232	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.36E-06	1.36E-06
th233	4.04E-03	4.04E-03	4.04E-03	1.47E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	8.04E-02	8.04E-02	8.04E-02	8.04E-02	8.04E-02	8.04E-02	8.04E-02	8.04E-02	8.05E-02
pa232	1.23E-02	1.23E-02	1.23E-02	7.25E-03	2.58E-23	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.94E+00	6.93E+00	6.93E+00	6.93E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.99E-13	1.99E-13	1.99E-13	1.92E-13	9.89E-15	1.03E-18	5.31E-24	.00E+00	.00E+00
u231	3.04E-09	3.04E-09	3.04E-09	2.58E-09	1.08E-15	.00E+00	.00E+00	.00E+00	.00E+00
u232	1.23E-02	1.23E-02	1.23E-02	1.23E-02	1.23E-02	1.22E-02	1.21E-02	1.17E-02	1.12E-02
u233	2.85E-01	2.85E-01	2.85E-01	2.85E-01	2.85E-01	2.85E-01	2.85E-01	2.85E-01	2.85E-01
u234	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01
u235	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01
u236	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00
u237	6.37E+01	6.37E+01	6.37E+01	5.74E+01	6.49E-03	3.11E-04	2.96E-04	2.56E-04	2.01E-04
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	2.54E+03	2.54E+03	2.54E+03	8.56E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	9.25E-27	9.25E-27	9.25E-27	9.25E-27	9.25E-27	9.26E-27	9.26E-27	9.29E-27	9.32E-27
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	2.90E-06	2.90E-06	2.90E-06	2.90E-06	2.48E-06	1.53E-06	8.09E-07	1.19E-07	4.87E-09
np236m	2.91E-04	2.91E-04	2.91E-04	1.39E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	5.99E-06	5.99E-06	5.99E-06	5.99E-06	5.99E-06	5.99E-06	5.99E-06	5.99E-06	5.99E-06
np237	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00
np238	9.29E+01	9.29E+01	9.29E+01	6.70E+01	8.07E-05	8.04E-05	8.00E-05	7.88E-05	7.69E-05
np239	2.54E+03	2.54E+03	2.54E+03	1.91E+03	6.91E-05	6.91E-05	6.91E-05	6.91E-05	6.90E-05
np240m	9.25E-27	9.25E-27	9.25E-27	9.27E-27	9.25E-27	9.26E-27	9.26E-27	9.29E-27	9.32E-27
np240	2.77E-05	2.77E-05	2.77E-05	2.76E-12	1.11E-29	1.11E-29	1.11E-29	1.11E-29	1.12E-29
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.40E-04	1.40E-04	1.40E-04	1.40E-04	1.32E-04	1.11E-04	8.72E-05	4.29E-05	1.33E-05
pu237	1.63E-06	1.63E-06	1.63E-06	1.61E-06	4.10E-07	6.00E-09	2.21E-11	1.10E-18	7.53E-31
pu238	9.30E+01	9.30E+01	9.30E+01	9.30E+01	9.28E+01	9.22E+01	9.15E+01	8.94E+01	8.59E+01
pu239	5.61E+02	5.61E+02	5.61E+02	5.61E+02	5.61E+02	5.61E+02	5.61E+02	5.61E+02	5.61E+02
pu240	7.28E+01	7.28E+01	7.28E+01	7.28E+01	7.28E+01	7.28E+01	7.28E+01	7.28E+01	7.27E+01
pu241	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.35E+01	1.30E+01	1.24E+01	1.07E+01	8.41E+00
pu242	1.51E-04	1.51E-04	1.51E-04	1.51E-04	1.51E-04	1.51E-04	1.51E-04	1.51E-04	1.51E-04
pu243	2.11E-04	2.11E-04	2.11E-04	7.37E-06	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20
pu244	9.26E-27	9.26E-27	9.26E-27	9.26E-27	9.26E-27	9.27E-27	9.27E-27	9.30E-27	9.34E-27
pu245	2.46E-26	2.46E-26	2.46E-26	5.05E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.10E-09	1.10E-09	1.10E-09	2.71E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	1.17E-07	1.17E-07	1.17E-07	8.44E-08	1.95E-20	.00E+00	.00E+00	.00E+00	.00E+00
am241	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01
am242m	1.79E-02	1.79E-02	1.79E-02	1.79E-02	1.79E-02	1.79E-02	1.78E-02	1.75E-02	1.71E-02
am242	1.15E-01	1.15E-01	1.15E-01	5.24E-02	1.78E-02	1.78E-02	1.77E-02	1.74E-02	1.70E-02
am243	6.91E-05	6.91E-05	6.91E-05	6.91E-05	6.91E-05	6.91E-05	6.91E-05	6.91E-05	6.90E-05
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	3.35E-06	3.35E-06	3.35E-06	6.46E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	2.58E-26	2.58E-26	2.58E-26	7.50E-27	1.00E-27	5.52E-28	2.50E-28	2.33E-29	4.56E-31
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	1.41E-13	1.41E-13	1.41E-13	1.38E-13	2.10E-14	6.26E-17	2.78E-20	2.44E-30	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 6

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cm242	9.53E-02	9.53E-02	9.53E-02	9.52E-02	6.99E-02	3.18E-02	1.83E-02	1.45E-02	1.41E-02
cm243	1.18E-12	1.18E-12	1.18E-12	1.18E-12	1.17E-12	1.15E-12	1.12E-12	1.04E-12	9.23E-13
cm244	3.35E-06	3.35E-06	3.35E-06	3.35E-06	3.32E-06	3.23E-06	3.11E-06	2.77E-06	2.29E-06
cm245	1.43E-11	1.43E-11	1.43E-11	1.43E-11	1.43E-11	1.43E-11	1.43E-11	1.43E-11	1.43E-11
cm246	2.26E-13	2.26E-13	2.26E-13	2.26E-13	2.26E-13	2.26E-13	2.26E-13	2.26E-13	2.26E-13
cm247	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20
cm248	9.60E-22	9.60E-22	9.60E-22	9.60E-22	9.60E-22	9.60E-22	9.60E-22	9.60E-22	9.60E-22
cm249	8.39E-23	8.39E-23	8.39E-23	1.47E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	8.39E-23	8.39E-23	8.39E-23	8.38E-23	6.91E-23	3.81E-23	1.73E-23	1.61E-24	3.08E-26
bk250	2.31E-27	2.31E-27	2.31E-27	1.31E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	6.01E-23	6.01E-23	6.01E-23	6.01E-23	6.01E-23	6.01E-23	6.00E-23	5.97E-23	5.91E-23
cf250	2.03E-25	2.03E-25	2.03E-25	2.03E-25	2.00E-25	1.93E-25	1.83E-25	1.56E-25	1.20E-25
cf251	6.20E-29	6.20E-29	6.20E-29	6.20E-29	6.20E-29	6.20E-29	6.19E-29	6.18E-29	6.16E-29
cf252	3.40E-30	3.40E-30	3.40E-30	3.40E-30	3.19E-30	2.62E-30	2.01E-30	9.13E-31	2.51E-31
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	6.04E+03	6.04E+03	6.04E+03	2.84E+03	8.05E+02	8.04E+02	8.03E+02	7.99E+02	7.93E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 7

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
h 3	3.94E-05	3.94E-05	3.94E-05	3.94E-05	3.89E-05	3.73E-05	3.52E-05	2.97E-05	2.25E-05
li 6	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04
li 7	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06
be 9	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06
be 10	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05
c 14	6.90E-06	6.90E-06	6.90E-06	6.90E-06	6.90E-06	6.90E-06	6.90E-06	6.90E-06	6.89E-06
ni 66	1.73E-13	1.73E-13	1.73E-13	1.28E-13	2.15E-25	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	2.70E-16	2.70E-16	2.70E-16	1.99E-16	3.34E-28	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07
cu 67	3.02E-14	3.02E-14	3.02E-14	2.31E-14	9.21E-25	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08
zn 68	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09
zn 69	1.07E-15	1.07E-15	1.07E-15	2.77E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	1.27E-14	1.27E-14	1.27E-14	3.78E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08
zn 70	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06
ga 70	1.23E-17	1.23E-17	1.23E-17	3.79E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09
zn 71	2.50E-15	2.50E-15	2.50E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	1.03E-12	1.03E-12	1.03E-12	1.55E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05
ge 71	1.18E-16	1.18E-16	1.18E-16	1.11E-16	5.06E-19	2.87E-26	6.97E-36	.00E+00	.00E+00
ge 71m	1.22E-24	1.22E-24	1.22E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	5.67E-18	5.67E-18	5.67E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	9.41E-15	9.41E-15	9.41E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	3.85E-14	3.85E-14	3.85E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	1.22E-09	1.22E-09	1.22E-09	8.54E-10	1.27E-23	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	3.71E-10	3.71E-10	3.71E-10	3.22E-10	5.53E-24	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03
co 73	3.64E-18	3.64E-18	3.64E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	1.64E-15	1.64E-15	1.64E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	8.76E-14	8.76E-14	8.76E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	6.45E-13	6.45E-13	6.45E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	4.86E-10	4.86E-10	4.86E-10	1.59E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03
ge 73m	1.37E-14	1.37E-14	1.37E-14	4.47E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	5.40E-19	5.40E-19	5.40E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	2.27E-15	2.27E-15	2.27E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	1.66E-14	1.66E-14	1.66E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	7.65E-12	7.65E-12	7.65E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	1.14E-11	1.14E-11	1.14E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03
co 75	9.18E-20	9.18E-20	9.18E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	2.75E-16	2.75E-16	2.75E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	3.56E-14	3.56E-14	3.56E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	2.24E-12	2.24E-12	2.24E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	3.24E-11	3.24E-11	3.24E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	1.28E-09	1.28E-09	1.28E-09	7.66E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	6.38E-13	6.38E-13	6.38E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02
ni 76	1.39E-16	1.39E-16	1.39E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	9.03E-15	9.03E-15	9.03E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 8

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
zn 76	3.19E-12	3.19E-12	3.19E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	2.62E-11	2.62E-11	2.62E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01
as 76	2.81E-11	2.81E-11	2.81E-11	1.49E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05
ni 77	7.73E-18	7.73E-18	7.73E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	5.57E-15	5.57E-15	5.57E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	1.41E-12	1.41E-12	1.41E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	2.10E-11	2.10E-11	2.10E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	2.37E-08	2.37E-08	2.37E-08	5.44E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	8.62E-11	8.62E-11	8.62E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	2.62E-07	2.62E-07	2.62E-07	1.85E-07	5.32E-24	.00E+00	.00E+00	.00E+00	.00E+00
se 77	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01
se 77m	1.05E-13	1.05E-13	1.05E-13	7.38E-14	2.13E-30	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	1.52E-18	1.52E-18	1.52E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	7.07E-16	7.07E-16	7.07E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	1.16E-12	1.16E-12	1.16E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	1.67E-11	1.67E-11	1.67E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	2.70E-08	2.70E-08	2.70E-08	3.20E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	2.81E-08	2.81E-08	2.81E-08	4.79E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
cu 79	1.65E-16	1.65E-16	1.65E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	3.94E-13	3.94E-13	3.94E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	1.24E-11	1.24E-11	1.24E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	1.86E-10	1.86E-10	1.86E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	5.63E-09	5.63E-09	5.63E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00
se 79m	2.42E-09	2.42E-09	2.42E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	2.37E-02	2.37E-02	2.37E-02	2.37E-02	2.37E-02	2.37E-02	2.38E-02	2.38E-02	2.38E-02
br 79m	7.23E-18	7.23E-18	7.23E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	5.42E-18	5.42E-18	5.42E-18	3.37E-18	1.48E-36	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	9.49E-18	9.49E-18	9.49E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	5.81E-14	5.81E-14	5.81E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	4.39E-12	4.39E-12	4.39E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	8.07E-10	8.07E-10	8.07E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	4.60E-10	4.60E-10	4.60E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00
br 80	3.28E-13	3.28E-13	3.28E-13	2.77E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	1.67E-12	1.67E-12	1.67E-12	3.87E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05

cu 81	6.87E-19	6.87E-19	6.87E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	2.62E-15	2.62E-15	2.62E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	2.14E-12	2.14E-12	2.14E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	2.25E-10	2.25E-10	2.25E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	1.45E-09	1.45E-09	1.45E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	5.03E-08	5.03E-08	5.03E-08	1.32E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	1.03E-08	1.03E-08	1.03E-08	2.78E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01
kr 81	2.84E-07	2.84E-07	2.84E-07	2.84E-07	2.84E-07	2.84E-07	2.84E-07	2.84E-07	2.84E-07
kr 81m	4.34E-18	4.34E-18	4.34E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	8.13E-16	8.13E-16	8.13E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	9.31E-13	9.31E-13	9.31E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 9

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
ge 82	1.42E-10	1.42E-10	1.42E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	9.43E-10	9.43E-10	9.43E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	2.53E-10	2.53E-10	2.53E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01
br 82	1.62E-08	1.62E-08	1.62E-08	1.01E-08	6.20E-27	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	2.13E-11	2.13E-11	2.13E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02
zn 83	1.50E-17	1.50E-17	1.50E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	3.34E-14	3.34E-14	3.34E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	2.41E-11	2.41E-11	2.41E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	1.09E-09	1.09E-09	1.09E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	7.63E-08	7.63E-08	7.63E-08	2.79E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	4.53E-09	4.53E-09	4.53E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	1.09E-06	1.09E-06	1.09E-06	1.16E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01
kr 83m	8.30E-07	8.30E-07	8.30E-07	3.81E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	1.96E-13	1.96E-13	1.96E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	9.09E-12	9.09E-12	9.09E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	3.22E-10	3.22E-10	3.22E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	4.60E-08	4.60E-08	4.60E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	4.68E-07	4.68E-07	4.68E-07	1.21E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	2.14E-09	2.14E-09	2.14E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01
ga 85	1.10E-16	1.10E-16	1.10E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	3.06E-13	3.06E-13	3.06E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	7.50E-11	7.50E-11	7.50E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	3.84E-09	3.84E-09	3.84E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	2.04E-09	2.04E-09	2.04E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	4.98E-08	4.98E-08	4.98E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	2.12E-02	2.12E-02	2.12E-02	2.12E-02	2.08E-02	1.99E-02	1.86E-02	1.53E-02	1.11E-02
kr 85m	4.66E-06	4.66E-06	4.66E-06	1.15E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01
ge 86	6.13E-14	6.13E-14	6.13E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	1.99E-11	1.99E-11	1.99E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	4.65E-09	4.65E-09	4.65E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	2.03E-08	2.03E-08	2.03E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	2.85E-10	2.85E-10	2.85E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02
rb 86	5.54E-08	5.54E-08	5.54E-08	5.34E-08	1.95E-09	6.97E-14	8.76E-20	1.74E-37	.00E+00
rb 86m	1.51E-13	1.51E-13	1.51E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03
ge 87	5.92E-13	5.92E-13	5.92E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	4.60E-12	4.60E-12	4.60E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	1.01E-09	1.01E-09	1.01E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	2.69E-08	2.69E-08	2.69E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	2.76E-06	2.76E-06	2.76E-06	5.82E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02
sr 87	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.73E-04
sr 87m	2.52E-12	2.52E-12	2.52E-12	6.79E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	7.65E-16	7.65E-16	7.65E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	1.01E-12	1.01E-12	1.01E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	1.35E-10	1.35E-10	1.35E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 10

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
br 88	8.09E-09	8.09E-09	8.09E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	8.81E-06	8.81E-06	8.81E-06	2.51E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	9.40E-07	9.40E-07	9.40E-07	2.93E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02
as 89	6.72E-15	6.72E-15	6.72E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	1.28E-11	1.28E-11	1.28E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	1.43E-09	1.43E-09	1.43E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	2.13E-07	2.13E-07	2.13E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	1.08E-06	1.08E-06	1.08E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	5.20E-03	5.20E-03	5.20E-03	5.13E-03	1.51E-03	3.48E-05	2.33E-07	6.95E-14	9.28E-25
y 89	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
y 89m	2.09E-12	2.09E-12	2.09E-12	1.76E-12	5.18E-13	1.19E-14	7.95E-17	2.38E-23	3.17E-34
as 90	3.63E-17	3.63E-17	3.63E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	2.75E-12	2.75E-12	2.75E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	3.31E-10	3.31E-10	3.31E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	3.98E-08	3.98E-08	3.98E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	1.72E-07	1.72E-07	1.72E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	8.38E-08	8.38E-08	8.38E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	1.29E+00	1.29E+00	1.29E+00	1.29E+00	1.28E+00	1.26E+00	1.23E+00	1.14E+00	1.01E+00
y 90	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.34E-04	3.28E-04	3.20E-04	2.97E-04	2.62E-04
y 90m	2.99E-12	2.99E-12	2.99E-12	1.62E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	3.28E+02	3.28E+02	3.28E+02	3.28E+02	3.28E+02	3.28E+02	3.28E+02	3.28E+02	3.28E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	1.38E-13	1.38E-13	1.38E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	3.73E-11	3.73E-11	3.73E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	7.28E-09	7.28E-09	7.28E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	8.33E-08	8.33E-08	8.33E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	5.13E-05	5.13E-05	5.13E-05	8.96E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	7.57E-03	7.57E-03	7.57E-03	7.53E-03	2.63E-03	1.01E-04	1.33E-06	3.06E-12	1.23E-21
y 91m	2.59E-06	2.59E-06	2.59E-06	4.95E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02
nb 91	2.77E-11	2.77E-11	2.77E-11	2.77E-11	2.77E-11	2.77E-11	2.77E-11	2.76E-11	2.74E-11
se 92	5.71E-15	5.71E-15	5.71E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	3.50E-12	3.50E-12	3.50E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	8.13E-10	8.13E-10	8.13E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	5.60E-09	5.60E-09	5.60E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	1.49E-05	1.49E-05	1.49E-05	3.21E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	1.96E-05	1.96E-05	1.96E-05	6.19E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02
nb 92	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08
se 93	1.51E-17	1.51E-17	1.51E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	2.11E-13	2.11E-13	2.11E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	1.81E-10	1.81E-10	1.81E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	5.44E-09	5.44E-09	5.44E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	7.35E-07	7.35E-07	7.35E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	4.06E-05	4.06E-05	4.06E-05	7.91E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02
nb 93	5.67E-01	5.67E-01	5.67E-01	5.67E-01	5.67E-01	5.67E-01	5.67E-01	5.67E-01	5.68E-01
nb 93m	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03
br 94	7.91E-15	7.91E-15	7.91E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	1.28E-11	1.28E-11	1.28E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	1.30E-09	1.30E-09	1.30E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 11

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sr 94	1.21E-07	1.21E-07	1.21E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	1.94E-06	1.94E-06	1.94E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02
nb 94	1.46E-04	1.46E-04	1.46E-04	1.46E-04	1.46E-04	1.46E-04	1.46E-04	1.46E-04	1.46E-04
nb 94m	3.21E-13	3.21E-13	3.21E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	6.42E-17	6.42E-17	6.42E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	2.37E-12	2.37E-12	2.37E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	8.69E-11	8.69E-11	8.69E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	3.67E-08	3.67E-08	3.67E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	1.11E-06	1.11E-06	1.11E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	9.85E-03	9.85E-03	9.85E-03	9.75E-03	3.72E-03	1.89E-04	3.62E-06	2.55E-11	6.58E-20
nb 95	5.38E-03	5.38E-03	5.38E-03	5.38E-03	3.38E-03	2.22E-04	4.49E-06	3.06E-11	7.91E-20
nb 95m	6.17E-06	6.17E-06	6.17E-06	6.16E-06	2.47E-06	1.25E-07	2.40E-09	1.69E-14	4.36E-23
mo 95	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02
br 96	1.27E-17	1.27E-17	1.27E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	1.79E-13	1.79E-13	1.79E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	1.15E-11	1.15E-11	1.15E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	1.14E-09	1.14E-09	1.14E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	9.88E-09	9.88E-09	9.88E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02
nb 96	2.08E-08	2.08E-08	2.08E-08	1.02E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01
kr 97	5.74E-16	5.74E-16	5.74E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	3.52E-12	3.52E-12	3.52E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	2.36E-10	2.36E-10	2.36E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	4.83E-09	4.83E-09	4.83E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	9.80E-05	9.80E-05	9.80E-05	3.66E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	6.99E-06	6.99E-06	6.99E-06	2.62E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	9.17E-08	9.17E-08	9.17E-08	3.43E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02
kr 98	2.98E-16	2.98E-16	2.98E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	1.10E-13	1.10E-13	1.10E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	1.32E-10	1.32E-10	1.32E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	6.57E-10	6.57E-10	6.57E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	5.15E-08	5.15E-08	5.15E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	4.82E-09	4.82E-09	4.82E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	2.43E-08	2.43E-08	2.43E-08	8.62E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02
tc 98	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05
rb 99	1.35E-15	1.35E-15	1.35E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	2.69E-11	2.69E-11	2.69E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	9.95E-10	9.95E-10	9.95E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	3.47E-09	3.47E-09	3.47E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	1.60E-08	1.60E-08	1.60E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	1.12E-07	1.12E-07	1.12E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	4.28E-04	4.28E-04	4.28E-04	3.33E-04	5.91E-14	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.87E+02
tc 99m	3.43E-05	3.43E-05	3.43E-05	2.91E-05	5.21E-15	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	6.41E+00	6.41E+00	6.41E+00	6.41E+00	6.41E+00	6.41E+00	6.41E+00	6.42E+00	6.42E+00

rb100	6.07E-16	6.07E-16	6.07E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	1.32E-12	1.32E-12	1.32E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	1.25E-10	1.25E-10	1.25E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 12

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
zr100	1.21E-08	1.21E-08	1.21E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	2.68E-09	2.68E-09	2.68E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	2.38E-10	2.38E-10	2.38E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02
tc100	2.46E-10	2.46E-10	2.46E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00
rb101	4.20E-18	4.20E-18	4.20E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	2.39E-13	2.39E-13	2.39E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	5.86E-11	5.86E-11	5.86E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	1.86E-09	1.86E-09	1.86E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	1.07E-08	1.07E-08	1.07E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	1.37E-06	1.37E-06	1.37E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	1.33E-06	1.33E-06	1.33E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02
sr102	8.01E-14	8.01E-14	8.01E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	6.42E-11	6.42E-11	6.42E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	2.04E-09	2.04E-09	2.04E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	1.60E-09	1.60E-09	1.60E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	9.22E-07	9.22E-07	9.22E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	7.19E-09	7.19E-09	7.19E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	2.27E-10	2.27E-10	2.27E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02
rh102	1.33E-08	1.33E-08	1.33E-08	1.33E-08	1.26E-08	1.05E-08	8.27E-09	4.04E-09	1.22E-09
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	1.02E-16	1.02E-16	1.02E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	5.77E-12	5.77E-12	5.77E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	2.68E-10	2.68E-10	2.68E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	1.15E-09	1.15E-09	1.15E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	7.19E-08	7.19E-08	7.19E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	5.91E-08	5.91E-08	5.91E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	3.70E-03	3.70E-03	3.70E-03	3.63E-03	7.55E-04	5.85E-06	9.26E-09	3.67E-17	3.64E-31
rh103	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02
rh103m	3.66E-06	3.66E-06	3.66E-06	3.60E-06	7.48E-07	5.80E-09	9.17E-12	3.64E-20	3.61E-34
sr104	4.36E-17	4.36E-17	4.36E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	2.38E-14	2.38E-14	2.38E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	1.19E-10	1.19E-10	1.19E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	1.36E-09	1.36E-09	1.36E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	4.22E-08	4.22E-08	4.22E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	8.04E-07	8.04E-07	8.04E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02
rh104	1.88E-09	1.88E-09	1.88E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	8.43E-10	8.43E-10	8.43E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00
y105	2.63E-16	2.63E-16	2.63E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	1.31E-11	1.31E-11	1.31E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	3.08E-10	3.08E-10	3.08E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	1.53E-08	1.53E-08	1.53E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	2.17E-07	2.17E-07	2.17E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	7.64E-06	7.64E-06	7.64E-06	1.86E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	6.08E-05	6.08E-05	6.08E-05	4.34E-05	2.86E-23	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	6.11E-09	6.11E-09	6.11E-09	1.49E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 13

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
y106	2.71E-18	2.71E-18	2.71E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	2.97E-13	2.97E-13	2.97E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	1.08E-11	1.08E-11	1.08E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	1.61E-09	1.61E-09	1.61E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	9.22E-09	9.22E-09	9.22E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	8.89E-03	8.89E-03	8.89E-03	8.87E-03	7.52E-03	4.50E-03	2.28E-03	2.95E-04	9.78E-06
rh106	8.25E-09	8.25E-09	8.25E-09	8.23E-09	6.97E-09	4.17E-09	2.11E-09	2.74E-10	9.08E-12
rh106m	8.17E-11	8.17E-11	8.17E-11	3.78E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01
ag106	6.42E-18	6.42E-18	6.42E-18	5.56E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	2.55E-20	2.55E-20	2.55E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	7.56E-16	7.56E-16	7.56E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	1.30E-12	1.30E-12	1.30E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	2.20E-10	2.20E-10	2.20E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	2.84E-09	2.84E-09	2.84E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	3.68E-08	3.68E-08	3.68E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	2.14E-07	2.14E-07	2.14E-07	2.77E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01
pd107m	3.74E-13	3.74E-13	3.74E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02
zr108	4.63E-17	4.63E-17	4.63E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	1.02E-14	1.02E-14	1.02E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	8.96E-12	8.96E-12	8.96E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	2.02E-10	2.02E-10	2.02E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	2.58E-08	2.58E-08	2.58E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	1.62E-09	1.62E-09	1.62E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	6.10E-10	6.10E-10	6.10E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01
ag108	4.57E-14	4.57E-14	4.57E-14	3.92E-17	3.92E-17	3.90E-17	3.88E-17	3.82E-17	3.71E-17
ag108m	1.27E-08	1.27E-08	1.27E-08	1.27E-08	1.27E-08	1.26E-08	1.26E-08	1.24E-08	1.20E-08
cd108	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05
zr109	1.28E-20	1.28E-20	1.28E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	5.62E-16	5.62E-16	5.62E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	8.54E-13	8.54E-13	8.54E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	1.78E-11	1.78E-11	1.78E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	2.25E-09	2.25E-09	2.25E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	6.08E-09	6.08E-09	6.08E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	1.90E-09	1.90E-09	1.90E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	3.78E-06	3.78E-06	3.78E-06	1.13E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	6.34E-11	6.34E-11	6.34E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01
ag109m	3.04E-09	3.04E-09	3.04E-09	9.05E-10	1.41E-18	9.32E-19	5.39E-19	1.04E-19	6.77E-21
cd109	1.63E-12	1.63E-12	1.63E-12	1.62E-12	1.42E-12	9.41E-13	5.45E-13	1.05E-13	6.83E-15
nb110	1.08E-17	1.08E-17	1.08E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	2.05E-13	2.05E-13	2.05E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	1.70E-12	1.70E-12	1.70E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	3.30E-10	3.30E-10	3.30E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	1.25E-11	1.25E-11	1.25E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	7.41E-10	7.41E-10	7.41E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00
ag110	4.28E-11	4.28E-11	4.28E-11	2.32E-14	1.81E-14	8.45E-15	3.07E-15	1.47E-16	9.22E-19
ag110m	1.50E-06	1.50E-06	1.50E-06	1.50E-06	1.17E-06	5.45E-07	1.98E-07	9.45E-09	5.95E-11

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 14

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cd110	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01
nb111	1.26E-19	1.26E-19	1.26E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	3.68E-15	3.68E-15	3.68E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	9.13E-13	9.13E-13	9.13E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	1.29E-11	1.29E-11	1.29E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	1.75E-10	1.75E-10	1.75E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	2.37E-08	2.37E-08	2.37E-08	4.04E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	1.49E-08	1.49E-08	1.49E-08	7.25E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	1.09E-05	1.09E-05	1.09E-05	9.99E-06	2.53E-09	1.91E-20	3.34E-35	.00E+00	.00E+00
ag111m	1.10E-09	1.10E-09	1.10E-09	2.32E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00
cd111m	1.29E-13	1.29E-13	1.29E-13	1.56E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	2.39E-21	2.39E-21	2.39E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	1.22E-15	1.22E-15	1.22E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	4.19E-14	4.19E-14	4.19E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	1.27E-11	1.27E-11	1.27E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	1.23E-11	1.23E-11	1.23E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	7.55E-07	7.55E-07	7.55E-07	3.42E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	1.13E-07	1.13E-07	1.13E-07	5.99E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00
mo113	5.66E-18	5.66E-18	5.66E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	1.69E-14	1.69E-14	1.69E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	4.24E-12	4.24E-12	4.24E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	4.70E-12	4.70E-12	4.70E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	7.02E-10	7.02E-10	7.02E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	1.42E-07	1.42E-07	1.42E-07	6.43E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	9.99E-11	9.99E-11	9.99E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01
cd113m	5.60E-05	5.60E-05	5.60E-05	5.60E-05	5.53E-05	5.33E-05	5.07E-05	4.38E-05	3.42E-05
in113	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02
in113m	2.57E-17	2.57E-17	2.57E-17	1.13E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	4.83E-18	4.83E-18	4.83E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	8.39E-16	8.39E-16	8.39E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	4.53E-12	4.53E-12	4.53E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	5.06E-12	5.06E-12	5.06E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	9.60E-10	9.60E-10	9.60E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	3.09E-11	3.09E-11	3.09E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00
in114	2.20E-14	2.20E-14	2.20E-14	1.56E-14	4.50E-15	9.54E-17	5.74E-19	1.25E-25	9.86E-37
in114m	9.85E-10	9.85E-10	9.85E-10	9.72E-10	2.80E-10	5.93E-12	3.57E-14	7.77E-21	6.13E-32
sn114	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05
mo115	7.03E-21	7.03E-21	7.03E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	3.57E-17	3.57E-17	3.57E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	1.07E-13	1.07E-13	1.07E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	1.13E-11	1.13E-11	1.13E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	1.74E-10	1.74E-10	1.74E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	4.26E-09	4.26E-09	4.26E-09	9.31E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	2.60E-11	2.60E-11	2.60E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	9.23E-07	9.23E-07	9.23E-07	6.79E-07	6.41E-19	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	8.03E-07	8.03E-07	8.03E-07	7.91E-07	1.98E-07	2.75E-09	9.42E-12	3.78E-19	1.78E-31
in115	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01
in115m	7.74E-08	7.74E-08	7.74E-08	6.20E-08	9.19E-14	1.27E-15	4.36E-18	1.75E-25	8.30E-38

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 15
0
nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sn115	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02

tc116	6.70E-18	6.70E-18	6.70E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	6.91E-14	6.91E-14	6.91E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	7.53E-13	7.53E-13	7.53E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	7.60E-11	7.60E-11	7.60E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	1.06E-09	1.06E-09	1.06E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	6.56E-12	6.56E-12	6.56E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00
in116	6.15E-13	6.15E-13	6.15E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	5.32E-10	5.32E-10	5.32E-10	5.26E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02
tc117	1.00E-19	1.00E-19	1.00E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	1.93E-15	1.93E-15	1.93E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	3.25E-13	3.25E-13	3.25E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	1.79E-11	1.79E-11	1.79E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	1.97E-10	1.97E-10	1.97E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	1.45E-11	1.45E-11	1.45E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	4.23E-08	4.23E-08	4.23E-08	5.33E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	1.22E-08	1.22E-08	1.22E-08	8.67E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	9.06E-09	9.06E-09	9.06E-09	5.80E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	3.01E-08	3.01E-08	3.01E-08	1.79E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00
sn117m	1.30E-08	1.30E-08	1.30E-08	1.25E-08	1.34E-10	1.08E-16	8.89E-25	.00E+00	.00E+00
tc118	1.61E-21	1.61E-21	1.61E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	5.42E-16	5.42E-16	5.42E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	1.69E-14	1.69E-14	1.69E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	5.10E-12	5.10E-12	5.10E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	1.14E-11	1.14E-11	1.14E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	4.32E-12	4.32E-12	4.32E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	1.54E-08	1.54E-08	1.54E-08	3.72E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	2.55E-11	2.55E-11	2.55E-11	6.17E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	1.04E-12	1.04E-12	1.04E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00
ru119	2.13E-17	2.13E-17	2.13E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	9.84E-15	9.84E-15	9.84E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	1.96E-12	1.96E-12	1.96E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	8.28E-12	8.28E-12	8.28E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	6.25E-10	6.25E-10	6.25E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	2.20E-10	2.20E-10	2.20E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	3.13E-10	3.13E-10	3.13E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	3.77E-09	3.77E-09	3.77E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
sn119m	5.21E-07	5.21E-07	5.21E-07	5.19E-07	4.21E-07	2.19E-07	9.25E-08	6.93E-09	9.22E-11
ru120	4.63E-18	4.63E-18	4.63E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	7.05E-16	7.05E-16	7.05E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	2.02E-12	2.02E-12	2.02E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	3.02E-12	3.02E-12	3.02E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	2.74E-10	2.74E-10	2.74E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	1.68E-11	1.68E-11	1.68E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	2.97E-12	2.97E-12	2.97E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
rh121	2.57E-16	2.57E-16	2.57E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% M2O) DBF Fuel fission products page 16

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
pd121	1.24E-13	1.24E-13	1.24E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	1.49E-12	1.49E-12	1.49E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	7.51E-11	7.51E-11	7.51E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	9.27E-12	9.27E-12	9.27E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	1.31E-09	1.31E-09	1.31E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	5.82E-07	5.82E-07	5.82E-07	3.17E-07	3.79E-09	3.75E-09	3.71E-09	3.57E-09	3.35E-09
sn121m	8.73E-05	8.73E-05	8.73E-05	8.73E-05	8.70E-05	8.62E-05	8.51E-05	8.20E-05	7.70E-05
sb121	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00
rh122	1.21E-17	1.21E-17	1.21E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	8.69E-14	8.69E-14	8.69E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	4.74E-13	4.74E-13	4.74E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	3.20E-11	3.20E-11	3.20E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	9.92E-12	9.92E-12	9.92E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	5.20E-12	5.20E-12	5.20E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00
sb122	2.35E-09	2.35E-09	2.35E-09	1.82E-09	2.18E-19	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	2.60E-13	2.60E-13	2.60E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03
rh123	1.22E-18	1.22E-18	1.22E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	2.79E-15	2.79E-15	2.79E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	1.39E-13	1.39E-13	1.39E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	3.49E-11	3.49E-11	3.49E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	2.74E-11	2.74E-11	2.74E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	6.06E-11	6.06E-11	6.06E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	7.65E-06	7.65E-06	7.65E-06	7.60E-06	4.72E-06	1.08E-06	1.52E-07	4.24E-10	2.35E-14
sn123m	1.56E-08	1.56E-08	1.56E-08	2.41E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00
te123	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07
te123m	1.55E-11	1.55E-11	1.55E-11	1.54E-11	9.19E-12	1.87E-12	2.25E-13	3.94E-16	1.01E-20
pd124	2.88E-15	2.88E-15	2.88E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	8.22E-14	8.22E-14	8.22E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	6.23E-12	6.23E-12	6.23E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	3.61E-11	3.61E-11	3.61E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00
sb124	7.65E-08	7.65E-08	7.65E-08	7.56E-08	2.71E-08	1.14E-09	1.70E-11	5.64E-17	4.15E-26
sb124m	2.46E-13	2.46E-13	2.46E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03
pd125	1.99E-16	1.99E-16	1.99E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	4.41E-14	4.41E-14	4.41E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	6.46E-12	6.46E-12	6.46E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	1.41E-11	1.41E-11	1.41E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	5.37E-11	5.37E-11	5.37E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	3.35E-06	3.35E-06	3.35E-06	3.12E-06	5.19E-09	1.32E-17	5.18E-29	.00E+00	.00E+00
sn125m	5.92E-09	5.92E-09	5.92E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	1.24E-03	1.24E-03	1.24E-03	1.24E-03	1.17E-03	9.67E-04	7.50E-04	3.50E-04	9.84E-05
te125	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00
te125m	1.66E-05	1.66E-05	1.66E-05	1.66E-05	1.63E-05	1.37E-05	1.07E-05	4.97E-06	1.40E-06
pd126	6.76E-17	6.76E-17	6.76E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	8.07E-15	8.07E-15	8.07E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	2.57E-12	2.57E-12	2.57E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	1.97E-11	1.97E-11	1.97E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	4.36E+00	4.36E+00	4.36E+00	4.36E+00	4.36E+00	4.36E+00	4.36E+00	4.36E+00	4.36E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 17

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sb126	3.26E-07	3.26E-07	3.26E-07	3.20E-07	2.08E-07	2.07E-07	2.07E-07	2.07E-07	2.07E-07
sb126m	1.75E-09	1.75E-09	1.75E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09
te126	1.82E-01	1.82E-01	1.82E-01	1.82E-01	1.82E-01	1.82E-01	1.82E-01	1.82E-01	1.82E-01
xe126	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10
ag127	4.74E-15	4.74E-15	4.74E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	2.18E-12	2.18E-12	2.18E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	1.61E-11	1.61E-11	1.61E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	5.28E-11	5.28E-11	5.28E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	1.78E-07	1.78E-07	1.78E-07	6.45E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	8.65E-09	8.65E-09	8.65E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	2.05E-05	2.05E-05	2.05E-05	1.73E-05	1.90E-12	5.67E-34	.00E+00	.00E+00	.00E+00
te127	2.07E-06	2.07E-06	2.07E-06	1.92E-06	2.08E-07	3.62E-08	3.55E-09	3.34E-12	3.02E-17
te127m	1.02E-04	1.02E-04	1.02E-04	1.02E-04	5.95E-05	1.03E-05	1.01E-06	9.54E-10	8.63E-15
i127	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01
xe127	1.15E-14	1.15E-14	1.15E-14	1.13E-14	2.08E-15	1.10E-17	1.05E-20	9.09E-30	.00E+00
ag128	1.06E-15	1.06E-15	1.06E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	3.59E-12	3.59E-12	3.59E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	3.21E-11	3.21E-11	3.21E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	4.99E-07	4.99E-07	4.99E-07	2.31E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	3.71E-07	3.71E-07	3.71E-07	6.24E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	9.07E-08	9.07E-08	9.07E-08	4.93E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01
i128	1.44E-10	1.44E-10	1.44E-10	6.43E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03
cd129	4.36E-13	4.36E-13	4.36E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	2.33E-11	2.33E-11	2.33E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	1.54E-08	1.54E-08	1.54E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	6.03E-08	6.03E-08	6.03E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	5.05E-06	5.05E-06	5.05E-06	1.17E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	1.26E-06	1.26E-06	1.26E-06	1.92E-07	2.51E-08	8.58E-11	4.58E-14	6.98E-24	.00E+00
te129m	1.73E-04	1.73E-04	1.73E-04	1.71E-04	2.72E-05	9.30E-08	4.97E-11	7.57E-21	3.29E-37
i129	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01
xe129	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02
xe129m	9.43E-12	9.43E-12	9.43E-12	8.72E-12	8.45E-15	4.04E-24	1.73E-36	.00E+00	.00E+00
cd130	2.78E-13	2.78E-13	2.78E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	1.17E-11	1.17E-11	1.17E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	9.70E-08	9.70E-08	9.70E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	2.47E-07	2.47E-07	2.47E-07	2.62E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	2.15E-07	2.15E-07	2.15E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02
i130	6.37E-08	6.37E-08	6.37E-08	1.67E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	3.68E-10	3.68E-10	3.68E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01
cd131	7.65E-15	7.65E-15	7.65E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	3.45E-12	3.45E-12	3.45E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	1.38E-08	1.38E-08	1.38E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	1.40E-06	1.40E-06	1.40E-06	2.00E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	1.55E-06	1.55E-06	1.55E-06	3.42E-08	1.26E-29	.00E+00	.00E+00	.00E+00	.00E+00
te131m	1.90E-05	1.90E-05	1.90E-05	1.10E-05	4.04E-27	.00E+00	.00E+00	.00E+00	.00E+00
i131	8.13E-04	8.13E-04	8.13E-04	7.56E-04	3.58E-07	1.77E-17	3.75E-31	.00E+00	.00E+00
xe131	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02
xe131m	1.31E-05	1.31E-05	1.31E-05	1.31E-05	2.06E-07	2.36E-14	1.36E-23	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 18

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cd132	1.11E-15	1.11E-15	1.11E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	5.96E-13	5.96E-13	5.96E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	1.01E-08	1.01E-08	1.01E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	1.37E-07	1.37E-07	1.37E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	9.83E-08	9.83E-08	9.83E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	4.89E-04	4.89E-04	4.89E-04	3.95E-04	2.36E-12	.00E+00	.00E+00	.00E+00	.00E+00
i132	1.44E-05	1.44E-05	1.44E-05	1.19E-05	7.11E-14	.00E+00	.00E+00	.00E+00	.00E+00
xe132	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02
cs132	4.08E-10	4.08E-10	4.08E-10	3.67E-10	2.69E-14	4.37E-27	.00E+00	.00E+00	.00E+00
ba132	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06

in133	6.28E-15	6.28E-15	6.28E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	9.79E-11	9.79E-11	9.79E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	1.38E-07	1.38E-07	1.38E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	1.13E-06	1.13E-06	1.13E-06	3.23E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	4.20E-06	4.20E-06	4.20E-06	6.33E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	2.00E-04	2.00E-04	2.00E-04	9.23E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	1.53E-09	1.53E-09	1.53E-09	1.75E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	1.21E-03	1.21E-03	1.21E-03	1.17E-03	1.01E-08	1.59E-24	.00E+00	.00E+00	.00E+00
xe133m	1.50E-05	1.50E-05	1.50E-05	1.36E-05	1.05E-17	.00E+00	.00E+00	.00E+00	.00E+00
cs133	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02
ba133	3.11E-11	3.11E-11	3.11E-11	3.10E-11	3.06E-11	2.91E-11	2.72E-11	2.23E-11	1.61E-11
in134	7.09E-16	7.09E-16	7.09E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	8.36E-12	8.36E-12	8.36E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	1.49E-10	1.49E-10	1.49E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	1.14E-09	1.14E-09	1.14E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	6.70E-06	6.70E-06	6.70E-06	2.86E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	9.70E-06	9.70E-06	9.70E-06	2.42E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	3.76E-08	3.76E-08	3.76E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02
xe134m	9.71E-12	9.71E-12	9.71E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	1.88E-03	1.88E-03	1.88E-03	1.87E-03	1.73E-03	1.34E-03	9.58E-04	3.49E-04	6.51E-05
cs134m	2.29E-08	2.29E-08	2.29E-08	7.56E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00
sn135	2.55E-13	2.55E-13	2.55E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	1.10E-10	1.10E-10	1.10E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	2.48E-08	2.48E-08	2.48E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	6.02E-05	6.02E-05	6.02E-05	4.79E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	8.81E-05	8.81E-05	8.81E-05	3.20E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	4.50E-07	4.50E-07	4.50E-07	3.03E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02
cs135m	4.95E-10	4.95E-10	4.95E-10	3.28E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	8.75E-01	8.75E-01	8.75E-01	8.75E-01	8.75E-01	8.75E-01	8.76E-01	8.76E-01	8.77E-01
ba135m	1.05E-10	1.05E-10	1.05E-10	5.89E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	3.37E-14	3.37E-14	3.37E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	6.80E-12	6.80E-12	6.80E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	1.09E-08	1.09E-08	1.09E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	1.07E-07	1.07E-07	1.07E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	2.83E-08	2.83E-08	2.83E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02
cs136	1.37E-05	1.37E-05	1.37E-05	1.30E-05	1.19E-07	6.04E-14	2.66E-22	.00E+00	.00E+00
ba136	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00
ba136m	4.16E-13	4.16E-13	4.16E-13	3.94E-13	3.63E-15	1.83E-21	8.09E-30	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 19

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sb137	9.12E-12	9.12E-12	9.12E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	6.53E-10	6.53E-10	6.53E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	3.21E-08	3.21E-08	3.21E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	5.73E-07	5.73E-07	5.73E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.45E+00	2.45E+00	2.45E+00	2.45E+00	2.43E+00	2.39E+00	2.34E+00	2.18E+00	1.94E+00
ba137	5.62E+02	5.62E+02	5.62E+02	5.62E+02	5.62E+02	5.62E+02	5.62E+02	5.62E+02	5.63E+02
ba137m	3.74E-07	3.74E-07	3.74E-07	3.74E-07	3.72E-07	3.65E-07	3.57E-07	3.33E-07	2.97E-07
sb138	1.32E-14	1.32E-14	1.32E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	4.99E-11	4.99E-11	4.99E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	4.26E-09	4.26E-09	4.26E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	2.16E-06	2.16E-06	2.16E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	5.21E-06	5.21E-06	5.21E-06	3.13E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	1.33E-08	1.33E-08	1.33E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02
la138	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03
sb139	1.14E-15	1.14E-15	1.14E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	2.73E-12	2.73E-12	2.73E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	8.95E-10	8.95E-10	8.95E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	8.12E-08	8.12E-08	8.12E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	1.42E-06	1.42E-06	1.42E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	1.32E-05	1.32E-05	1.32E-05	1.12E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02
ce139	4.10E-10	4.10E-10	4.10E-10	4.08E-10	2.61E-10	6.52E-11	1.04E-11	4.15E-14	4.20E-18
pr139	2.59E-15	2.59E-15	2.59E-15	5.95E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	6.75E-13	6.75E-13	6.75E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	7.64E-11	7.64E-11	7.64E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	2.04E-08	2.04E-08	2.04E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	1.50E-07	1.50E-07	1.50E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	2.86E-03	2.86E-03	2.86E-03	2.71E-03	2.15E-05	6.85E-12	1.64E-20	.00E+00	.00E+00
la140	3.77E-04	3.77E-04	3.77E-04	3.73E-04	3.25E-06	1.04E-12	2.49E-21	.00E+00	.00E+00
ce140	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02
pr140	1.04E-13	1.04E-13	1.04E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	1.58E-15	1.58E-15	1.58E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	3.68E-12	3.68E-12	3.68E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	9.38E-10	9.38E-10	9.38E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	4.54E-08	4.54E-08	4.54E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	2.63E-06	2.63E-06	2.63E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	3.40E-05	3.40E-05	3.40E-05	5.29E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	6.77E-03	6.77E-03	6.77E-03	6.66E-03	9.98E-04	2.82E-06	1.17E-09	8.26E-20	1.00E-36
pr141	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02
nd141	5.68E-15	5.68E-15	5.68E-15	7.11E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	1.58E-15	1.58E-15	1.58E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	5.23E-13	5.23E-13	5.23E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	2.38E-10	2.38E-10	2.38E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	1.87E-09	1.87E-09	1.87E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	1.52E-06	1.52E-06	1.52E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	1.33E-05	1.33E-05	1.33E-05	2.62E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02
pr142	3.49E-07	3.49E-07	3.49E-07	1.46E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01
i143	6.82E-15	6.82E-15	6.82E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 20

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
xe143	2.45E-11	2.45E-11	2.45E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	1.07E-09	1.07E-09	1.07E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	3.13E-08	3.13E-08	3.13E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	2.07E-06	2.07E-06	2.07E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	2.91E-04	2.91E-04	2.91E-04	1.77E-04	5.79E-24	.00E+00	.00E+00	.00E+00	.00E+00
pr143	2.87E-03	2.87E-03	2.87E-03	2.84E-03	3.21E-05	2.50E-11	1.96E-19	.00E+00	.00E+00
nd143	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02
i144	8.66E-17	8.66E-17	8.66E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	4.49E-12	4.49E-12	4.49E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	1.57E-10	1.57E-10	1.57E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	2.06E-08	2.06E-08	2.06E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	9.11E-08	9.11E-08	9.11E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	5.57E-02	5.57E-02	5.57E-02	5.55E-02	4.47E-02	2.29E-02	9.41E-03	6.55E-04	7.71E-06
pr144	2.34E-06	2.34E-06	2.34E-06	2.34E-06	1.88E-06	9.64E-07	3.97E-07	2.76E-08	3.25E-10
pr144m	1.37E-08	1.37E-08	1.37E-08	1.36E-08	1.10E-08	5.62E-09	2.31E-09	1.61E-10	1.89E-12
nd144	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02

i145	3.46E-18	3.46E-18	3.46E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	2.29E-13	2.29E-13	2.29E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	1.74E-11	1.74E-11	1.74E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	3.30E-09	3.30E-09	3.30E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	3.74E-08	3.74E-08	3.74E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	2.98E-07	2.98E-07	2.98E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	3.55E-05	3.55E-05	3.55E-05	2.23E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02
pm145	6.46E-10	6.46E-10	6.46E-10	6.46E-10	6.45E-10	6.37E-10	6.20E-10	5.57E-10	4.58E-10
sm145	3.04E-11	3.04E-11	3.04E-11	3.03E-11	2.53E-11	1.44E-11	6.86E-12	7.35E-13	1.78E-14
xe146	1.37E-14	1.37E-14	1.37E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	2.72E-12	2.72E-12	2.72E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	9.19E-10	9.19E-10	9.19E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	6.40E-09	6.40E-09	6.40E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	1.03E-06	1.03E-06	1.03E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	1.85E-06	1.85E-06	1.85E-06	4.73E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02
pm146	2.92E-10	2.92E-10	2.92E-10	2.92E-10	2.84E-10	2.58E-10	2.28E-10	1.56E-10	8.35E-11
sm146	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04
xe147	1.40E-17	1.40E-17	1.40E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	4.52E-14	4.52E-14	4.52E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	3.30E-11	3.30E-11	3.30E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	1.76E-09	1.76E-09	1.76E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	5.33E-08	5.33E-08	5.33E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	8.01E-07	8.01E-07	8.01E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	9.32E-04	9.32E-04	9.32E-04	8.76E-04	3.18E-06	9.05E-14	8.77E-24	.00E+00	.00E+00
pm147	8.14E-02	8.14E-02	8.14E-02	8.14E-02	7.71E-02	6.32E-02	4.85E-02	2.20E-02	5.86E-03
sm147	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02
cs148	2.99E-15	2.99E-15	2.99E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	4.37E-12	4.37E-12	4.37E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	1.23E-10	1.23E-10	1.23E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	3.73E-08	3.73E-08	3.73E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	1.01E-07	1.01E-07	1.01E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02
pm148	6.26E-09	6.26E-09	6.26E-09	5.53E-09	6.63E-11	6.53E-13	1.42E-15	1.46E-23	6.38E-37
pm148m	4.36E-08	4.36E-08	4.36E-08	4.29E-08	9.63E-09	9.49E-11	2.06E-13	2.12E-21	1.03E-34

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 21

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sm148	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00
cs149	2.60E-17	2.60E-17	2.60E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	4.56E-13	4.56E-13	4.56E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	7.00E-11	7.00E-11	7.00E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	1.75E-09	1.75E-09	1.75E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	6.46E-08	6.46E-08	6.46E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	3.04E-06	3.04E-06	3.04E-06	2.02E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	9.37E-05	9.37E-05	9.37E-05	7.08E-05	5.46E-17	.00E+00	.00E+00	.00E+00	.00E+00
sm149	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00
eu149	1.64E-13	1.64E-13	1.64E-13	1.63E-13	8.39E-14	1.08E-14	7.11E-16	2.03E-19	2.51E-25
cs150	1.70E-18	1.70E-18	1.70E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	4.86E-14	4.86E-14	4.86E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	2.31E-12	2.31E-12	2.31E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	5.25E-10	5.25E-10	5.25E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	1.67E-09	1.67E-09	1.67E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01
pm150	6.35E-10	6.35E-10	6.35E-10	1.28E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01
eu150	2.82E-08	2.82E-08	2.82E-08	2.82E-08	2.81E-08	2.76E-08	2.71E-08	2.56E-08	2.32E-08

ba151	1.54E-16	1.54E-16	1.54E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	3.62E-13	3.62E-13	3.62E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	3.20E-11	3.20E-11	3.20E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	2.51E-09	2.51E-09	2.51E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	1.56E-07	1.56E-07	1.56E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	2.15E-05	2.15E-05	2.15E-05	1.21E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	6.13E-01	6.13E-01	6.13E-01	6.13E-01	6.11E-01	6.08E-01	6.03E-01	5.89E-01	5.67E-01
eu151	2.77E+01	2.77E+01	2.77E+01	2.77E+01	2.77E+01	2.77E+01	2.77E+01	2.77E+01	2.77E+01
ba152	1.46E-18	1.46E-18	1.46E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	2.82E-15	2.82E-15	2.82E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	3.32E-11	3.32E-11	3.32E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	2.95E-10	2.95E-10	2.95E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	9.13E-08	9.13E-08	9.13E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	3.37E-08	3.37E-08	3.37E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	1.47E-09	1.47E-09	1.47E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01
eu152	3.64E-02	3.64E-02	3.64E-02	3.64E-02	3.60E-02	3.46E-02	3.28E-02	2.81E-02	2.17E-02
eu152m	1.58E-06	1.58E-06	1.58E-06	2.64E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	7.10E+00	7.10E+00	7.10E+00	7.10E+00	7.10E+00	7.10E+00	7.10E+00	7.10E+00	7.10E+00
la153	1.04E-15	1.04E-15	1.04E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	1.43E-12	1.43E-12	1.43E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	6.87E-11	6.87E-11	6.87E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	5.02E-09	5.02E-09	5.02E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	2.80E-08	2.80E-08	2.80E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	1.68E-05	1.68E-05	1.68E-05	1.17E-05	1.50E-19	.00E+00	.00E+00	.00E+00	.00E+00
eu153	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01
gd153	1.77E-05	1.77E-05	1.77E-05	1.76E-05	1.36E-05	6.19E-06	2.17E-06	9.35E-08	4.96E-10
la154	1.20E-17	1.20E-17	1.20E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	1.74E-13	1.74E-13	1.74E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	2.48E-12	2.48E-12	2.48E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	1.22E-09	1.22E-09	1.22E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	3.83E-09	3.83E-09	3.83E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	1.06E-09	1.06E-09	1.06E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 22

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sm154	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00
eu154	1.53E-03	1.53E-03	1.53E-03	1.53E-03	1.50E-03	1.41E-03	1.30E-03	1.02E-03	6.84E-04
gd154	5.95E-01	5.95E-01	5.95E-01	5.95E-01	5.95E-01	5.95E-01	5.96E-01	5.96E-01	5.96E-01
la155	6.12E-20	6.12E-20	6.12E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	3.65E-15	3.65E-15	3.65E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	4.77E-13	4.77E-13	4.77E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	1.66E-10	1.66E-10	1.66E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	9.55E-10	9.55E-10	9.55E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	3.05E-08	3.05E-08	3.05E-08	1.15E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	3.36E-03	3.36E-03	3.36E-03	3.36E-03	3.24E-03	2.90E-03	2.50E-03	1.60E-03	7.65E-04
gd155m	1.75E-17	1.75E-17	1.75E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	8.59E-01	8.59E-01	8.59E-01	8.59E-01	8.59E-01	8.59E-01	8.60E-01	8.61E-01	8.61E-01
ce156	3.11E-16	3.11E-16	3.11E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	1.89E-14	1.89E-14	1.89E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	4.95E-11	4.95E-11	4.95E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	1.05E-10	1.05E-10	1.05E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	4.05E-07	4.05E-07	4.05E-07	6.90E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	1.59E-05	1.59E-05	1.59E-05	1.55E-05	2.67E-07	9.35E-13	5.37E-20	.00E+00	.00E+00
gd156	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00
ce157	5.31E-18	5.31E-18	5.31E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	2.67E-15	2.67E-15	2.67E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	1.26E-12	1.26E-12	1.26E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	1.83E-10	1.83E-10	1.83E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	3.12E-09	3.12E-09	3.12E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	3.66E-07	3.66E-07	3.66E-07	1.23E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02
pr158	6.11E-17	6.11E-17	6.11E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	2.11E-13	2.11E-13	2.11E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	2.62E-12	2.62E-12	2.62E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	1.01E-09	1.01E-09	1.01E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	9.49E-09	9.49E-09	9.49E-09	3.83E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00
pr159	2.75E-18	2.75E-18	2.75E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	4.23E-15	4.23E-15	4.23E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	3.85E-13	3.85E-13	3.85E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	1.72E-10	1.72E-10	1.72E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	1.65E-09	1.65E-09	1.65E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	1.04E-07	1.04E-07	1.04E-07	4.33E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01
nd160	3.30E-16	3.30E-16	3.30E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	9.75E-15	9.75E-15	9.75E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	2.12E-11	2.12E-11	2.12E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	2.59E-11	2.59E-11	2.59E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02
tb160	4.46E-08	4.46E-08	4.46E-08	4.42E-08	1.88E-08	1.35E-09	4.06E-11	1.11E-15	2.77E-23
dy160	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04
nd161	5.29E-18	5.29E-18	5.29E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	1.18E-15	1.18E-15	1.18E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	2.52E-13	2.52E-13	2.52E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	8.59E-12	8.59E-12	8.59E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	6.50E-11	6.50E-11	6.50E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	1.78E-07	1.78E-07	1.78E-07	1.61E-07	2.11E-11	2.07E-23	2.41E-39	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 23

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
dy161	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02
pm162	3.14E-17	3.14E-17	3.14E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	4.34E-14	4.34E-14	4.34E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	8.46E-12	8.46E-12	8.46E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	6.62E-11	6.62E-11	6.62E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	6.24E-11	6.24E-11	6.24E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	2.15E-11	2.15E-11	2.15E-11	1.24E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02
sm163	8.19E-16	8.19E-16	8.19E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	7.55E-14	7.55E-14	7.55E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	4.32E-12	4.32E-12	4.32E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	6.35E-11	6.35E-11	6.35E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03
sm164	6.64E-17	6.64E-17	6.64E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	1.75E-15	1.75E-15	1.75E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	1.80E-11	1.80E-11	1.80E-11	1.84E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	3.57E-12	3.57E-12	3.57E-12	2.95E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03
sm165	1.15E-18	1.15E-18	1.15E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	1.78E-16	1.78E-16	1.78E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	1.30E-13	1.30E-13	1.30E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	8.91E-13	8.91E-13	8.91E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	9.63E-11	9.63E-11	9.63E-11	7.86E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	6.76E-13	6.76E-13	6.76E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03
dy166	3.66E-10	3.66E-10	3.66E-10	2.98E-10	3.95E-18	.00E+00	.00E+00	.00E+00	.00E+00
ho166	1.28E-10	1.28E-10	1.28E-10	1.19E-10	1.93E-18	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	6.34E-07	6.34E-07	6.34E-07	6.34E-07	6.34E-07	6.34E-07	6.34E-07	6.32E-07	6.31E-07
er166	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04
er167	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07
er167m	9.28E-20	9.28E-20	9.28E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	1.77E-12	1.77E-12	1.77E-12	1.64E-12	2.32E-15	3.55E-24	7.15E-36	.00E+00	.00E+00
tm169	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07
tm170	1.50E-13	1.50E-13	1.50E-13	1.49E-13	9.23E-14	2.09E-14	2.92E-15	7.95E-18	4.22E-22
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09
er171	8.24E-14	8.24E-14	8.24E-14	9.02E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	1.88E-10	1.88E-10	1.88E-10	1.88E-10	1.72E-10	1.31E-10	9.16E-11	3.10E-11	5.10E-12
yb171	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.96E-07	3.96E-07	3.96E-07
er172	3.31E-13	3.31E-13	3.31E-13	2.36E-13	2.15E-26	.00E+00	.00E+00	.00E+00	.00E+00
tm172	4.48E-13	4.48E-13	4.48E-13	4.28E-13	1.15E-22	.00E+00	.00E+00	.00E+00	.00E+00
yb172	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07
total	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 24

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
h 3	3.81E-01	3.81E-01	3.81E-01	3.81E-01	3.76E-01	3.60E-01	3.40E-01	2.88E-01	2.17E-01
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06
c 14	3.08E-05	3.08E-05	3.08E-05	3.08E-05	3.08E-05	3.08E-05	3.08E-05	3.08E-05	3.07E-05
ni 66	1.50E-07	1.50E-07	1.50E-07	1.11E-07	1.87E-19	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	1.51E-07	1.51E-07	1.51E-07	1.11E-07	1.87E-19	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	2.29E-08	2.29E-08	2.29E-08	1.75E-08	6.97E-19	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	5.17E-08	5.17E-08	5.17E-08	1.34E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	4.19E-08	4.19E-08	4.19E-08	1.25E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	1.57E-09	1.57E-09	1.57E-09	4.81E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	2.70E-06	2.70E-06	2.70E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	1.15E-05	1.15E-05	1.15E-05	1.73E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	1.91E-11	1.91E-11	1.91E-11	1.79E-11	8.14E-14	4.62E-21	1.12E-30	.00E+00	.00E+00
ge 71m	9.53E-12	9.53E-12	9.53E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	7.19E-06	7.19E-06	7.19E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	3.85E-04	3.85E-04	3.85E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	9.31E-04	9.31E-04	9.31E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	1.14E-03	1.14E-03	1.14E-03	8.00E-04	1.19E-17	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	1.15E-03	1.15E-03	1.15E-03	9.96E-04	1.71E-17	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	4.36E-06	4.36E-06	4.36E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	5.18E-04	5.18E-04	5.18E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	2.65E-03	2.65E-03	2.65E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	4.24E-03	4.24E-03	4.24E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	4.29E-03	4.29E-03	4.29E-03	1.40E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	4.24E-03	4.24E-03	4.24E-03	1.38E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	8.96E-07	8.96E-07	8.96E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	3.84E-04	3.84E-04	3.84E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	3.91E-03	3.91E-03	3.91E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	1.22E-02	1.22E-02	1.22E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	3.58E-03	3.58E-03	3.58E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	1.69E-07	1.69E-07	1.69E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	1.79E-04	1.79E-04	1.79E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	5.77E-03	5.77E-03	5.77E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	3.31E-02	3.31E-02	3.31E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	3.87E-02	3.87E-02	3.87E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	3.89E-02	3.89E-02	3.89E-02	2.32E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	2.01E-03	2.01E-03	2.01E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	6.77E-05	6.77E-05	6.77E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	5.15E-03	5.15E-03	5.15E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 25

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
zn 76	8.47E-02	8.47E-02	8.47E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	1.19E-01	1.19E-01	1.19E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	4.41E-05	4.41E-05	4.41E-05	2.34E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	1.10E-05	1.10E-05	1.10E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	2.67E-03	2.67E-03	2.67E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	9.96E-02	9.96E-02	9.96E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	2.34E-01	2.34E-01	2.34E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	8.54E-02	8.54E-02	8.54E-02	1.96E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	2.39E-01	2.39E-01	2.39E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	2.74E-01	2.74E-01	2.74E-01	1.94E-01	5.58E-18	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	8.79E-04	8.79E-04	8.79E-04	6.20E-04	1.79E-20	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	1.67E-06	1.67E-06	1.67E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	8.68E-04	8.68E-04	8.68E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	1.15E-01	1.15E-01	1.15E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	4.75E-01	4.75E-01	4.75E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	7.40E-01	7.40E-01	7.40E-01	8.78E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	7.47E-01	7.47E-01	7.47E-01	1.27E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	1.75E-04	1.75E-04	1.75E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	5.63E-02	5.63E-02	5.63E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	5.92E-01	5.92E-01	5.92E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	1.39E+00	1.39E+00	1.39E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	1.49E+00	1.49E+00	1.49E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02
se 79m	1.47E+00	1.47E+00	1.47E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	2.13E-07	2.13E-07	2.13E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	6.14E-12	6.14E-12	6.14E-12	3.82E-12	1.69E-30	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	1.49E-05	1.49E-05	1.49E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	1.52E-02	1.52E-02	1.52E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	3.73E-01	3.73E-01	3.73E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	3.86E+00	3.86E+00	3.86E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	4.27E+00	4.27E+00	4.27E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	4.36E-05	4.36E-05	4.36E-05	3.68E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	1.48E-05	1.48E-05	1.48E-05	3.43E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	1.29E-06	1.29E-06	1.29E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	2.98E-03	2.98E-03	2.98E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	2.43E-01	2.43E-01	2.43E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	4.12E+00	4.12E+00	4.12E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	6.06E+00	6.06E+00	6.06E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	6.33E+00	6.33E+00	6.33E+00	1.66E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	4.18E-01	4.18E-01	4.18E-01	1.13E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	5.88E-09	5.88E-09	5.88E-09	5.88E-09	5.88E-09	5.88E-09	5.88E-09	5.88E-09	5.88E-09
kr 81m	4.65E-08	4.65E-08	4.65E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	8.83E-04	8.83E-04	8.83E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	2.14E-01	2.14E-01	2.14E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 26

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
ge 82	4.24E+00	4.24E+00	4.24E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	6.80E+00	6.80E+00	6.80E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	2.56E+00	2.56E+00	2.56E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	1.75E-02	1.75E-02	1.75E-02	1.10E-02	6.72E-21	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	7.96E-03	7.96E-03	7.96E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	2.43E-05	2.43E-05	2.43E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	1.47E-02	1.47E-02	1.47E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	1.72E+00	1.72E+00	1.72E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	1.11E+01	1.11E+01	1.11E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	7.75E+00	7.75E+00	7.75E+00	2.84E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	8.79E+00	8.79E+00	8.79E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	1.71E+01	1.71E+01	1.71E+01	1.82E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	1.71E+01	1.71E+01	1.71E+01	7.85E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	2.68E-01	2.68E-01	2.68E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	1.02E+00	1.02E+00	1.02E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	7.87E+00	7.87E+00	7.87E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	3.22E+01	3.22E+01	3.22E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	3.30E+01	3.30E+01	3.30E+01	8.55E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	7.99E-01	7.99E-01	7.99E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	1.68E-04	1.68E-04	1.68E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	1.63E-01	1.63E-01	1.63E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	4.91E+00	4.91E+00	4.91E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	1.61E+01	1.61E+01	1.61E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	1.43E+01	1.43E+01	1.43E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	3.84E+01	3.84E+01	3.84E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	8.31E+00	8.31E+00	8.31E+00	8.31E+00	8.18E+00	7.79E+00	7.30E+00	6.02E+00	4.35E+00
kr 85m	3.83E+01	3.83E+01	3.83E+01	9.47E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	3.26E-02	3.26E-02	3.26E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	2.90E+00	2.90E+00	2.90E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	3.99E+01	3.99E+01	3.99E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	4.82E+01	4.82E+01	4.82E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	8.30E+00	8.30E+00	8.30E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	4.52E-03	4.52E-03	4.52E-03	4.35E-03	1.59E-04	5.68E-09	7.14E-15	2.28E-32	.00E+00
rb 86m	3.24E-04	3.24E-04	3.24E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	5.74E-01	5.74E-01	5.74E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	1.99E+00	1.99E+00	1.99E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	2.35E+01	2.35E+01	2.35E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	6.26E+01	6.26E+01	6.26E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	7.82E+01	7.82E+01	7.82E+01	1.65E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	3.24E-05	3.24E-05	3.24E-05	8.71E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	7.61E-04	7.61E-04	7.61E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	9.56E-01	9.56E-01	9.56E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	1.16E+01	1.16E+01	1.16E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 27

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
br 88	6.29E+01	6.29E+01	6.29E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	1.11E+02	1.11E+02	1.11E+02	3.15E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	1.13E+02	1.13E+02	1.13E+02	3.52E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	7.03E-03	7.03E-03	7.03E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	3.95E+00	3.95E+00	3.95E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	4.16E+01	4.16E+01	4.16E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	1.42E+02	1.42E+02	1.42E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	1.50E+02	1.50E+02	1.50E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	1.51E+02	1.51E+02	1.51E+02	1.49E+02	4.40E+01	1.01E+00	6.75E-03	2.02E-09	2.69E-20
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	1.65E-02	1.65E-02	1.65E-02	1.39E-02	4.09E-03	9.39E-05	6.28E-07	1.88E-13	2.51E-24
as 90	5.00E-05	5.00E-05	5.00E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	8.06E-01	8.06E-01	8.06E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	2.16E+01	2.16E+01	2.16E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	1.55E+02	1.55E+02	1.55E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	1.41E+02	1.41E+02	1.41E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	4.07E+01	4.07E+01	4.07E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	1.82E+02	1.82E+02	1.82E+02	1.82E+02	1.81E+02	1.78E+02	1.74E+02	1.61E+02	1.43E+02
y 90	1.82E+02	1.82E+02	1.82E+02	1.82E+02	1.81E+02	1.78E+02	1.74E+02	1.61E+02	1.43E+02
y 90m	3.26E-05	3.26E-05	3.26E-05	1.77E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	6.33E-02	6.33E-02	6.33E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	7.71E+00	7.71E+00	7.71E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	1.05E+02	1.05E+02	1.05E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	1.77E+02	1.77E+02	1.77E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	1.86E+02	1.86E+02	1.86E+02	3.24E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	1.86E+02	1.86E+02	1.86E+02	1.85E+02	6.44E+01	2.47E+00	3.26E-02	7.51E-08	3.01E-17
y 91m	1.08E+02	1.08E+02	1.08E+02	2.06E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	1.60E-10	1.60E-10	1.60E-10	1.60E-10	1.60E-10	1.60E-10	1.60E-10	1.59E-10	1.59E-10
se 92	4.16E-03	4.16E-03	4.16E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	1.18E+00	1.18E+00	1.18E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	5.39E+01	5.39E+01	5.39E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	1.53E+02	1.53E+02	1.53E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	1.87E+02	1.87E+02	1.87E+02	4.04E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	1.89E+02	1.89E+02	1.89E+02	5.96E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12
se 93	1.90E-05	1.90E-05	1.90E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	1.45E-01	1.45E-01	1.45E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	1.71E+01	1.71E+01	1.71E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	1.16E+02	1.16E+02	1.16E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	2.00E+02	2.00E+02	2.00E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	1.36E+02	1.36E+02	1.36E+02	2.64E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01
br 94	8.57E-03	8.57E-03	8.57E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	7.34E+00	7.34E+00	7.34E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	5.77E+01	5.77E+01	5.77E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 28

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sr 94	1.94E+02	1.94E+02	1.94E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	2.07E+02	2.07E+02	2.07E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	2.74E-05	2.74E-05	2.74E-05	2.74E-05	2.74E-05	2.74E-05	2.74E-05	2.74E-05	2.74E-05
nb 94m	1.03E-04	1.03E-04	1.03E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	7.14E-05	7.14E-05	7.14E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	3.60E-01	3.60E-01	3.60E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	2.69E+01	2.69E+01	2.69E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	1.74E+02	1.74E+02	1.74E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	2.09E+02	2.09E+02	2.09E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	2.12E+02	2.12E+02	2.12E+02	2.09E+02	7.99E+01	4.05E+00	7.77E-02	5.47E-07	1.41E-15
nb 95	2.11E+02	2.11E+02	2.11E+02	2.11E+02	1.33E+02	8.75E+00	1.76E-01	1.20E-06	3.11E-15
nb 95m	2.35E+00	2.35E+00	2.35E+00	2.35E+00	9.39E-01	4.77E-02	9.14E-04	6.43E-09	1.66E-17
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	1.68E-05	1.68E-05	1.68E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	7.20E-02	7.20E-02	7.20E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	6.79E+00	6.79E+00	6.79E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	1.26E+02	1.26E+02	1.26E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	1.97E+02	1.97E+02	1.97E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	2.91E-02	2.91E-02	2.91E-02	1.43E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	6.67E-04	6.67E-04	6.67E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	2.39E+00	2.39E+00	2.39E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	6.53E+01	6.53E+01	6.53E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	1.61E+02	1.61E+02	1.61E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	1.87E+02	1.87E+02	1.87E+02	7.01E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	1.88E+02	1.88E+02	1.88E+02	7.04E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	1.78E+02	1.78E+02	1.78E+02	6.65E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	2.15E-04	2.15E-04	2.15E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	1.12E-01	1.12E-01	1.12E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	2.34E+01	2.34E+01	2.34E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	1.18E+02	1.18E+02	1.18E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	1.93E+02	1.93E+02	1.93E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	1.94E+02	1.94E+02	1.94E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	9.09E-01	9.09E-01	9.09E-01	3.22E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	7.20E-08	7.20E-08	7.20E-08	7.20E-08	7.20E-08	7.20E-08	7.20E-08	7.20E-08	7.20E-08
rb 99	2.60E-03	2.60E-03	2.60E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	1.13E+01	1.13E+01	1.13E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	7.72E+01	7.72E+01	7.72E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	1.88E+02	1.88E+02	1.88E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	1.22E+02	1.22E+02	1.22E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	8.15E+01	8.15E+01	8.15E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	2.06E+02	2.06E+02	2.06E+02	1.60E+02	2.84E-08	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.62E+00
tc 99m	1.81E+02	1.81E+02	1.81E+02	1.54E+02	2.75E-08	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	6.95E-04	6.95E-04	6.95E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	7.35E-01	7.35E-01	7.35E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	1.91E+01	1.91E+01	1.91E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 29

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
zr100	1.93E+02	1.93E+02	1.93E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	2.02E+02	2.02E+02	2.02E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	9.00E+00	9.00E+00	9.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	1.76E+00	1.76E+00	1.76E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	5.00E-06	5.00E-06	5.00E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	1.38E-01	1.38E-01	1.38E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	1.31E+01	1.31E+01	1.31E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	1.04E+02	1.04E+02	1.04E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	1.69E+02	1.69E+02	1.69E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	1.75E+02	1.75E+02	1.75E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	1.75E+02	1.75E+02	1.75E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	3.09E-02	3.09E-02	3.09E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	7.89E+00	7.89E+00	7.89E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	7.77E+01	7.77E+01	7.77E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	1.36E+02	1.36E+02	1.36E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	1.51E+02	1.51E+02	1.51E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	1.51E+02	1.51E+02	1.51E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	9.63E-02	9.63E-02	9.63E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	1.61E-05	1.61E-05	1.61E-05	1.61E-05	1.52E-05	1.27E-05	1.00E-05	4.88E-06	1.48E-06
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	9.32E-05	9.32E-05	9.32E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	2.43E+00	2.43E+00	2.43E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	2.26E+01	2.26E+01	2.26E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	8.37E+01	8.37E+01	8.37E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	1.17E+02	1.17E+02	1.17E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	1.19E+02	1.19E+02	1.19E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	1.19E+02	1.19E+02	1.19E+02	1.17E+02	2.44E+01	1.89E-01	2.99E-04	1.19E-12	1.18E-26
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	1.19E+02	1.19E+02	1.19E+02	1.17E+02	2.43E+01	1.89E-01	2.99E-04	1.18E-12	1.17E-26
sr104	2.90E-05	2.90E-05	2.90E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	2.01E-02	2.01E-02	2.01E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	5.01E+00	5.01E+00	5.01E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	3.07E+01	3.07E+01	3.07E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	7.64E+01	7.64E+01	7.64E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	7.94E+01	7.94E+01	7.94E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	4.81E+00	4.81E+00	4.81E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	3.51E-01	3.51E-01	3.51E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	1.92E-04	1.92E-04	1.92E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	2.87E+00	2.87E+00	2.87E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	1.12E+01	1.12E+01	1.12E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	4.61E+01	4.61E+01	4.61E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	5.11E+01	5.11E+01	5.11E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	5.14E+01	5.14E+01	5.14E+01	1.25E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	5.14E+01	5.14E+01	5.14E+01	3.67E+01	2.41E-17	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	1.46E+01	1.46E+01	1.46E+01	3.56E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 30

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
y106	3.23E-06	3.23E-06	3.23E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	3.48E-02	3.48E-02	3.48E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	1.15E+00	1.15E+00	1.15E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	2.04E+01	2.04E+01	2.04E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	2.73E+01	2.73E+01	2.73E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	2.95E+01	2.95E+01	2.95E+01	2.94E+01	2.49E+01	1.49E+01	7.55E+00	9.78E-01	3.24E-02
rh106	2.95E+01	2.95E+01	2.95E+01	2.94E+01	2.49E+01	1.49E+01	7.55E+00	9.78E-01	3.24E-02
rh106m	1.12E-03	1.12E-03	1.12E-03	5.16E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	4.74E-10	4.74E-10	4.74E-10	4.11E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	2.92E-08	2.92E-08	2.92E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	3.28E-04	3.28E-04	3.28E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	1.79E-01	1.79E-01	1.79E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	6.63E+00	6.63E+00	6.63E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	1.41E+01	1.41E+01	1.41E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	1.73E+01	1.73E+01	1.73E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	1.73E+01	1.73E+01	1.73E+01	2.24E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02
pd107m	1.85E-03	1.85E-03	1.85E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	1.28E-05	1.28E-05	1.28E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	4.39E-03	4.39E-03	4.39E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	6.25E-01	6.25E-01	6.25E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	4.08E+00	4.08E+00	4.08E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	9.89E+00	9.89E+00	9.89E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	1.01E+01	1.01E+01	1.01E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	1.77E-01	1.77E-01	1.77E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	3.36E-05	3.36E-05	3.36E-05	2.88E-08	2.88E-08	2.87E-08	2.85E-08	2.81E-08	2.73E-08
ag108m	3.31E-07	3.31E-07	3.31E-07	3.31E-07	3.31E-07	3.30E-07	3.28E-07	3.22E-07	3.14E-07
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	1.02E-08	1.02E-08	1.02E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	1.85E-04	1.85E-04	1.85E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	6.28E-02	6.28E-02	6.28E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	1.32E+00	1.32E+00	1.32E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	6.67E+00	6.67E+00	6.67E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	7.86E+00	7.86E+00	7.86E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	3.93E+00	3.93E+00	3.93E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	7.94E+00	7.94E+00	7.94E+00	2.37E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	2.33E-02	2.33E-02	2.33E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	7.94E+00	7.94E+00	7.94E+00	2.37E+00	3.68E-09	2.44E-09	1.41E-09	2.73E-10	1.77E-11
cd109	4.21E-09	4.21E-09	4.21E-09	4.21E-09	3.68E-09	2.44E-09	1.41E-09	2.73E-10	1.77E-11
nb110	8.54E-06	8.54E-06	8.54E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	7.60E-03	7.60E-03	7.60E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	2.10E-01	2.10E-01	2.10E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	2.26E+00	2.26E+00	2.26E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	4.07E-01	4.07E-01	4.07E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	2.67E+00	2.67E+00	2.67E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	1.78E-01	1.78E-01	1.78E-01	9.68E-05	7.57E-05	3.52E-05	1.28E-05	6.11E-07	3.85E-09
ag110m	7.14E-03	7.14E-03	7.14E-03	7.12E-03	5.56E-03	2.59E-03	9.40E-04	4.49E-05	2.83E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 31

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	7.45E-08	7.45E-08	7.45E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	8.03E-04	8.03E-04	8.03E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	4.68E-02	4.68E-02	4.68E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	8.17E-01	8.17E-01	8.17E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	1.62E+00	1.62E+00	1.62E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	1.72E+00	1.72E+00	1.72E+00	2.92E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	7.66E-02	7.66E-02	7.66E-02	3.72E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	1.73E+00	1.73E+00	1.73E+00	1.58E+00	4.00E-04	3.02E-15	5.27E-30	.00E+00	.00E+00
ag111m	1.72E+00	1.72E+00	1.72E+00	3.63E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	4.51E-06	4.51E-06	4.51E-06	5.43E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	2.77E-09	2.77E-09	2.77E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	1.26E-04	1.26E-04	1.26E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	9.79E-03	9.79E-03	9.79E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	3.56E-01	3.56E-01	3.56E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	8.25E-01	8.25E-01	8.25E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	1.00E+00	1.00E+00	1.00E+00	4.55E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	1.01E+00	1.01E+00	1.01E+00	5.34E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	2.47E-06	2.47E-06	2.47E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	2.59E-03	2.59E-03	2.59E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	1.41E-01	1.41E-01	1.41E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	5.22E-01	5.22E-01	5.22E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	7.54E-01	7.54E-01	7.54E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	7.32E-01	7.32E-01	7.32E-01	3.32E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	1.45E-01	1.45E-01	1.45E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14
cd113m	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.24E-02	1.20E-02	1.14E-02	9.82E-03	7.68E-03
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	4.30E-10	4.30E-10	4.30E-10	1.89E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	1.27E-06	1.27E-06	1.27E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	4.11E-04	4.11E-04	4.11E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	5.51E-02	5.51E-02	5.51E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	2.95E-01	2.95E-01	2.95E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	6.47E-01	6.47E-01	6.47E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	6.65E-01	6.65E-01	6.65E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	3.03E-05	3.03E-05	3.03E-05	2.15E-05	6.19E-06	1.31E-07	7.90E-10	1.72E-16	1.36E-27
in114m	2.28E-05	2.28E-05	2.28E-05	2.25E-05	6.47E-06	1.37E-07	8.26E-10	1.80E-16	1.42E-27
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	5.48E-09	5.48E-09	5.48E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	1.30E-05	1.30E-05	1.30E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	1.19E-02	1.19E-02	1.19E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	1.34E-01	1.34E-01	1.34E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	4.48E-01	4.48E-01	4.48E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	3.48E-01	3.48E-01	3.48E-01	7.61E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	1.42E-01	1.42E-01	1.42E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	4.71E-01	4.71E-01	4.71E-01	3.46E-01	3.27E-13	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	2.05E-02	2.05E-02	2.05E-02	2.02E-02	5.05E-03	7.01E-05	2.40E-07	9.62E-15	4.52E-27
in115	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12
in115m	4.71E-01	4.71E-01	4.71E-01	3.77E-01	5.58E-07	7.74E-09	2.65E-11	1.06E-18	5.02E-31

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 32

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	5.64E-06	5.64E-06	5.64E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	3.95E-03	3.95E-03	3.95E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	7.72E-02	7.72E-02	7.72E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	5.81E-01	5.81E-01	5.81E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	6.44E-01	6.44E-01	6.44E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	6.13E-02	6.13E-02	6.13E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	4.24E-03	4.24E-03	4.24E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	1.59E-02	1.59E-02	1.59E-02	1.58E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	6.37E-08	6.37E-08	6.37E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	5.44E-04	5.44E-04	5.44E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	2.58E-02	2.58E-02	2.58E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	3.46E-01	3.46E-01	3.46E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	2.61E-01	2.61E-01	2.61E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	2.61E-01	2.61E-01	2.61E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	4.55E-01	4.55E-01	4.55E-01	5.73E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	9.72E-02	9.72E-02	9.72E-02	6.91E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	3.32E-01	3.32E-01	3.32E-01	2.13E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	4.15E-01	4.15E-01	4.15E-01	2.47E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	1.06E-03	1.06E-03	1.06E-03	1.03E-03	1.10E-05	8.88E-12	7.30E-20	.00E+00	.00E+00
tc118	1.89E-09	1.89E-09	1.89E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	7.82E-05	7.82E-05	7.82E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	5.11E-03	5.11E-03	5.11E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	1.57E-01	1.57E-01	1.57E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	2.91E-01	2.91E-01	2.91E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	2.07E-01	2.07E-01	2.07E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	4.88E-01	4.88E-01	4.88E-01	1.18E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	4.88E-01	4.88E-01	4.88E-01	1.18E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	3.74E-04	3.74E-04	3.74E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	1.04E-05	1.04E-05	1.04E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	2.01E-03	2.01E-03	2.01E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	1.06E-01	1.06E-01	1.06E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	3.74E-01	3.74E-01	3.74E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	3.68E-01	3.68E-01	3.68E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	1.58E-01	1.58E-01	1.58E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	2.06E-01	2.06E-01	2.06E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	3.31E-01	3.31E-01	3.31E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	1.95E-03	1.95E-03	1.95E-03	1.95E-03	1.58E-03	8.22E-04	3.47E-04	2.59E-05	3.45E-07
ru120	1.24E-06	1.24E-06	1.24E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	3.84E-04	3.84E-04	3.84E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	4.87E-02	4.87E-02	4.87E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	2.43E-01	2.43E-01	2.43E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	5.07E-01	5.07E-01	5.07E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	5.13E-01	5.13E-01	5.13E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	6.05E-03	6.05E-03	6.05E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	9.60E-05	9.60E-05	9.60E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 33

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
pd121	1.79E-02	1.79E-02	1.79E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	1.74E-01	1.74E-01	1.74E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	5.19E-01	5.19E-01	5.19E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	3.74E-02	3.74E-02	3.74E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	5.26E-01	5.26E-01	5.26E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	5.57E-01	5.57E-01	5.57E-01	3.04E-01	3.63E-03	3.59E-03	3.55E-03	3.42E-03	3.21E-03
sn121m	4.69E-03	4.69E-03	4.69E-03	4.69E-03	4.68E-03	4.63E-03	4.57E-03	4.40E-03	4.13E-03
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	1.05E-05	1.05E-05	1.05E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	5.70E-03	5.70E-03	5.70E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	9.14E-02	9.14E-02	9.14E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	5.65E-01	5.65E-01	5.65E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	6.12E-01	6.12E-01	6.12E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	4.67E-02	4.67E-02	4.67E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	9.32E-04	9.32E-04	9.32E-04	7.21E-04	8.63E-14	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	9.54E-05	9.54E-05	9.54E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	8.31E-07	8.31E-07	8.31E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	8.51E-04	8.51E-04	8.51E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	3.27E-02	3.27E-02	3.27E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	3.60E-01	3.60E-01	3.60E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	4.21E-01	4.21E-01	4.21E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	1.16E-01	1.16E-01	1.16E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	6.29E-02	6.29E-02	6.29E-02	6.25E-02	3.88E-02	8.85E-03	1.25E-03	3.49E-06	1.93E-10
sn123m	5.96E-01	5.96E-01	5.96E-01	9.20E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17
te123m	1.37E-07	1.37E-07	1.37E-07	1.37E-07	8.16E-08	1.66E-08	2.00E-09	3.50E-12	8.92E-17
pd124	5.10E-04	5.10E-04	5.10E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	3.00E-02	3.00E-02	3.00E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	6.30E-01	6.30E-01	6.30E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	1.04E+00	1.04E+00	1.04E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	1.34E-03	1.34E-03	1.34E-03	1.32E-03	4.75E-04	2.00E-05	2.98E-07	9.86E-13	7.27E-22
sb124m	2.40E-04	2.40E-04	2.40E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	1.08E-04	1.08E-04	1.08E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	1.19E-02	1.19E-02	1.19E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	3.77E-01	3.77E-01	3.77E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	5.48E-01	5.48E-01	5.48E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	3.98E-01	3.98E-01	3.98E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	3.63E-01	3.63E-01	3.63E-01	3.38E-01	5.62E-04	1.43E-12	5.61E-24	.00E+00	.00E+00
sn125m	9.36E-01	9.36E-01	9.36E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	1.30E+00	1.30E+00	1.30E+00	1.30E+00	1.23E+00	1.01E+00	7.86E-01	3.67E-01	1.03E-01
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	3.00E-01	3.00E-01	3.00E-01	3.00E-01	2.93E-01	2.47E-01	1.92E-01	8.96E-02	2.52E-02
pd126	2.40E-05	2.40E-05	2.40E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	5.17E-03	5.17E-03	5.17E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	4.54E-01	4.54E-01	4.54E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	1.22E+00	1.22E+00	1.22E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 34

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sb126	2.73E-02	2.73E-02	2.73E-02	2.67E-02	1.74E-02	1.73E-02	1.73E-02	1.73E-02	1.73E-02
sb126m	1.37E-01	1.37E-01	1.37E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	2.40E-03	2.40E-03	2.40E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	3.38E-01	3.38E-01	3.38E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	1.25E+00	1.25E+00	1.25E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	1.25E+00	1.25E+00	1.25E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	2.09E+00	2.09E+00	2.09E+00	7.59E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	3.10E+00	3.10E+00	3.10E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	5.48E+00	5.48E+00	5.48E+00	4.62E+00	5.06E-07	1.51E-28	.00E+00	.00E+00	.00E+00
te127	5.45E+00	5.45E+00	5.45E+00	5.08E+00	5.50E-01	9.55E-02	9.36E-03	8.82E-06	7.98E-11
te127m	9.59E-01	9.59E-01	9.59E-01	9.59E-01	5.61E-01	9.75E-02	9.56E-03	9.00E-06	8.14E-11
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	3.26E-10	3.26E-10	3.26E-10	3.19E-10	5.87E-11	3.11E-13	2.96E-16	2.57E-25	.00E+00
ag128	9.90E-04	9.90E-04	9.90E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	3.01E-01	3.01E-01	3.01E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	3.15E+00	3.15E+00	3.15E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	1.24E+01	1.24E+01	1.24E+01	5.74E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	1.01E+00	1.01E+00	1.01E+00	1.69E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	1.28E+01	1.28E+01	1.28E+01	6.97E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	8.48E-03	8.48E-03	8.48E-03	3.78E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	1.28E-01	1.28E-01	1.28E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	3.45E+00	3.45E+00	3.45E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	1.04E+01	1.04E+01	1.04E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	1.31E+01	1.31E+01	1.31E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	2.79E+01	2.79E+01	2.79E+01	6.46E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	2.63E+01	2.63E+01	2.63E+01	4.01E+00	5.25E-01	1.80E-03	9.59E-07	1.46E-16	.00E+00
te129m	5.22E+00	5.22E+00	5.22E+00	5.14E+00	8.20E-01	2.80E-03	1.50E-06	2.28E-16	.00E+00
i129	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	1.07E-06	1.07E-06	1.07E-06	9.93E-07	9.63E-10	4.60E-19	2.05E-31	.00E+00	.00E+00
cd130	5.05E-02	5.05E-02	5.05E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	3.18E+00	3.18E+00	3.18E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	3.77E+01	3.77E+01	3.77E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	9.05E+00	9.05E+00	9.05E+00	9.60E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	4.95E+01	4.95E+01	4.95E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	1.24E-01	1.24E-01	1.24E-01	3.25E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	5.91E-02	5.91E-02	5.91E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	6.21E-03	6.21E-03	6.21E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	1.10E+00	1.10E+00	1.10E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	3.05E+01	3.05E+01	3.05E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	8.71E+01	8.71E+01	8.71E+01	1.25E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	8.88E+01	8.88E+01	8.88E+01	1.97E+00	7.25E-22	.00E+00	.00E+00	.00E+00	.00E+00
te131m	1.51E+01	1.51E+01	1.51E+01	8.74E+00	3.22E-21	.00E+00	.00E+00	.00E+00	.00E+00
i131	1.01E+02	1.01E+02	1.01E+02	9.38E+01	4.44E-02	2.20E-12	4.65E-26	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.72E-02	1.98E-09	1.14E-18	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 35

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cd132	6.99E-04	6.99E-04	6.99E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	2.74E-01	2.74E-01	2.74E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	2.16E+01	2.16E+01	2.16E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	4.66E+01	4.66E+01	4.66E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	5.00E+01	5.00E+01	5.00E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	1.48E+02	1.48E+02	1.48E+02	1.20E+02	7.18E-07	.00E+00	.00E+00	.00E+00	.00E+00
i132	1.50E+02	1.50E+02	1.50E+02	1.24E+02	7.40E-07	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	6.23E-05	6.23E-05	6.23E-05	5.60E-05	4.10E-09	6.68E-22	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	4.77E-03	4.77E-03	4.77E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	5.77E+00	5.77E+00	5.77E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	7.83E+01	7.83E+01	7.83E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	1.28E+02	1.28E+02	1.28E+02	3.65E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	1.07E+02	1.07E+02	1.07E+02	1.61E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	2.26E+02	2.26E+02	2.26E+02	1.05E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	1.44E+01	1.44E+01	1.44E+01	1.65E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	2.27E+02	2.27E+02	2.27E+02	2.18E+02	1.89E-03	2.98E-19	.00E+00	.00E+00	.00E+00
xe133m	6.72E+00	6.72E+00	6.72E+00	6.12E+00	4.71E-12	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	7.94E-09	7.94E-09	7.94E-09	7.94E-09	7.81E-09	7.43E-09	6.96E-09	5.71E-09	4.11E-09
in134	7.41E-04	7.41E-04	7.41E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	6.77E-01	6.77E-01	6.77E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	1.48E+01	1.48E+01	1.48E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	9.17E+00	9.17E+00	9.17E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	2.25E+02	2.25E+02	2.25E+02	9.60E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	2.59E+02	2.59E+02	2.59E+02	6.46E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	1.43E+01	1.43E+01	1.43E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	2.82E+00	2.82E+00	2.82E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	2.43E+00	2.43E+00	2.43E+00	2.43E+00	2.24E+00	1.74E+00	1.24E+00	4.52E-01	8.42E-02
cs134m	1.84E-01	1.84E-01	1.84E-01	6.08E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	5.11E-02	5.11E-02	5.11E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	5.37E+00	5.37E+00	5.37E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	1.09E+02	1.09E+02	1.09E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	2.13E+02	2.13E+02	2.13E+02	1.69E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	2.24E+02	2.24E+02	2.24E+02	8.13E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	4.10E+01	4.10E+01	4.10E+01	2.76E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01
cs135m	1.30E-02	1.30E-02	1.30E-02	8.62E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	8.51E-05	8.51E-05	8.51E-05	4.76E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	3.90E-03	3.90E-03	3.90E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	6.88E-01	6.88E-01	6.88E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	5.15E+01	5.15E+01	5.15E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	1.06E+02	1.06E+02	1.06E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	5.02E+01	5.02E+01	5.02E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	9.98E-01	9.98E-01	9.98E-01	9.47E-01	8.72E-03	4.41E-09	1.94E-17	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	1.12E-01	1.12E-01	1.12E-01	1.06E-01	9.76E-04	4.93E-10	2.18E-18	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 36

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sb137	1.57E+00	1.57E+00	1.57E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	1.54E+01	1.54E+01	1.54E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	1.08E+02	1.08E+02	1.08E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	2.06E+02	2.06E+02	2.06E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.13E+02	2.13E+02	2.13E+02	2.13E+02	2.12E+02	2.08E+02	2.03E+02	1.90E+02	1.69E+02
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	2.01E+02	2.01E+02	2.01E+02	2.01E+02	2.00E+02	1.96E+02	1.92E+02	1.79E+02	1.60E+02
sb138	6.23E-03	6.23E-03	6.23E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	2.91E+00	2.91E+00	2.91E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	5.37E+01	5.37E+01	5.37E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	2.09E+02	2.09E+02	2.09E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	2.20E+02	2.20E+02	2.20E+02	1.32E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	6.24E+00	6.24E+00	6.24E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11
sb139	4.23E-04	4.23E-04	4.23E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	3.82E-01	3.82E-01	3.82E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	3.16E+01	3.16E+01	3.16E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	1.66E+02	1.66E+02	1.66E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	2.08E+02	2.08E+02	2.08E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	2.11E+02	2.11E+02	2.11E+02	1.80E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	2.80E-06	2.80E-06	2.80E-06	2.79E-06	1.78E-06	4.45E-07	7.07E-08	2.84E-10	2.87E-14
pr139	1.32E-08	1.32E-08	1.32E-08	3.04E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	6.09E-02	6.09E-02	6.09E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	7.16E+00	7.16E+00	7.16E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	1.21E+02	1.21E+02	1.21E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	1.89E+02	1.89E+02	1.89E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	2.09E+02	2.09E+02	2.09E+02	1.98E+02	1.57E+00	5.01E-07	1.20E-15	.00E+00	.00E+00
la140	2.10E+02	2.10E+02	2.10E+02	2.07E+02	1.81E+00	5.77E-07	1.38E-15	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	4.13E-05	4.13E-05	4.13E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	4.65E-04	4.65E-04	4.65E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	6.40E-01	6.40E-01	6.40E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	4.34E+01	4.34E+01	4.34E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	1.46E+02	1.46E+02	1.46E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	1.92E+02	1.92E+02	1.92E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	1.93E+02	1.93E+02	1.93E+02	3.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	1.93E+02	1.93E+02	1.93E+02	1.90E+02	2.84E+01	8.03E-02	3.32E-05	2.36E-15	2.28E-32
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	5.08E-08	5.08E-08	5.08E-08	6.35E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	2.13E-04	2.13E-04	2.13E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	2.08E-01	2.08E-01	2.08E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	1.55E+01	1.55E+01	1.55E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	8.73E+01	8.73E+01	8.73E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	1.89E+02	1.89E+02	1.89E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	1.94E+02	1.94E+02	1.94E+02	3.81E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05
pr142	4.03E-01	4.03E-01	4.03E-01	1.69E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	1.34E-03	1.34E-03	1.34E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 37

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
xe143	2.01E+00	2.01E+00	2.01E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	4.75E+01	4.75E+01	4.75E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	1.71E+02	1.71E+02	1.71E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	1.92E+02	1.92E+02	1.92E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	1.93E+02	1.93E+02	1.93E+02	1.18E+02	3.85E-18	.00E+00	.00E+00	.00E+00	.00E+00
pr143	1.93E+02	1.93E+02	1.93E+02	1.91E+02	2.16E+00	1.69E-06	1.32E-14	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	4.65E-05	4.65E-05	4.65E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	3.20E-01	3.20E-01	3.20E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	1.20E+01	1.20E+01	1.20E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	1.42E+02	1.42E+02	1.42E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	1.75E+02	1.75E+02	1.75E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	1.77E+02	1.77E+02	1.77E+02	1.77E+02	1.42E+02	7.29E+01	3.00E+01	2.09E+00	2.45E-02
pr144	1.77E+02	1.77E+02	1.77E+02	1.77E+02	1.42E+02	7.29E+01	3.00E+01	2.09E+00	2.45E-02
pr144m	2.48E+00	2.48E+00	2.48E+00	2.47E+00	1.99E+00	1.02E+00	4.20E-01	2.92E-02	3.44E-04
nd144	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10
i145	1.39E-06	1.39E-06	1.39E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	1.98E-02	1.98E-02	1.98E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	2.28E+00	2.28E+00	2.28E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	5.96E+01	5.96E+01	5.96E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	1.18E+02	1.18E+02	1.18E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	1.28E+02	1.28E+02	1.28E+02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	1.28E+02	1.28E+02	1.28E+02	8.04E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	9.00E-08	9.00E-08	9.00E-08	9.00E-08	8.98E-08	8.87E-08	8.63E-08	7.76E-08	6.38E-08
sm145	8.06E-08	8.06E-08	8.06E-08	8.04E-08	6.71E-08	3.83E-08	1.82E-08	1.95E-09	4.71E-11
xe146	1.89E-03	1.89E-03	1.89E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	6.14E-01	6.14E-01	6.14E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	3.23E+01	3.23E+01	3.23E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	7.89E+01	7.89E+01	7.89E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	9.84E+01	9.84E+01	9.84E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	9.88E+01	9.88E+01	9.88E+01	2.52E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.26E-07	1.14E-07	1.01E-07	6.92E-08	3.70E-08
sm146	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09
xe147	5.40E-06	5.40E-06	5.40E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	6.36E-03	6.36E-03	6.36E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	3.62E+00	3.62E+00	3.62E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	3.07E+01	3.07E+01	3.07E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	7.26E+01	7.26E+01	7.26E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	7.54E+01	7.54E+01	7.54E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	7.55E+01	7.55E+01	7.55E+01	7.09E+01	2.57E-01	7.32E-09	7.10E-19	.00E+00	.00E+00
pm147	7.55E+01	7.55E+01	7.55E+01	7.55E+01	7.15E+01	5.86E+01	4.50E+01	2.04E+01	5.44E+00
sm147	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06
cs148	1.11E-03	1.11E-03	1.11E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	5.49E-01	5.49E-01	5.49E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	8.91E+00	8.91E+00	8.91E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	5.08E+01	5.08E+01	5.08E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	5.63E+01	5.63E+01	5.63E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	1.03E-03	1.03E-03	1.03E-03	9.09E-04	1.09E-05	1.07E-07	2.33E-10	2.40E-18	1.14E-31
pm148m	9.33E-04	9.33E-04	9.33E-04	9.17E-04	2.06E-04	2.03E-06	4.41E-09	4.54E-17	2.21E-30

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 38

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sm148	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13
cs149	8.07E-06	8.07E-06	8.07E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	4.97E-02	4.97E-02	4.97E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	2.20E+00	2.20E+00	2.20E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	2.55E+01	2.55E+01	2.55E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	3.61E+01	3.61E+01	3.61E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	3.71E+01	3.71E+01	3.71E+01	2.46E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	3.71E+01	3.71E+01	3.71E+01	2.81E+01	2.16E-11	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12
eu149	1.55E-09	1.55E-09	1.55E-09	1.53E-09	7.90E-10	1.02E-10	6.70E-12	1.91E-15	2.36E-21
cs150	1.03E-06	1.03E-06	1.03E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	3.80E-03	3.80E-03	3.80E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	2.86E-01	2.86E-01	2.86E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	9.88E+00	9.88E+00	9.88E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	2.04E+01	2.04E+01	2.04E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	4.96E-03	4.96E-03	4.96E-03	9.98E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	1.88E-06	1.88E-06	1.88E-06	1.88E-06	1.87E-06	1.84E-06	1.81E-06	1.70E-06	1.55E-06
ba151	3.47E-05	3.47E-05	3.47E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	3.77E-02	3.77E-02	3.77E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	2.34E+00	2.34E+00	2.34E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	9.92E+00	9.92E+00	9.92E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	1.56E+01	1.56E+01	1.56E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	1.57E+01	1.57E+01	1.57E+01	8.83E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	1.61E+01	1.61E+01	1.61E+01	1.61E+01	1.61E+01	1.60E+01	1.59E+01	1.55E+01	1.49E+01
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	2.57E-07	2.57E-07	2.57E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	7.36E-04	7.36E-04	7.36E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	3.22E-01	3.22E-01	3.22E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	3.23E+00	3.23E+00	3.23E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	9.92E+00	9.92E+00	9.92E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	1.02E+01	1.02E+01	1.02E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	2.42E-01	2.42E-01	2.42E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	6.43E+00	6.43E+00	6.43E+00	6.43E+00	6.35E+00	6.11E+00	5.80E+00	4.96E+00	3.82E+00
eu152m	3.49E+00	3.49E+00	3.49E+00	5.85E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10
la153	2.35E-04	2.35E-04	2.35E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	7.17E-02	7.17E-02	7.17E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	1.13E+00	1.13E+00	1.13E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	5.48E+00	5.48E+00	5.48E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	6.38E+00	6.38E+00	6.38E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	7.43E+00	7.43E+00	7.43E+00	5.20E+00	6.63E-14	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	6.24E-02	6.24E-02	6.24E-02	6.22E-02	4.82E-02	2.19E-02	7.67E-03	3.31E-04	1.75E-06
la154	5.91E-06	5.91E-06	5.91E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	6.31E-03	6.31E-03	6.31E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	1.71E-01	1.71E-01	1.71E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	2.24E+00	2.24E+00	2.24E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	2.72E+00	2.72E+00	2.72E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	4.82E-01	4.82E-01	4.82E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 39

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	4.15E-01	4.15E-01	4.15E-01	4.14E-01	4.06E-01	3.82E-01	3.53E-01	2.77E-01	1.85E-01
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	2.90E-08	2.90E-08	2.90E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	5.04E-04	5.04E-04	5.04E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	3.09E-02	3.09E-02	3.09E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	6.63E-01	6.63E-01	6.63E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	1.45E+00	1.45E+00	1.45E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	1.66E+00	1.66E+00	1.66E+00	6.26E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	1.66E+00	1.66E+00	1.66E+00	1.66E+00	1.60E+00	1.43E+00	1.23E+00	7.91E-01	3.77E-01
gd155m	4.11E-05	4.11E-05	4.11E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	3.77E-05	3.77E-05	3.77E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	3.60E-03	3.60E-03	3.60E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	1.83E-01	1.83E-01	1.83E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	5.79E-01	5.79E-01	5.79E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	8.66E-01	8.66E-01	8.66E-01	1.48E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	8.74E-01	8.74E-01	8.74E-01	8.53E-01	1.47E-02	5.15E-08	2.96E-15	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	1.78E-06	1.78E-06	1.78E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	5.05E-04	5.05E-04	5.05E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	3.65E-02	3.65E-02	3.65E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	2.14E-01	2.14E-01	2.14E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	4.63E-01	4.63E-01	4.63E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	4.81E-01	4.81E-01	4.81E-01	1.62E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	2.59E-05	2.59E-05	2.59E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	5.59E-03	5.59E-03	5.59E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	4.92E-02	4.92E-02	4.92E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	2.18E-01	2.18E-01	2.18E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	2.46E-01	2.46E-01	2.46E-01	9.92E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	1.08E-06	1.08E-06	1.08E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	4.68E-04	4.68E-04	4.68E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	9.11E-03	9.11E-03	9.11E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	7.52E-02	7.52E-02	7.52E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	1.08E-01	1.08E-01	1.08E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	1.11E-01	1.11E-01	1.11E-01	4.60E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	2.95E-05	2.95E-05	2.95E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	9.43E-04	9.43E-04	9.43E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	2.06E-02	2.06E-02	2.06E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	4.14E-02	4.14E-02	4.14E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	5.04E-04	5.04E-04	5.04E-04	4.99E-04	2.13E-04	1.52E-05	4.58E-07	1.26E-11	3.13E-19
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	1.19E-06	1.19E-06	1.19E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	1.05E-04	1.05E-04	1.05E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	3.69E-03	3.69E-03	3.69E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	1.43E-02	1.43E-02	1.43E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	2.08E-02	2.08E-02	2.08E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	2.09E-02	2.09E-02	2.09E-02	1.89E-02	2.48E-06	2.44E-18	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 40

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	6.75E-06	6.75E-06	6.75E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	5.74E-04	5.74E-04	5.74E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	3.63E-03	3.63E-03	3.63E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	9.15E-03	9.15E-03	9.15E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	9.34E-03	9.34E-03	9.34E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	1.87E-04	1.87E-04	1.87E-04	1.07E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	4.47E-05	4.47E-05	4.47E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	6.88E-04	6.88E-04	6.88E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	3.23E-03	3.23E-03	3.23E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	3.76E-03	3.76E-03	3.76E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	3.30E-06	3.30E-06	3.30E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	7.88E-05	7.88E-05	7.88E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	9.53E-04	9.53E-04	9.53E-04	9.72E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	1.37E-03	1.37E-03	1.37E-03	1.13E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	1.74E-07	1.74E-07	1.74E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	8.98E-06	8.98E-06	8.98E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	2.10E-04	2.10E-04	2.10E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	4.81E-04	4.81E-04	4.81E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	7.84E-04	7.84E-04	7.84E-04	6.40E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	6.13E-04	6.13E-04	6.13E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	8.47E-05	8.47E-05	8.47E-05	6.91E-05	9.13E-13	.00E+00	.00E+00	.00E+00	.00E+00
ho166	9.05E-05	9.05E-05	9.05E-05	8.37E-05	1.36E-12	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.13E-06
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	2.75E-09	2.75E-09	2.75E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	1.45E-07	1.45E-07	1.45E-07	1.35E-07	1.91E-10	2.92E-19	5.93E-31	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	8.96E-10	8.96E-10	8.96E-10	8.91E-10	5.51E-10	1.25E-10	1.75E-11	4.75E-14	2.52E-18
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	2.01E-07	2.01E-07	2.01E-07	2.20E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	2.05E-07	2.05E-07	2.05E-07	2.05E-07	1.88E-07	1.43E-07	9.98E-08	3.38E-08	5.56E-09
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	1.22E-07	1.22E-07	1.22E-07	8.72E-08	7.93E-21	.00E+00	.00E+00	.00E+00	.00E+00
tm172	1.28E-07	1.28E-07	1.28E-07	1.23E-07	3.29E-17	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	2.05E+04	2.05E+04	2.05E+04	4.79E+03	1.64E+03	1.06E+03	9.05E+02	7.56E+02	6.52E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 41

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
he 4	3.61E+01	3.61E+01	3.61E+01	3.62E+01	3.63E+01	3.66E+01	3.69E+01	3.71E+01	3.74E+01	3.77E+01	3.82E+01
tl206	5.79E-15	5.79E-15	5.79E-15	5.79E-15	5.80E-15	5.84E-15	5.87E-15	5.91E-15	5.95E-15	5.98E-15	6.06E-15
tl207	4.22E-10	4.22E-10	4.22E-10	4.22E-10	4.22E-10	4.23E-10	4.24E-10	4.26E-10	4.27E-10	4.29E-10	4.31E-10
tl208	1.39E-11	1.33E-11	1.26E-11	1.14E-11	9.37E-12	5.70E-12	3.47E-12	2.11E-12	1.29E-12	7.84E-13	2.92E-13
tl209	5.00E-12	5.01E-12	5.01E-12	5.02E-12	5.04E-12	5.08E-12	5.12E-12	5.16E-12	5.21E-12	5.25E-12	5.34E-12
pb206	1.58E+00	1.58E+00	1.59E+00	1.59E+00	1.60E+00	1.62E+00	1.64E+00	1.65E+00	1.67E+00	1.69E+00	1.73E+00
pb207	1.60E-01	1.60E-01	1.60E-01	1.60E-01	1.61E-01	1.63E-01	1.64E-01	1.66E-01	1.68E-01	1.69E-01	1.73E-01
pb208	2.50E-02	2.51E-02	2.51E-02	2.51E-02	2.52E-02	2.53E-02	2.54E-02	2.54E-02	2.55E-02	2.55E-02	2.55E-02
pb209	2.11E-08	2.11E-08	2.12E-08	2.12E-08	2.13E-08	2.15E-08	2.16E-08	2.18E-08	2.20E-08	2.22E-08	2.25E-08
pb210	1.25E-02	1.25E-02	1.25E-02	1.25E-02	1.25E-02	1.26E-02	1.27E-02	1.27E-02	1.28E-02	1.29E-02	1.31E-02
pb211	3.27E-09	3.27E-09	3.27E-09	3.26E-09	3.27E-09	3.27E-09	3.28E-09	3.29E-09	3.31E-09	3.32E-09	3.34E-09
pb212	8.25E-09	7.86E-09	7.48E-09	6.77E-09	5.55E-09	3.38E-09	2.06E-09	1.25E-09	7.63E-10	4.65E-10	1.73E-10
pb214	2.91E-08	2.91E-08	2.91E-08	2.92E-08	2.92E-08	2.94E-08	2.96E-08	2.98E-08	3.00E-08	3.02E-08	3.06E-08
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.43E-01	1.43E-01	1.43E-01	1.44E-01	1.44E-01	1.46E-01	1.48E-01	1.50E-01	1.52E-01	1.55E-01	1.59E-01
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	7.68E-06	7.68E-06	7.69E-06	7.69E-06	7.70E-06	7.74E-06	7.79E-06	7.84E-06	7.89E-06	7.94E-06	8.04E-06
bi211	1.94E-10	1.94E-10	1.94E-10	1.94E-10	1.94E-10	1.94E-10	1.95E-10	1.95E-10	1.96E-10	1.97E-10	1.98E-10
bi212	7.83E-10	7.46E-10	7.10E-10	6.42E-10	5.27E-10	3.20E-10	1.95E-10	1.19E-10	7.23E-11	4.41E-11	1.64E-11
bi213	5.03E-09	5.03E-09	5.04E-09	5.05E-09	5.06E-09	5.11E-09	5.15E-09	5.19E-09	5.24E-09	5.28E-09	5.37E-09
bi214	2.16E-08	2.16E-08	2.16E-08	2.17E-08	2.17E-08	2.18E-08	2.20E-08	2.21E-08	2.23E-08	2.24E-08	2.27E-08
po210	2.12E-04	2.12E-04	2.12E-04	2.12E-04	2.13E-04	2.14E-04	2.15E-04	2.17E-04	2.18E-04	2.19E-04	2.22E-04
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.14E-15	2.14E-15	2.14E-15	2.14E-15	2.14E-15	2.14E-15	2.15E-15	2.16E-15	2.17E-15	2.17E-15	2.19E-15
po212	4.11E-20	3.92E-20	3.73E-20	3.37E-20	2.77E-20	1.68E-20	1.03E-20	6.24E-21	3.80E-21	2.32E-21	8.63E-22
po213	7.56E-18	7.57E-18	7.57E-18	7.59E-18	7.61E-18	7.68E-18	7.74E-18	7.81E-18	7.87E-18	7.94E-18	8.07E-18
po214	2.97E-15	2.97E-15	2.98E-15	2.98E-15	2.99E-15	3.01E-15	3.03E-15	3.04E-15	3.06E-15	3.08E-15	3.12E-15

po215	2.73E-15	2.73E-15	2.73E-15	2.73E-15	2.73E-15	2.74E-15	2.75E-15	2.76E-15	2.77E-15	2.78E-15	2.79E-15
po216	3.18E-14	3.03E-14	2.89E-14	2.61E-14	2.14E-14	1.30E-14	7.93E-15	4.83E-15	2.94E-15	1.79E-15	6.68E-16
po218	3.43E-09	3.43E-09	3.43E-09	3.44E-09	3.45E-09	3.47E-09	3.49E-09	3.51E-09	3.53E-09	3.56E-09	3.60E-09
at217	6.05E-14	6.06E-14	6.06E-14	6.07E-14	6.09E-14	6.14E-14	6.20E-14	6.25E-14	6.30E-14	6.35E-14	6.46E-14
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	6.20E-12	6.20E-12	6.20E-12	6.20E-12	6.20E-12	6.21E-12	6.23E-12	6.25E-12	6.27E-12	6.29E-12	6.33E-12
rn220	1.24E-11	1.18E-11	1.13E-11	1.02E-11	8.37E-12	5.09E-12	3.10E-12	1.89E-12	1.15E-12	7.00E-13	2.61E-13
rn222	6.20E-06	6.20E-06	6.21E-06	6.22E-06	6.23E-06	6.27E-06	6.31E-06	6.35E-06	6.39E-06	6.43E-06	6.52E-06
fr221	5.61E-10	5.62E-10	5.62E-10	5.63E-10	5.65E-10	5.70E-10	5.74E-10	5.79E-10	5.84E-10	5.89E-10	5.99E-10
fr223	2.87E-11	2.87E-11	2.87E-11	2.87E-11	2.87E-11	2.88E-11	2.89E-11	2.90E-11	2.91E-11	2.92E-11	2.94E-11
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	1.57E-06	1.57E-06	1.57E-06	1.57E-06	1.57E-06	1.58E-06	1.58E-06	1.59E-06	1.59E-06	1.60E-06	1.61E-06
ra224	7.20E-08	6.86E-08	6.53E-08	5.90E-08	4.84E-08	2.95E-08	1.79E-08	1.09E-08	6.65E-09	4.05E-09	1.51E-09
ra225	2.48E-06	2.49E-06	2.49E-06	2.49E-06	2.50E-06	2.52E-06	2.54E-06	2.57E-06	2.59E-06	2.61E-06	2.65E-06
ra226	9.65E-01	9.65E-01	9.66E-01	9.67E-01	9.70E-01	9.76E-01	9.82E-01	9.88E-01	9.95E-01	1.00E+00	1.01E+00
ra228	4.96E-09	4.97E-09	4.97E-09	4.97E-09	4.98E-09	5.01E-09	5.04E-09	5.06E-09	5.09E-09	5.11E-09	5.17E-09
ac225	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.69E-06	1.70E-06	1.72E-06	1.73E-06	1.75E-06	1.76E-06	1.79E-06
ac227	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.12E-03	1.12E-03	1.12E-03	1.13E-03	1.13E-03	1.14E-03
ac228	6.06E-13	6.06E-13	6.07E-13	6.07E-13	6.08E-13	6.11E-13	6.15E-13	6.18E-13	6.21E-13	6.24E-13	6.31E-13
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	2.59E-06	2.59E-06	2.59E-06	2.59E-06	2.59E-06	2.59E-06	2.60E-06	2.61E-06	2.62E-06	2.63E-06	2.64E-06
th228	1.40E-05	1.33E-05	1.27E-05	1.15E-05	9.41E-06	5.73E-06	3.49E-06	2.12E-06	1.29E-06	7.88E-07	2.93E-07
th229	4.92E-01	4.92E-01	4.93E-01	4.93E-01	4.95E-01	4.99E-01	5.03E-01	5.08E-01	5.12E-01	5.16E-01	5.25E-01
th230	6.01E+01	6.01E+01	6.02E+01	6.02E+01	6.03E+01	6.07E+01	6.10E+01	6.13E+01	6.16E+01	6.19E+01	6.25E+01
th231	6.36E-07	6.36E-07	6.36E-07	6.36E-07	6.36E-07	6.36E-07	6.36E-07	6.36E-07	6.36E-07	6.36E-07	6.36E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 42

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
th232	1.24E+01	1.24E+01	1.24E+01	1.24E+01	1.24E+01	1.25E+01	1.25E+01	1.26E+01	1.27E+01	1.27E+01	1.29E+01
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04
pa231	1.70E+00	1.70E+00	1.70E+00	1.71E+00	1.71E+00	1.71E+00	1.72E+00	1.72E+00	1.73E+00	1.74E+00	1.75E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	5.05E-04	4.81E-04	4.57E-04	4.14E-04	3.40E-04	2.07E-04	1.26E-04	7.66E-05	4.66E-05	2.84E-05	1.05E-05
u233	2.96E+01	2.96E+01	2.96E+01	2.96E+01	2.97E+01	2.99E+01	3.00E+01	3.02E+01	3.03E+01	3.05E+01	3.08E+01
u234	2.43E+03	2.43E+03	2.43E+03	2.43E+03	2.43E+03	2.43E+03	2.43E+03	2.44E+03	2.44E+03	2.44E+03	2.44E+03
u235	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05
u236	4.37E+04	4.37E+04	4.37E+04	4.37E+04	4.37E+04	4.38E+04	4.38E+04	4.38E+04	4.38E+04	4.38E+04	4.38E+04
u237	2.47E-09	1.94E-09	1.52E-09	9.38E-10	3.57E-10	3.19E-11	2.85E-12	2.54E-13	2.27E-14	2.03E-15	1.62E-17
u238	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.01E-32	1.01E-32	1.01E-32	1.02E-32	1.04E-32	1.08E-32	1.12E-32	1.16E-32	1.20E-32	1.24E-32	1.33E-32
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	3.47E-12	1.42E-13	5.82E-15	9.76E-18	2.74E-23	3.64E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.53E-04
np237	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03
np238	2.96E-10	2.89E-10	2.82E-10	2.69E-10	2.44E-10	1.90E-10	1.49E-10	1.17E-10	9.11E-11	7.13E-11	4.36E-11
np239	2.97E-10	2.97E-10	2.97E-10	2.97E-10	2.96E-10	2.95E-10	2.94E-10	2.92E-10	2.91E-10	2.89E-10	2.87E-10
np240m	8.59E-35	8.62E-35	8.66E-35	8.73E-35	8.87E-35	9.22E-35	9.57E-35	9.92E-35	1.03E-34	1.06E-34	1.13E-34
np240	8.83E-37	8.87E-37	8.90E-37	8.97E-37	9.12E-37	9.48E-37	9.84E-37	1.02E-36	1.06E-36	1.09E-36	1.17E-36
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	2.55E-08	8.44E-09	3.27E-09	1.23E-09	1.02E-09	1.02E-09	1.02E-09	1.02E-09	1.02E-09	1.02E-09	1.02E-09
pu237	6.11E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	5.01E+00	4.82E+00	4.63E+00	4.28E+00	3.66E+00	2.46E+00	1.66E+00	1.12E+00	7.53E-01	5.07E-01	2.30E-01
pu239	9.03E+03	9.03E+03	9.03E+03	9.03E+03	9.02E+03	9.01E+03	9.00E+03	8.98E+03	8.97E+03	8.96E+03	8.93E+03
pu240	3.20E+02	3.20E+02	3.20E+02	3.20E+02	3.19E+02	3.17E+02	3.16E+02	3.14E+02	3.12E+02	3.11E+02	3.07E+02
pu241	8.13E-02	6.39E-02	5.02E-02	3.10E-02	1.18E-02	1.05E-03	9.39E-05	8.39E-06	7.49E-07	6.69E-08	5.34E-10
pu242	3.82E-02	3.82E-02	3.82E-02	3.82E-02	3.82E-02	3.83E-02	3.83E-02	3.84E-02	3.84E-02	3.84E-02	3.84E-02
pu243	4.55E-27	4.55E-27	4.55E-27	4.55E-27	4.55E-27	4.55E-27	4.55E-27	4.55E-27	4.55E-27	4.55E-27	4.55E-27
pu244	5.10E-22	5.12E-22	5.14E-22	5.18E-22	5.26E-22	5.47E-22	5.68E-22	5.89E-22	6.09E-22	6.30E-22	6.72E-22
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	3.53E+00	3.52E+00	3.50E+00	3.47E+00	3.38E+00	3.13E+00	2.89E+00	2.67E+00	2.46E+00	2.27E+00	1.93E+00
am242m	1.63E-03	1.59E-03	1.55E-03	1.48E-03	1.34E-03	1.05E-03	8.19E-04	6.41E-04	5.01E-04	3.92E-04	2.40E-04
am242	2.10E-08	2.05E-08	2.00E-08	1.91E-08	1.73E-08	1.35E-08	1.06E-08	8.26E-09	6.46E-09	5.05E-09	3.09E-09
am243	3.46E-04	3.45E-04	3.45E-04	3.45E-04	3.44E-04	3.43E-04	3.41E-04	3.40E-04	3.38E-04	3.36E-04	3.33E-04
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	7.31E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 43

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cm242	4.25E-06	4.14E-06	4.04E-06	3.85E-06	3.49E-06	2.73E-06	2.13E-06	1.67E-06	1.30E-06	1.02E-06	6.24E-07
cm243	1.79E-14	1.58E-14	1.40E-14	1.10E-14	6.76E-15	2.00E-15	5.94E-16	1.76E-16	5.21E-17	1.55E-17	1.36E-18
cm244	2.82E-08	2.33E-08	1.93E-08	1.31E-08	6.10E-09	8.99E-10	1.32E-10	1.95E-11	2.88E-12	4.24E-13	9.21E-15
cm245	8.33E-11	8.32E-11	8.32E-11	8.31E-11	8.30E-11	8.27E-11	8.23E-11	8.20E-11	8.17E-11	8.13E-11	8.07E-11
cm246	7.34E-13	7.34E-13	7.33E-13	7.32E-13	7.30E-13	7.25E-13	7.20E-13	7.14E-13	7.09E-13	7.04E-13	6.94E-13
cm247	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16
cm248	2.26E-19	2.26E-19	2.26E-19	2.26E-19	2.26E-19	2.26E-19	2.26E-19	2.26E-19	2.26E-19	2.26E-19	2.26E-19
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	3.36E-34	3.36E-34	3.36E-34	3.36E-34	3.36E-34	3.35E-34	3.34E-34	3.34E-34	3.33E-34	3.32E-34	3.31E-34
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	1.88E-29	3.59E-31	6.88E-33	2.52E-36	3.49E-43	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	1.44E-23	1.43E-23	1.41E-23	1.39E-23	1.33E-23	1.21E-23	1.09E-23	9.91E-24	8.98E-24	8.13E-24	6.67E-24
cf250	1.09E-27	8.38E-28	6.43E-28	3.79E-28	1.31E-28	9.27E-30	6.55E-31	4.63E-32	3.27E-33	2.31E-34	1.19E-36
cf251	3.88E-29	3.87E-29	3.85E-29	3.82E-29	3.76E-29	3.62E-29	3.48E-29	3.35E-29	3.22E-29	3.10E-29	2.87E-29
cf252	4.61E-34	1.24E-34	3.35E-35	2.44E-36	1.29E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
fm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 44

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.27E-06	1.28E-06	1.28E-06	1.29E-06	1.30E-06	1.32E-06

tl207	8.04E-02	8.04E-02	8.04E-02	8.04E-02	8.04E-02	8.06E-02	8.09E-02	8.11E-02	8.14E-02	8.17E-02	8.22E-02
tl208	4.12E-03	3.93E-03	3.74E-03	3.38E-03	2.77E-03	1.69E-03	1.03E-03	6.26E-04	3.81E-04	2.32E-04	8.65E-05
tl209	2.05E-03	2.05E-03	2.05E-03	2.05E-03	2.06E-03	2.08E-03	2.10E-03	2.11E-03	2.13E-03	2.15E-03	2.18E-03
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	9.74E-02	9.75E-02	9.76E-02	9.78E-02	9.81E-02	9.89E-02	9.98E-02	1.01E-01	1.01E-01	1.02E-01	1.04E-01
pb210	9.53E-01	9.53E-01	9.53E-01	9.54E-01	9.56E-01	9.61E-01	9.67E-01	9.73E-01	9.79E-01	9.86E-01	9.98E-01
pb211	8.06E-02	8.06E-02	8.06E-02	8.06E-02	8.07E-02	8.08E-02	8.11E-02	8.14E-02	8.16E-02	8.19E-02	8.24E-02
pb212	1.15E-02	1.09E-02	1.04E-02	9.41E-03	7.72E-03	4.70E-03	2.86E-03	1.74E-03	1.06E-03	6.46E-04	2.41E-04
pb214	9.54E-01	9.55E-01	9.55E-01	9.56E-01	9.59E-01	9.65E-01	9.71E-01	9.78E-01	9.84E-01	9.90E-01	1.00E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	9.53E-01	9.54E-01	9.54E-01	9.54E-01	9.56E-01	9.61E-01	9.67E-01	9.73E-01	9.79E-01	9.86E-01	9.98E-01
bi211	8.06E-02	8.06E-02	8.06E-02	8.06E-02	8.07E-02	8.08E-02	8.11E-02	8.14E-02	8.16E-02	8.19E-02	8.24E-02
bi212	1.15E-02	1.09E-02	1.04E-02	9.41E-03	7.72E-03	4.70E-03	2.86E-03	1.74E-03	1.06E-03	6.46E-04	2.41E-04
bi213	9.74E-02	9.75E-02	9.76E-02	9.78E-02	9.81E-02	9.89E-02	9.98E-02	1.01E-01	1.01E-01	1.02E-01	1.04E-01
bi214	9.54E-01	9.55E-01	9.55E-01	9.56E-01	9.59E-01	9.65E-01	9.71E-01	9.78E-01	9.84E-01	9.90E-01	1.00E+00
po210	9.54E-01	9.54E-01	9.54E-01	9.54E-01	9.56E-01	9.61E-01	9.67E-01	9.73E-01	9.79E-01	9.86E-01	9.98E-01
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.22E-04	2.22E-04	2.22E-04	2.22E-04	2.22E-04	2.22E-04	2.23E-04	2.24E-04	2.24E-04	2.25E-04	2.27E-04
po212	7.35E-03	7.00E-03	6.66E-03	6.03E-03	4.95E-03	3.01E-03	1.83E-03	1.12E-03	6.79E-04	4.14E-04	1.54E-04
po213	9.54E-02	9.55E-02	9.56E-02	9.57E-02	9.60E-02	9.69E-02	9.77E-02	9.85E-02	9.93E-02	1.00E-01	1.02E-01
po214	9.54E-01	9.54E-01	9.55E-01	9.56E-01	9.59E-01	9.65E-01	9.71E-01	9.77E-01	9.84E-01	9.90E-01	1.00E+00
po215	8.06E-02	8.06E-02	8.06E-02	8.06E-02	8.07E-02	8.08E-02	8.11E-02	8.14E-02	8.16E-02	8.19E-02	8.24E-02
po216	1.15E-02	1.09E-02	1.04E-02	9.41E-03	7.72E-03	4.70E-03	2.86E-03	1.74E-03	1.06E-03	6.46E-04	2.41E-04
po218	9.54E-01	9.55E-01	9.55E-01	9.57E-01	9.59E-01	9.65E-01	9.72E-01	9.78E-01	9.84E-01	9.90E-01	1.00E+00
at217	9.75E-02	9.75E-02	9.76E-02	9.78E-02	9.81E-02	9.89E-02	9.98E-02	1.01E-01	1.01E-01	1.02E-01	1.04E-01
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	8.06E-02	8.06E-02	8.06E-02	8.06E-02	8.07E-02	8.08E-02	8.11E-02	8.14E-02	8.16E-02	8.19E-02	8.24E-02
rn220	1.15E-02	1.09E-02	1.04E-02	9.41E-03	7.72E-03	4.70E-03	2.86E-03	1.74E-03	1.06E-03	6.46E-04	2.41E-04
rn222	9.54E-01	9.55E-01	9.55E-01	9.57E-01	9.59E-01	9.65E-01	9.72E-01	9.78E-01	9.84E-01	9.90E-01	1.00E+00
fr221	9.75E-02	9.75E-02	9.76E-02	9.78E-02	9.81E-02	9.89E-02	9.98E-02	1.01E-01	1.01E-01	1.02E-01	1.04E-01
fr223	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.12E-03	1.12E-03	1.13E-03	1.13E-03	1.14E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	8.06E-02	8.06E-02	8.06E-02	8.06E-02	8.07E-02	8.08E-02	8.11E-02	8.14E-02	8.16E-02	8.19E-02	8.24E-02
ra224	1.15E-02	1.09E-02	1.04E-02	9.41E-03	7.72E-03	4.70E-03	2.86E-03	1.74E-03	1.06E-03	6.46E-04	2.41E-04
ra225	9.75E-02	9.75E-02	9.76E-02	9.78E-02	9.81E-02	9.89E-02	9.98E-02	1.01E-01	1.01E-01	1.02E-01	1.04E-01
ra226	9.54E-01	9.55E-01	9.55E-01	9.57E-01	9.59E-01	9.65E-01	9.72E-01	9.78E-01	9.84E-01	9.90E-01	1.00E+00
ra228	1.35E-06	1.36E-06	1.36E-06	1.36E-06	1.36E-06	1.37E-06	1.37E-06	1.38E-06	1.39E-06	1.40E-06	1.41E-06
ac225	9.75E-02	9.75E-02	9.76E-02	9.78E-02	9.81E-02	9.89E-02	9.98E-02	1.01E-01	1.01E-01	1.02E-01	1.04E-01
ac227	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.06E-02	8.08E-02	8.11E-02	8.13E-02	8.16E-02	8.19E-02	8.24E-02
ac228	1.35E-06	1.36E-06	1.36E-06	1.36E-06	1.36E-06	1.37E-06	1.37E-06	1.38E-06	1.39E-06	1.40E-06	1.41E-06
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	7.95E-02	7.95E-02	7.95E-02	7.95E-02	7.95E-02	7.97E-02	8.00E-02	8.02E-02	8.05E-02	8.08E-02	8.13E-02
th228	1.15E-02	1.09E-02	1.04E-02	9.41E-03	7.72E-03	4.70E-03	2.86E-03	1.74E-03	1.06E-03	6.46E-04	2.41E-04
th229	9.75E-02	9.75E-02	9.76E-02	9.78E-02	9.81E-02	9.89E-02	9.98E-02	1.01E-01	1.01E-01	1.02E-01	1.04E-01
th230	1.24E+00	1.24E+00	1.24E+00	1.24E+00	1.24E+00	1.25E+00	1.26E+00	1.26E+00	1.27E+00	1.28E+00	1.29E+00
th231	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 45

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
th232	1.36E-06	1.36E-06	1.36E-06	1.36E-06	1.36E-06	1.37E-06	1.38E-06	1.38E-06	1.39E-06	1.40E-06	1.41E-06
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	8.05E-02	8.05E-02	8.05E-02	8.06E-02	8.07E-02	8.09E-02	8.12E-02	8.15E-02	8.18E-02	8.20E-02	8.26E-02
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	1.12E-02	1.06E-02	1.01E-02	9.15E-03	7.50E-03	4.57E-03	2.78E-03	1.69E-03	1.03E-03	6.27E-04	2.33E-04
u233	2.85E-01	2.85E-01	2.85E-01	2.86E-01	2.86E-01	2.88E-01	2.89E-01	2.91E-01	2.92E-01	2.94E-01	2.96E-01
u234	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01
u235	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01
u236	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00
u237	2.01E-04	1.58E-04	1.24E-04	7.66E-05	2.91E-05	2.60E-06	2.33E-07	2.08E-08	1.85E-09	1.66E-10	1.32E-12
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	9.32E-27	9.36E-27	9.40E-27	9.48E-27	9.63E-27	1.00E-26	1.04E-26	1.08E-26	1.12E-26	1.15E-26	1.23E-26
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	4.87E-09	1.99E-10	8.16E-12	1.37E-14	3.85E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	5.99E-06	5.99E-06	5.99E-06	5.99E-06	5.99E-06	5.99E-06	5.98E-06	5.98E-06	5.98E-06	5.98E-06	5.97E-06
np237	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00
np238	7.69E-05	7.50E-05	7.32E-05	6.97E-05	6.32E-05	4.94E-05	3.86E-05	3.02E-05	2.36E-05	1.85E-05	1.13E-05
np239	6.90E-05	6.90E-05	6.90E-05	6.89E-05	6.88E-05	6.84E-05	6.81E-05	6.78E-05	6.75E-05	6.72E-05	6.65E-05
np240m	9.32E-27	9.36E-27	9.40E-27	9.48E-27	9.63E-27	1.00E-26	1.04E-26	1.08E-26	1.12E-26	1.15E-26	1.23E-26
np240	1.12E-29	1.12E-29	1.13E-29	1.14E-29	1.15E-29	1.20E-29	1.25E-29	1.29E-29	1.34E-29	1.39E-29	1.48E-29
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.33E-05	4.41E-06	1.71E-06	6.40E-07	5.34E-07	5.33E-07	5.33E-07	5.32E-07	5.32E-07	5.32E-07	5.32E-07
pu237	7.53E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	8.59E+01	8.26E+01	7.94E+01	7.34E+01	6.26E+01	4.22E+01	2.84E+01	1.91E+01	1.29E+01	8.69E+00	3.94E+00
pu239	5.61E+02	5.61E+02	5.60E+02	5.60E+02	5.60E+02	5.59E+02	5.58E+02	5.57E+02	5.56E+02	5.54E+02	5.54E+02
pu240	7.27E+01	7.27E+01	7.27E+01	7.26E+01	7.24E+01	7.21E+01	7.17E+01	7.13E+01	7.09E+01	7.06E+01	6.98E+01
pu241	8.41E+00	6.61E+00	5.19E+00	3.20E+00	1.22E+00	1.09E-01	9.72E-03	8.68E-04	7.75E-05	6.92E-06	5.52E-08
pu242	1.51E-04	1.51E-04	1.51E-04	1.51E-04	1.51E-04	1.52E-04	1.52E-04	1.52E-04	1.52E-04	1.52E-04	1.52E-04
pu243	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20
pu244	9.34E-27	9.37E-27	9.41E-27	9.49E-27	9.64E-27	1.00E-26	1.04E-26	1.08E-26	1.12E-26	1.15E-26	1.23E-26
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	1.21E+01	1.21E+01	1.20E+01	1.19E+01	1.16E+01	1.07E+01	9.91E+00	9.14E+00	8.44E+00	7.79E+00	6.64E+00
am242m	1.71E-02	1.67E-02	1.63E-02	1.55E-02	1.40E-02	1.10E-02	8.58E-03	6.71E-03	5.25E-03	4.11E-03	2.51E-03
am242	1.70E-02	1.66E-02	1.62E-02	1.54E-02	1.40E-02	1.09E-02	8.54E-03	6.68E-03	5.23E-03	4.09E-03	2.50E-03
am243	6.90E-05	6.90E-05	6.90E-05	6.89E-05	6.88E-05	6.84E-05	6.81E-05	6.78E-05	6.75E-05	6.72E-05	6.65E-05
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	4.56E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 46

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cm242	1.41E-02	1.37E-02	1.34E-02	1.27E-02	1.16E-02	9.04E-03	7.07E-03	5.53E-03	4.32E-03	3.38E-03	2.07E-03
cm243	9.23E-13	8.18E-13	7.24E-13	5.68E-13	3.49E-13	1.03E-13	3.07E-14	9.08E-15	2.69E-15	7.98E-16	7.01E-17
cm244	2.29E-06	1.89E-06	1.56E-06	1.06E-06	4.94E-07	7.28E-08	1.07E-08	1.58E-09	2.33E-10	3.43E-11	7.45E-13
cm245	1.43E-11	1.43E-11	1.43E-11	1.43E-11	1.43E-11	1.42E-11	1.41E-11	1.41E-11	1.40E-11	1.40E-11	1.39E-11
cm246	2.26E-13	2.26E-13	2.25E-13	2.25E-13	2.24E-13	2.23E-13	2.21E-13	2.20E-13	2.18E-13	2.16E-13	2.13E-13
cm247	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20
cm248	9.60E-22	9.59E-22	9.59E-22	9.59E-22	9.59E-22	9.59E-22	9.59E-22	9.59E-22	9.59E-22	9.59E-22	9.59E-22
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	3.08E-26	5.89E-28	1.13E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	5.91E-23	5.86E-23	5.80E-23	5.69E-23	5.46E-23	4.95E-23	4.48E-23	4.06E-23	3.68E-23	3.33E-23	2.73E-23
cf250	1.20E-25	9.17E-26	7.03E-26	4.14E-26	1.43E-26	1.01E-27	7.17E-29	5.07E-30	3.65E-31	2.28E-32	.00E+00
cf251	6.16E-29	6.13E-29	6.11E-29	6.06E-29	5.97E-29	5.74E-29	5.53E-29	5.32E-29	5.12E-29	4.92E-29	4.56E-29
cf252	2.51E-31	6.85E-32	2.28E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	7.93E+02	7.88E+02	7.83E+02	7.74E+02	7.61E+02	7.37E+02	7.22E+02	7.10E+02	7.02E+02	6.96E+02	6.88E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 47

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
h 3	2.25E-05	1.70E-05	1.28E-05	7.30E-06	2.37E-06	1.43E-07	8.57E-09	5.16E-10	3.10E-11	1.86E-12	6.74E-15
li 6	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04
li 7	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06
be 9	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06
be 10	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05
c 14	6.89E-06	6.89E-06	6.88E-06	6.88E-06	6.86E-06	6.82E-06	6.78E-06	6.74E-06	6.69E-06	6.65E-06	6.57E-06
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08
zn 68	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08
zn 70	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 48

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	2.38E-02	2.38E-02	2.38E-02	2.39E-02	2.40E-02	2.42E-02	2.45E-02	2.47E-02	2.49E-02	2.52E-02	2.56E-02
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05

cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01
kr 81	2.84E-07	2.84E-07	2.84E-07	2.84E-07	2.84E-07	2.84E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 49

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	1.11E-02	8.03E-03	5.81E-03	3.04E-03	8.35E-04	3.29E-05	1.30E-06	5.12E-08	2.02E-09	7.96E-11	1.24E-13
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02
rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02
sr 87	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.74E-04	2.74E-04	2.74E-04	2.74E-04	2.74E-04	2.74E-04
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 50

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	9.28E-25	1.24E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
y 89m	3.17E-34	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	1.01E+00	8.93E-01	7.89E-01	6.17E-01	3.77E-01	1.10E-01	3.21E-02	9.38E-03	2.74E-03	7.99E-04	6.81E-05
y 90	2.62E-04	2.32E-04	2.05E-04	1.60E-04	9.80E-05	2.86E-05	8.35E-06	2.44E-06	7.12E-07	2.08E-07	1.77E-08
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	3.28E+02	3.28E+02	3.28E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	1.23E-21	4.92E-31	1.97E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02
nb 91	2.74E-11	2.73E-11	2.72E-11	2.69E-11	2.63E-11	2.50E-11	2.38E-11	2.26E-11	2.15E-11	2.04E-11	1.84E-11
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02
nb 92	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02
nb 93	5.68E-01	5.69E-01	5.69E-01	5.70E-01	5.72E-01	5.78E-01	5.84E-01	5.89E-01	5.95E-01	6.01E-01	6.12E-01
nb 93m	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel

0 fission products page 51

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02
nb 94	1.46E-04	1.46E-04	1.46E-04	1.46E-04	1.46E-04	1.46E-04	1.45E-04	1.45E-04	1.45E-04	1.45E-04	1.44E-04
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	6.58E-20	1.70E-28	4.38E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	7.91E-20	2.04E-28	5.85E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	4.36E-23	1.13E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02
tc 98	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.86E+02
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	6.42E+00	6.43E+00	6.44E+00	6.45E+00	6.47E+00	6.54E+00	6.60E+00	6.67E+00	6.73E+00	6.79E+00	6.92E+00

rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 52

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02
rh102	1.22E-09	3.70E-10	1.12E-10	1.03E-11	8.60E-14	5.55E-19	3.58E-24	2.31E-29	1.49E-34	9.61E-40	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	3.64E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02
rh103m	3.61E-34	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 53

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	9.78E-06	3.24E-07	1.08E-08	1.18E-11	1.43E-17	2.30E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	9.08E-12	3.01E-13	9.98E-15	1.10E-17	1.33E-23	2.13E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.16E-02	1.17E-02	1.19E-02	1.20E-02	1.21E-02	1.23E-02	1.25E-02
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01
ag108	3.71E-17	3.61E-17	3.52E-17	3.33E-17	2.99E-17	2.27E-17	1.73E-17	1.32E-17	1.00E-17	7.63E-18	4.42E-18
ag108m	1.20E-08	1.17E-08	1.14E-08	1.08E-08	9.67E-09	7.36E-09	5.60E-09	4.27E-09	3.25E-09	2.47E-09	1.43E-09
cd108	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01
ag109m	6.77E-21	4.39E-22	2.84E-23	1.19E-25	2.10E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	6.83E-15	4.43E-16	2.87E-17	1.20E-19	2.12E-24	2.77E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00
ag110	9.22E-19	5.80E-21	3.65E-23	1.45E-27	2.26E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	5.95E-11	3.74E-13	2.35E-15	9.32E-20	1.46E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 54

nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cd110	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01
cd113m	3.42E-05	2.68E-05	2.09E-05	1.28E-05	4.79E-06	4.10E-07	3.51E-08	3.01E-09	2.57E-10	2.20E-11	1.61E-13
in113	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00
in114	9.86E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	6.13E-32	4.79E-43	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	1.78E-31	1.61E-43	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01
in115m	8.30E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 55

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sn115	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02

tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
sn119m	9.22E-11	1.23E-12	1.63E-14	2.89E-18	9.03E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 56

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	3.35E-09	3.15E-09	2.95E-09	2.60E-09	2.02E-09	1.08E-09	5.74E-10	3.06E-10	1.63E-10	8.67E-11	2.46E-11
sn121m	7.70E-05	7.23E-05	6.78E-05	5.98E-05	4.65E-05	2.48E-05	1.32E-05	7.02E-06	3.74E-06	1.99E-06	5.65E-07
sb121	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	2.35E-14	1.30E-18	7.21E-23	2.21E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00
te123	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07
te123m	1.01E-20	2.56E-25	6.52E-30	4.23E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00
sb124	4.15E-26	3.05E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	9.84E-05	2.76E-05	7.76E-06	6.13E-07	3.82E-09	1.17E-14	3.58E-20	1.10E-25	3.36E-31	1.03E-36	.00E+00
te125	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00
te125m	1.40E-06	3.92E-07	1.10E-07	8.70E-09	5.42E-11	1.66E-16	5.08E-22	1.56E-27	4.77E-33	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	4.36E+00	4.36E+00	4.36E+00	4.36E+00	4.36E+00	4.35E+00	4.35E+00	4.35E+00	4.35E+00	4.35E+00	4.35E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 57

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sb126	2.07E-07	2.07E-07	2.07E-07	2.07E-07	2.07E-07	2.07E-07	2.07E-07	2.07E-07	2.07E-07	2.07E-07	2.06E-07
sb126m	1.57E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09
te126	1.82E-01	1.82E-01	1.83E-01	1.83E-01	1.84E-01	1.85E-01	1.87E-01	1.88E-01	1.90E-01	1.91E-01	1.94E-01
xe126	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	3.02E-17	2.73E-22	2.47E-27	1.99E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	8.63E-15	7.80E-20	7.05E-25	5.76E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	3.29E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01
xe129	1.47E-02	1.47E-02	1.47E-02	1.48E-02	1.48E-02	1.50E-02	1.51E-02	1.53E-02	1.54E-02	1.56E-02	1.59E-02
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 58

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06

in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02
ba133	1.61E-11	1.16E-11	8.31E-12	4.30E-12	1.15E-12	4.27E-14	1.58E-15	5.87E-17	2.18E-18	8.08E-20	1.11E-22
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	6.51E-05	1.21E-05	2.26E-06	7.82E-08	9.40E-11	4.71E-18	2.36E-25	1.18E-32	5.92E-40	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	8.77E-01	8.78E-01	8.79E-01	8.81E-01	8.84E-01	8.93E-01	9.02E-01	9.10E-01	9.19E-01	9.28E-01	9.45E-01
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 59

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	1.94E+00	1.73E+00	1.54E+00	1.22E+00	7.71E-01	2.43E-01	7.64E-02	2.41E-02	7.58E-03	2.39E-03	2.37E-04
ba137	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.64E+02	5.64E+02	5.64E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02
ba137m	2.97E-07	2.64E-07	2.35E-07	1.87E-07	1.18E-07	3.71E-08	1.17E-08	3.68E-09	1.16E-09	3.65E-10	3.62E-11
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02
la138	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02
ce139	4.20E-18	4.25E-22	4.30E-26	4.39E-34	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	1.00E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 60

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	7.71E-06	9.07E-08	1.07E-09	1.48E-13	2.83E-21	1.43E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	3.25E-10	3.82E-12	4.49E-14	6.22E-18	1.19E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	1.89E-12	2.23E-14	2.62E-16	3.63E-20	6.95E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02

i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02
pm145	4.58E-10	3.77E-10	3.10E-10	2.09E-10	9.57E-11	1.35E-11	1.91E-12	2.69E-13	3.79E-14	5.36E-15	1.07E-16
sm145	1.78E-14	4.29E-16	1.04E-17	6.06E-21	2.06E-27	2.03E-43	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02
pm146	8.35E-11	4.46E-11	2.38E-11	6.80E-12	5.54E-13	1.05E-15	1.99E-18	3.78E-21	7.16E-24	1.36E-26	4.88E-32
sm146	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	5.86E-03	1.56E-03	4.17E-04	2.97E-05	1.51E-07	2.75E-13	5.04E-19	9.22E-25	1.69E-30	3.08E-36	.00E+00
sm147	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02
pm148	6.38E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	1.03E-34	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 61

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sm148	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00
eu149	2.51E-25	3.10E-31	3.82E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01
eu150	2.32E-08	2.11E-08	1.91E-08	1.58E-08	1.07E-08	4.07E-09	1.55E-09	5.87E-10	2.23E-10	8.47E-11	1.22E-11

ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	5.67E-01	5.46E-01	5.25E-01	4.86E-01	4.17E-01	2.84E-01	1.93E-01	1.31E-01	8.93E-02	6.08E-02	2.81E-02
eu151	2.77E+01	2.77E+01	2.78E+01	2.78E+01	2.79E+01	2.80E+01	2.81E+01	2.81E+01	2.82E+01	2.82E+01	2.82E+01
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01
eu152	2.17E-02	1.67E-02	1.29E-02	7.65E-03	2.70E-03	2.01E-04	1.49E-05	1.11E-06	8.21E-08	6.10E-09	3.36E-11
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	7.10E+00	7.10E+00	7.10E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01
gd153	4.96E-10	2.62E-12	1.39E-14	3.90E-19	3.06E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 62

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sm154	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00
eu154	6.84E-04	4.57E-04	3.05E-04	1.36E-04	2.71E-05	4.80E-07	8.49E-09	1.50E-10	2.66E-12	4.70E-14	1.47E-17
gd154	5.96E-01	5.96E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	7.65E-04	3.65E-04	1.74E-04	3.96E-05	2.05E-06	1.24E-09	7.56E-13	4.59E-16	2.79E-19	1.70E-22	6.27E-29
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	8.61E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02
tb160	2.77E-23	6.90E-31	1.72E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 63

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
dy161	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	6.31E-07	6.29E-07	6.27E-07	6.23E-07	6.16E-07	5.99E-07	5.82E-07	5.65E-07	5.49E-07	5.33E-07	5.03E-07
er166	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04
er167	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07
tm170	4.22E-22	2.24E-26	1.18E-30	3.33E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	5.10E-12	8.39E-13	1.38E-13	3.73E-15	2.73E-18	3.96E-26	5.75E-34	8.39E-42	.00E+00	.00E+00	.00E+00
yb171	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07
total	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 64

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
h 3	2.17E-01	1.64E-01	1.24E-01	7.05E-02	2.29E-02	1.38E-03	8.29E-05	4.98E-06	3.00E-07	1.80E-08	6.52E-11
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06
c 14	3.07E-05	3.07E-05	3.07E-05	3.07E-05	3.06E-05	3.04E-05	3.02E-05	3.00E-05	2.99E-05	2.97E-05	2.93E-05
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 65

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	5.88E-09	5.88E-09	5.88E-09	5.88E-09	5.88E-09	5.88E-09	5.88E-09	5.88E-09	5.87E-09	5.87E-09	5.87E-09
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 66

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	4.35E+00	3.15E+00	2.28E+00	1.19E+00	3.28E-01	1.29E-02	5.10E-04	2.01E-05	7.92E-07	3.12E-08	4.86E-11
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 67

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	2.69E-20	3.65E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	2.51E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	1.43E+02	1.26E+02	1.11E+02	8.71E+01	5.32E+01	1.55E+01	4.54E+00	1.32E+00	3.87E-01	1.13E-01	9.61E-03
y 90	1.43E+02	1.26E+02	1.11E+02	8.71E+01	5.33E+01	1.55E+01	4.54E+00	1.32E+00	3.87E-01	1.13E-01	9.62E-03
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	3.01E-17	1.21E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	1.59E-10	1.58E-10	1.57E-10	1.55E-10	1.52E-10	1.45E-10	1.37E-10	1.31E-10	1.24E-10	1.18E-10	1.07E-10
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 68

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	2.74E-05	2.74E-05	2.74E-05	2.74E-05	2.73E-05	2.73E-05	2.72E-05	2.72E-05	2.72E-05	2.71E-05	2.70E-05
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	1.41E-15	3.64E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	3.11E-15	8.03E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	1.66E-17	4.29E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	7.20E-08	7.20E-08	7.20E-08	7.20E-08	7.20E-08	7.20E-08	7.20E-08	7.20E-08	7.20E-08	7.20E-08	7.20E-08
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.61E+00
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 69

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	1.48E-06	4.47E-07	1.35E-07	1.24E-08	1.04E-10	6.71E-16	4.33E-21	2.79E-26	1.83E-31	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	1.18E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	1.17E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 70

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	3.24E-02	1.08E-03	3.57E-05	3.92E-08	4.74E-14	7.63E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	3.24E-02	1.08E-03	3.57E-05	3.92E-08	4.74E-14	7.63E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	2.73E-08	2.66E-08	2.58E-08	2.45E-08	2.19E-08	1.67E-08	1.27E-08	9.68E-09	7.37E-09	5.61E-09	3.25E-09
ag108m	3.14E-07	3.05E-07	2.97E-07	2.81E-07	2.52E-07	1.92E-07	1.46E-07	1.11E-07	8.47E-08	6.44E-08	3.73E-08
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	1.77E-11	1.15E-12	7.43E-14	3.12E-16	5.50E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	1.77E-11	1.15E-12	7.43E-14	3.12E-16	5.50E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	3.85E-09	2.42E-11	1.52E-13	6.03E-18	9.45E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	2.83E-07	1.78E-09	1.12E-11	4.43E-16	6.95E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 71

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14
cd113m	7.68E-03	6.01E-03	4.70E-03	2.87E-03	1.08E-03	9.21E-05	7.88E-06	6.75E-07	5.78E-08	4.95E-09	3.62E-11
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	1.36E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	1.42E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	4.52E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12
in115m	5.02E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 72

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	3.45E-07	4.59E-09	6.11E-11	1.08E-14	3.38E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 73

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	3.21E-03	3.01E-03	2.83E-03	2.49E-03	1.94E-03	1.03E-03	5.50E-04	2.93E-04	1.56E-04	8.30E-05	2.36E-05
sn121m	4.13E-03	3.88E-03	3.65E-03	3.21E-03	2.50E-03	1.33E-03	7.08E-04	3.77E-04	2.01E-04	1.07E-04	3.03E-05
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	1.93E-10	1.07E-14	5.93E-19	1.82E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17
te123m	8.92E-17	2.27E-21	5.78E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	7.27E-22	5.25E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	1.03E-01	2.90E-02	8.14E-03	6.42E-04	4.00E-06	1.22E-11	3.75E-17	1.15E-22	3.52E-28	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	2.52E-02	7.07E-03	1.99E-03	1.57E-04	9.77E-07	2.99E-12	9.16E-18	2.80E-23	8.59E-29	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.23E-01	1.23E-01	1.23E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 74

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sb126	1.73E-02	1.73E-02	1.73E-02	1.73E-02	1.73E-02	1.73E-02	1.73E-02	1.73E-02	1.73E-02	1.73E-02	1.73E-02
sb126m	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.23E-01	1.23E-01	1.23E-01

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	7.98E-11	7.21E-16	6.52E-21	5.25E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	8.14E-11	7.36E-16	6.65E-21	5.48E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 75

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	4.11E-09	2.95E-09	2.12E-09	1.10E-09	2.94E-10	1.09E-11	4.05E-13	1.50E-14	5.57E-16	2.06E-17	2.84E-20
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	8.42E-02	1.57E-02	2.92E-03	1.01E-04	1.22E-07	6.09E-15	3.05E-22	1.53E-29	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 76

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	1.69E+02	1.51E+02	1.34E+02	1.06E+02	6.71E+01	2.11E+01	6.65E+00	2.10E+00	6.60E-01	2.08E-01	2.06E-02
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	1.60E+02	1.42E+02	1.27E+02	1.01E+02	6.33E+01	1.99E+01	6.28E+00	1.98E+00	6.23E-01	1.96E-01	1.95E-02
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	2.87E-14	2.90E-18	2.93E-22	2.99E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	2.28E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 77

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	2.45E-02	2.89E-04	3.40E-06	4.70E-10	9.00E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	2.45E-02	2.89E-04	3.40E-06	4.70E-10	9.00E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	3.44E-04	4.04E-06	4.75E-08	6.58E-12	1.26E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10
i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	6.38E-08	5.25E-08	4.32E-08	2.92E-08	1.33E-08	1.88E-09	2.66E-10	3.75E-11	5.29E-12	7.46E-13	1.49E-14
sm145	4.71E-11	1.14E-12	2.75E-14	1.60E-17	5.47E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	3.70E-08	1.98E-08	1.06E-08	3.01E-09	2.46E-10	4.66E-13	8.83E-16	1.67E-18	3.17E-21	6.01E-24	2.16E-29
sm146	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	5.44E+00	1.45E+00	3.87E-01	2.76E-02	1.40E-04	2.55E-10	4.67E-16	8.55E-22	1.56E-27	.00E+00	.00E+00
sm147	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	1.14E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	2.21E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 78

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sm148	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12
eu149	2.36E-21	2.92E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	1.55E-06	1.40E-06	1.27E-06	1.05E-06	7.13E-07	2.71E-07	1.03E-07	3.91E-08	1.48E-08	5.64E-09	8.14E-10
ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	1.49E+01	1.44E+01	1.38E+01	1.28E+01	1.10E+01	7.46E+00	5.08E+00	3.45E+00	2.35E+00	1.60E+00	7.40E-01
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	3.82E+00	2.95E+00	2.27E+00	1.35E+00	4.78E-01	3.54E-02	2.63E-03	1.95E-04	1.45E-05	1.08E-06	5.93E-09
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	1.75E-06	9.27E-09	4.91E-11	1.38E-15	1.08E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 79

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	1.85E-01	1.24E-01	8.25E-02	3.68E-02	7.33E-03	1.30E-04	2.30E-06	4.06E-08	7.19E-10	1.27E-11	3.98E-15
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	3.77E-01	1.80E-01	8.58E-02	1.95E-02	1.01E-03	6.13E-07	3.73E-10	2.26E-13	1.38E-16	8.37E-20	3.09E-26
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	3.13E-19	7.79E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 80

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	1.13E-06	1.13E-06	1.13E-06	1.12E-06	1.11E-06	1.07E-06	1.04E-06	1.01E-06	9.86E-07	9.58E-07	9.04E-07
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	2.52E-18	1.34E-22	7.08E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	5.56E-09	9.14E-10	1.50E-10	4.07E-12	2.98E-15	4.32E-23	6.16E-31	.00E+00	.00E+00	.00E+00	.00E+00
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	6.52E+02	5.76E+02	5.12E+02	4.06E+02	2.58E+02	8.85E+01	3.59E+01	1.90E+01	1.33E+01	1.11E+01	9.65E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 81

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
he 4	3.82E+01	3.87E+01	4.13E+01	4.62E+01	5.56E+01	6.44E+01	7.27E+01	8.05E+01	8.79E+01	9.49E+01	1.02E+02
tl206	6.06E-15	6.13E-15	6.54E-15	7.30E-15	8.81E-15	1.03E-14	1.18E-14	1.32E-14	1.46E-14	1.60E-14	1.73E-14
tl207	4.31E-10	4.34E-10	4.49E-10	4.77E-10	5.31E-10	5.83E-10	6.33E-10	6.81E-10	7.28E-10	7.72E-10	8.15E-10
tl208	2.92E-13	1.10E-13	3.20E-15	2.62E-15	2.95E-15	3.29E-15	3.62E-15	3.95E-15	4.28E-15	4.62E-15	4.95E-15
tl209	5.34E-12	5.42E-12	5.87E-12	6.79E-12	8.78E-12	1.09E-11	1.32E-11	1.55E-11	1.80E-11	2.04E-11	2.30E-11
pb206	1.73E+00	1.77E+00	1.98E+00	2.44E+00	3.50E+00	4.77E+00	6.23E+00	7.88E+00	9.72E+00	1.17E+01	1.39E+01
pb207	1.73E-01	1.76E-01	1.93E-01	2.28E-01	3.05E-01	3.91E-01	4.84E-01	5.85E-01	6.93E-01	8.07E-01	9.29E-01
pb208	2.55E-02	2.55E-02	2.55E-02	2.55E-02	2.55E-02	2.55E-02	2.55E-02	2.55E-02	2.55E-02	2.55E-02	2.55E-02
pb209	2.25E-08	2.29E-08	2.48E-08	2.87E-08	3.71E-08	4.61E-08	5.56E-08	6.56E-08	7.58E-08	8.64E-08	9.71E-08
pb210	1.31E-02	1.32E-02	1.41E-02	1.57E-02	1.90E-02	2.22E-02	2.54E-02	2.85E-02	3.15E-02	3.45E-02	3.74E-02
pb211	3.34E-09	3.36E-09	3.48E-09	3.69E-09	4.11E-09	4.51E-09	4.90E-09	5.27E-09	5.63E-09	5.97E-09	6.30E-09
pb212	1.73E-10	6.50E-11	1.90E-12	1.55E-12	1.75E-12	1.95E-12	2.15E-12	2.34E-12	2.54E-12	2.74E-12	2.94E-12
pb214	3.06E-08	3.09E-08	3.28E-08	3.67E-08	4.43E-08	5.18E-08	5.91E-08	6.63E-08	7.34E-08	8.03E-08	8.70E-08
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.59E-01	1.63E-01	1.85E-01	2.35E-01	3.58E-01	5.13E-01	7.03E-01	9.29E-01	1.19E+00	1.50E+00	1.84E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	8.04E-06	8.14E-06	8.68E-06	9.69E-06	1.17E-05	1.37E-05	1.56E-05	1.75E-05	1.94E-05	2.12E-05	2.30E-05
bi211	1.98E-10	1.99E-10	2.06E-10	2.19E-10	2.44E-10	2.67E-10	2.90E-10	3.12E-10	3.34E-10	3.54E-10	3.74E-10
bi212	1.64E-11	6.17E-12	1.80E-13	1.47E-13	1.66E-13	1.85E-13	2.03E-13	2.22E-13	2.41E-13	2.60E-13	2.78E-13
bi213	5.37E-09	5.45E-09	5.90E-09	6.83E-09	8.83E-09	1.10E-08	1.32E-08	1.56E-08	1.81E-08	2.06E-08	2.31E-08
bi214	2.27E-08	2.30E-08	2.44E-08	2.72E-08	3.29E-08	3.84E-08	4.39E-08	4.93E-08	5.45E-08	5.96E-08	6.46E-08
po210	2.22E-04	2.25E-04	2.40E-04	2.67E-04	3.23E-04	3.78E-04	4.32E-04	4.84E-04	5.36E-04	5.86E-04	6.35E-04
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.19E-15	2.20E-15	2.28E-15	2.42E-15	2.69E-15	2.95E-15	3.21E-15	3.45E-15	3.69E-15	3.91E-15	4.13E-15
po212	8.63E-22	3.24E-22	9.46E-24	7.75E-24	8.73E-24	9.71E-24	1.07E-23	1.17E-23	1.27E-23	1.36E-23	1.46E-23
po213	8.07E-18	8.20E-18	8.87E-18	1.03E-17	1.33E-17	1.65E-17	1.99E-17	2.35E-17	2.71E-17	3.09E-17	3.47E-17
po214	3.12E-15	3.16E-15	3.35E-15	3.74E-15	4.52E-15	5.29E-15	6.04E-15	6.78E-15	7.50E-15	8.20E-15	8.89E-15

po215	2.79E-15	2.81E-15	2.91E-15	3.09E-15	3.44E-15	3.78E-15	4.10E-15	4.41E-15	4.71E-15	5.00E-15	5.28E-15
po216	6.68E-16	2.51E-16	7.32E-18	6.00E-18	6.75E-18	7.51E-18	8.28E-18	9.04E-18	9.80E-18	1.06E-17	1.13E-17
po218	3.60E-09	3.65E-09	3.87E-09	4.32E-09	5.22E-09	6.10E-09	6.97E-09	7.82E-09	8.65E-09	9.46E-09	1.03E-08
at217	6.46E-14	6.56E-14	7.10E-14	8.22E-14	1.06E-13	1.32E-13	1.59E-13	1.88E-13	2.17E-13	2.47E-13	2.78E-13
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	6.33E-12	6.37E-12	6.60E-12	7.00E-12	7.80E-12	8.56E-12	9.29E-12	1.00E-11	1.07E-11	1.13E-11	1.20E-11
rn220	2.61E-13	9.79E-14	2.86E-15	2.34E-15	2.64E-15	2.93E-15	3.23E-15	3.53E-15	3.83E-15	4.12E-15	4.42E-15
rn222	6.52E-06	6.60E-06	7.00E-06	7.81E-06	9.44E-06	1.10E-05	1.26E-05	1.41E-05	1.56E-05	1.71E-05	1.85E-05
fr221	5.99E-10	6.08E-10	6.58E-10	7.62E-10	9.84E-10	1.22E-09	1.48E-09	1.74E-09	2.01E-09	2.29E-09	2.58E-09
fr223	2.94E-11	2.96E-11	3.06E-11	3.25E-11	3.62E-11	3.97E-11	4.31E-11	4.64E-11	4.96E-11	5.26E-11	5.55E-11
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	1.61E-06	1.62E-06	1.68E-06	1.78E-06	1.98E-06	2.17E-06	2.36E-06	2.54E-06	2.71E-06	2.88E-06	3.04E-06
ra224	1.51E-09	5.67E-10	1.65E-11	1.36E-11	1.53E-11	1.70E-11	1.87E-11	2.04E-11	2.22E-11	2.39E-11	2.56E-11
ra225	2.65E-06	2.69E-06	2.91E-06	3.37E-06	4.36E-06	5.42E-06	6.54E-06	7.71E-06	8.92E-06	1.02E-05	1.14E-05
ra226	1.01E+00	1.03E+00	1.09E+00	1.22E+00	1.47E+00	1.72E+00	1.96E+00	2.20E+00	2.43E+00	2.66E+00	2.89E+00
ra228	5.17E-09	5.22E-09	5.47E-09	5.99E-09	7.01E-09	8.04E-09	9.07E-09	1.01E-08	1.11E-08	1.22E-08	1.32E-08
ac225	1.79E-06	1.82E-06	1.97E-06	2.28E-06	2.95E-06	3.66E-06	4.42E-06	5.21E-06	6.02E-06	6.86E-06	7.71E-06
ac227	1.14E-03	1.15E-03	1.19E-03	1.26E-03	1.40E-03	1.54E-03	1.67E-03	1.80E-03	1.92E-03	2.04E-03	2.15E-03
ac228	6.31E-13	6.37E-13	6.68E-13	7.31E-13	8.56E-13	9.81E-13	1.11E-12	1.23E-12	1.36E-12	1.48E-12	1.61E-12
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	2.64E-06	2.66E-06	2.75E-06	2.92E-06	3.25E-06	3.57E-06	3.88E-06	4.17E-06	4.46E-06	4.73E-06	4.99E-06
th228	2.93E-07	1.10E-07	3.22E-09	2.63E-09	2.97E-09	3.30E-09	3.64E-09	3.97E-09	4.31E-09	4.64E-09	4.98E-09
th229	5.25E-01	5.33E-01	5.77E-01	6.68E-01	8.63E-01	1.07E+00	1.29E+00	1.53E+00	1.76E+00	2.01E+00	2.26E+00
th230	6.25E+01	6.31E+01	6.62E+01	7.23E+01	8.43E+01	9.60E+01	1.07E+02	1.19E+02	1.30E+02	1.40E+02	1.51E+02
th231	6.36E-07	6.36E-07	6.37E-07	6.38E-07	6.40E-07	6.42E-07	6.43E-07	6.45E-07	6.46E-07	6.48E-07	6.49E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 82

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
th232	1.29E+01	1.30E+01	1.36E+01	1.49E+01	1.74E+01	2.00E+01	2.25E+01	2.51E+01	2.77E+01	3.02E+01	3.28E+01
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04
pa231	1.75E+00	1.76E+00	1.82E+00	1.93E+00	2.15E+00	2.36E+00	2.56E+00	2.75E+00	2.94E+00	3.12E+00	3.29E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.33E-04	3.33E-04	3.33E-04	3.33E-04	3.33E-04	3.32E-04	3.32E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	1.05E-05	3.92E-06	5.10E-08	2.39E-08	2.36E-08	2.33E-08	2.30E-08	2.27E-08	2.25E-08	2.22E-08	2.19E-08
u233	3.08E+01	3.10E+01	3.25E+01	3.55E+01	4.14E+01	4.73E+01	5.31E+01	5.89E+01	6.46E+01	7.02E+01	7.58E+01
u234	2.44E+03	2.43E+03	2.43E+03	2.43E+03	2.42E+03	2.40E+03	2.39E+03	2.38E+03	2.37E+03	2.36E+03	2.35E+03
u235	1.56E+05	1.57E+05	1.57E+05	1.57E+05	1.57E+05	1.58E+05	1.58E+05	1.59E+05	1.59E+05	1.59E+05	1.60E+05
u236	4.38E+04	4.38E+04	4.38E+04	4.38E+04	4.39E+04	4.39E+04	4.39E+04	4.39E+04	4.40E+04	4.40E+04	4.40E+04
u237	1.62E-17	1.33E-19	3.87E-21	3.56E-21	3.03E-21	2.57E-21	2.19E-21	1.86E-21	1.58E-21	1.34E-21	1.14E-21
u238	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.33E-32	1.41E-32	1.82E-32	2.64E-32	4.27E-32	5.90E-32	7.52E-32	9.14E-32	1.07E-31	1.23E-31	1.39E-31
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	4.53E-04	4.53E-04	4.52E-04	4.49E-04	4.44E-04	4.38E-04	4.33E-04	4.28E-04	4.23E-04	4.18E-04	4.13E-04
np237	9.83E+03	9.83E+03	9.83E+03	9.82E+03	9.82E+03	9.81E+03	9.81E+03	9.80E+03	9.79E+03	9.79E+03	9.78E+03
np238	4.36E-11	2.67E-11	2.28E-12	1.67E-14	8.99E-19	4.83E-23	2.59E-27	1.39E-31	7.48E-36	.00E+00	.00E+00
np239	2.87E-10	2.84E-10	2.71E-10	2.47E-10	2.04E-10	1.69E-10	1.40E-10	1.16E-10	9.63E-11	7.98E-11	6.61E-11
np240m	1.13E-34	1.20E-34	1.55E-34	2.25E-34	3.65E-34	5.04E-34	6.42E-34	7.80E-34	9.17E-34	1.05E-33	1.19E-33
np240	1.17E-36	1.24E-36	1.60E-36	2.32E-36	3.75E-36	5.18E-36	6.60E-36	8.02E-36	9.43E-36	1.08E-35	1.22E-35
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	1.02E-09	1.02E-09	1.01E-09	1.01E-09	9.96E-10	9.84E-10	9.72E-10	9.60E-10	9.49E-10	9.38E-10	9.26E-10
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	2.30E-01	1.04E-01	2.02E-03	7.94E-07	6.73E-12	3.57E-16	1.92E-20	1.03E-24	5.53E-29	2.97E-33	1.59E-37
pu239	8.93E+03	8.91E+03	8.78E+03	8.53E+03	8.05E+03	7.60E+03	7.18E+03	6.78E+03	6.40E+03	6.04E+03	5.70E+03
pu240	3.07E+02	3.04E+02	2.89E+02	2.60E+02	2.10E+02	1.70E+02	1.38E+02	1.12E+02	9.03E+01	7.31E+01	5.92E+01
pu241	5.34E-10	4.39E-12	1.28E-13	1.18E-13	1.00E-13	8.50E-14	7.22E-14	6.13E-14	5.21E-14	4.43E-14	3.76E-14
pu242	3.84E-02	3.84E-02	3.84E-02	3.83E-02	3.82E-02	3.81E-02	3.79E-02	3.78E-02	3.76E-02	3.75E-02	3.74E-02
pu243	4.55E-27	4.55E-27	4.55E-27	4.55E-27	4.55E-27	4.55E-27	4.55E-27	4.55E-27	4.55E-27	4.55E-27	4.55E-27
pu244	6.72E-22	7.13E-22	9.21E-22	1.34E-21	2.16E-21	2.99E-21	3.81E-21	4.63E-21	5.44E-21	6.25E-21	7.06E-21
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	1.93E+00	1.65E+00	7.39E-01	1.49E-01	6.04E-03	2.45E-04	9.93E-06	4.03E-07	1.63E-08	6.63E-10	2.80E-11
am242m	2.40E-04	1.47E-04	1.25E-05	9.20E-08	4.94E-12	2.65E-16	1.43E-20	7.66E-25	4.11E-29	2.21E-33	1.19E-37
am242	3.09E-09	1.89E-09	1.62E-10	1.19E-12	6.37E-17	3.42E-21	1.84E-25	9.88E-30	5.31E-34	2.82E-38	.00E+00
am243	3.33E-04	3.30E-04	3.15E-04	2.87E-04	2.38E-04	1.97E-04	1.63E-04	1.35E-04	1.12E-04	9.27E-05	7.68E-05
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 83

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cm242	6.24E-07	3.82E-07	3.27E-08	2.40E-10	1.29E-14	6.93E-19	3.72E-23	2.00E-27	1.07E-31	5.77E-36	3.10E-40
cm243	1.36E-18	1.19E-19	6.23E-25	1.70E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	9.21E-15	2.00E-16	9.65E-25	2.26E-41	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	8.07E-11	8.00E-11	7.68E-11	7.08E-11	6.01E-11	5.11E-11	4.34E-11	3.69E-11	3.13E-11	2.66E-11	2.26E-11
cm246	6.94E-13	6.84E-13	6.35E-13	5.49E-13	4.09E-13	3.05E-13	2.28E-13	1.70E-13	1.27E-13	9.46E-14	7.05E-14
cm247	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16
cm248	2.26E-19	2.26E-19	2.26E-19	2.25E-19	2.24E-19	2.23E-19	2.23E-19	2.22E-19	2.21E-19	2.20E-19	2.19E-19
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	3.31E-34	3.30E-34	3.23E-34	3.10E-34	2.87E-34	2.65E-34	2.44E-34	2.26E-34	2.08E-34	1.92E-34	1.78E-34
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	6.67E-24	5.48E-24	2.04E-24	2.82E-25	5.39E-27	1.03E-28	1.98E-30	3.78E-32	7.24E-34	1.39E-35	2.65E-37
cf250	1.19E-36	4.05E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	2.87E-29	2.66E-29	1.81E-29	8.35E-30	1.78E-30	3.81E-31	8.13E-32	1.74E-32	3.71E-33	7.92E-34	1.69E-34
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 84

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	1.32E-06	1.33E-06	1.42E-06	1.59E-06	1.92E-06	2.24E-06	2.56E-06	2.87E-06	3.18E-06	3.47E-06	3.77E-06

tl207	8.22E-02	8.27E-02	8.56E-02	9.09E-02	1.01E-01	1.11E-01	1.21E-01	1.30E-01	1.39E-01	1.47E-01	1.55E-01
tl208	8.65E-05	3.25E-05	9.48E-07	7.76E-07	8.75E-07	9.73E-07	1.07E-06	1.17E-06	1.27E-06	1.37E-06	1.47E-06
tl209	2.18E-03	2.22E-03	2.40E-03	2.78E-03	3.59E-03	4.46E-03	5.39E-03	6.35E-03	7.34E-03	8.36E-03	9.40E-03
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	1.04E-01	1.06E-01	1.14E-01	1.32E-01	1.71E-01	2.13E-01	2.57E-01	3.02E-01	3.50E-01	3.98E-01	4.48E-01
pb210	9.98E-01	1.01E+00	1.08E+00	1.20E+00	1.45E+00	1.70E+00	1.94E+00	2.18E+00	2.41E+00	2.63E+00	2.85E+00
pb211	8.24E-02	8.30E-02	8.59E-02	9.12E-02	1.01E-01	1.11E-01	1.21E-01	1.30E-01	1.39E-01	1.47E-01	1.56E-01
pb212	2.41E-04	9.04E-05	2.64E-06	2.16E-06	2.43E-06	2.71E-06	2.98E-06	3.26E-06	3.53E-06	3.81E-06	4.08E-06
pb214	1.00E+00	1.01E+00	1.08E+00	1.20E+00	1.45E+00	1.70E+00	1.94E+00	2.18E+00	2.41E+00	2.63E+00	2.85E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	9.98E-01	1.01E+00	1.08E+00	1.20E+00	1.45E+00	1.70E+00	1.94E+00	2.18E+00	2.41E+00	2.63E+00	2.85E+00
bi211	8.24E-02	8.30E-02	8.59E-02	9.12E-02	1.01E-01	1.11E-01	1.21E-01	1.30E-01	1.39E-01	1.47E-01	1.56E-01
bi212	2.41E-04	9.04E-05	2.64E-06	2.16E-06	2.43E-06	2.71E-06	2.98E-06	3.26E-06	3.53E-06	3.81E-06	4.08E-06
bi213	1.04E-01	1.06E-01	1.14E-01	1.32E-01	1.71E-01	2.13E-01	2.57E-01	3.02E-01	3.50E-01	3.98E-01	4.48E-01
bi214	1.00E+00	1.01E+00	1.08E+00	1.20E+00	1.45E+00	1.70E+00	1.94E+00	2.18E+00	2.41E+00	2.63E+00	2.85E+00
po210	9.98E-01	1.01E+00	1.08E+00	1.20E+00	1.45E+00	1.70E+00	1.94E+00	2.18E+00	2.41E+00	2.63E+00	2.85E+00
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.27E-04	2.28E-04	2.36E-04	2.51E-04	2.79E-04	3.06E-04	3.33E-04	3.58E-04	3.82E-04	4.06E-04	4.28E-04
po212	1.54E-04	5.79E-05	1.69E-06	1.38E-06	1.56E-06	1.73E-06	1.91E-06	2.09E-06	2.26E-06	2.44E-06	2.61E-06
po213	1.02E-01	1.03E-01	1.12E-01	1.30E-01	1.67E-01	2.08E-01	2.51E-01	2.96E-01	3.42E-01	3.90E-01	4.38E-01
po214	1.00E+00	1.01E+00	1.08E+00	1.20E+00	1.45E+00	1.70E+00	1.94E+00	2.18E+00	2.41E+00	2.63E+00	2.85E+00
po215	8.24E-02	8.30E-02	8.59E-02	9.12E-02	1.01E-01	1.11E-01	1.21E-01	1.30E-01	1.39E-01	1.47E-01	1.56E-01
po216	2.41E-04	9.04E-05	2.64E-06	2.16E-06	2.43E-06	2.71E-06	2.98E-06	3.26E-06	3.53E-06	3.81E-06	4.08E-06
po218	1.00E+00	1.01E+00	1.08E+00	1.20E+00	1.45E+00	1.70E+00	1.94E+00	2.18E+00	2.41E+00	2.63E+00	2.85E+00
at217	1.04E-01	1.06E-01	1.14E-01	1.32E-01	1.71E-01	2.13E-01	2.57E-01	3.02E-01	3.50E-01	3.98E-01	4.48E-01
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	8.24E-02	8.30E-02	8.59E-02	9.12E-02	1.01E-01	1.11E-01	1.21E-01	1.30E-01	1.39E-01	1.47E-01	1.56E-01
rn220	2.41E-04	9.04E-05	2.64E-06	2.16E-06	2.43E-06	2.71E-06	2.98E-06	3.26E-06	3.53E-06	3.81E-06	4.08E-06
rn222	1.00E+00	1.01E+00	1.08E+00	1.20E+00	1.45E+00	1.70E+00	1.94E+00	2.18E+00	2.41E+00	2.63E+00	2.85E+00
fr221	1.04E-01	1.06E-01	1.14E-01	1.32E-01	1.71E-01	2.13E-01	2.57E-01	3.02E-01	3.50E-01	3.98E-01	4.48E-01
fr223	1.14E-03	1.14E-03	1.18E-03	1.26E-03	1.40E-03	1.54E-03	1.67E-03	1.80E-03	1.92E-03	2.04E-03	2.15E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	8.24E-02	8.30E-02	8.59E-02	9.12E-02	1.01E-01	1.11E-01	1.21E-01	1.30E-01	1.39E-01	1.47E-01	1.56E-01
ra224	2.41E-04	9.04E-05	2.64E-06	2.16E-06	2.43E-06	2.71E-06	2.98E-06	3.26E-06	3.53E-06	3.81E-06	4.08E-06
ra225	1.04E-01	1.06E-01	1.14E-01	1.32E-01	1.71E-01	2.13E-01	2.57E-01	3.02E-01	3.50E-01	3.98E-01	4.48E-01
ra226	1.00E+00	1.01E+00	1.08E+00	1.20E+00	1.45E+00	1.70E+00	1.94E+00	2.18E+00	2.41E+00	2.63E+00	2.85E+00
ra228	1.41E-06	1.42E-06	1.49E-06	1.63E-06	1.91E-06	2.19E-06	2.47E-06	2.75E-06	3.04E-06	3.32E-06	3.60E-06
ac225	1.04E-01	1.06E-01	1.14E-01	1.32E-01	1.71E-01	2.13E-01	2.57E-01	3.02E-01	3.50E-01	3.98E-01	4.48E-01
ac227	8.24E-02	8.29E-02	8.59E-02	9.12E-02	1.01E-01	1.11E-01	1.21E-01	1.30E-01	1.39E-01	1.47E-01	1.56E-01
ac228	1.41E-06	1.42E-06	1.49E-06	1.63E-06	1.91E-06	2.19E-06	2.47E-06	2.75E-06	3.04E-06	3.32E-06	3.60E-06
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	8.13E-02	8.18E-02	8.47E-02	8.99E-02	1.00E-01	1.10E-01	1.19E-01	1.28E-01	1.37E-01	1.45E-01	1.54E-01
th228	2.41E-04	9.04E-05	2.64E-06	2.16E-06	2.43E-06	2.71E-06	2.98E-06	3.26E-06	3.53E-06	3.81E-06	4.08E-06
th229	1.04E-01	1.06E-01	1.14E-01	1.32E-01	1.71E-01	2.13E-01	2.57E-01	3.02E-01	3.50E-01	3.98E-01	4.48E-01
th230	1.29E+00	1.30E+00	1.37E+00	1.49E+00	1.74E+00	1.98E+00	2.22E+00	2.45E+00	2.67E+00	2.89E+00	3.11E+00
th231	3.38E-01	3.38E-01	3.39E-01	3.39E-01	3.40E-01	3.41E-01	3.42E-01	3.43E-01	3.44E-01	3.45E-01	3.45E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 85

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
th232	1.41E-06	1.42E-06	1.49E-06	1.63E-06	1.91E-06	2.19E-06	2.47E-06	2.75E-06	3.04E-06	3.32E-06	3.60E-06
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	8.26E-02	8.31E-02	8.58E-02	9.11E-02	1.01E-01	1.11E-01	1.21E-01	1.30E-01	1.39E-01	1.47E-01	1.56E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.92E+00	6.92E+00	6.92E+00	6.91E+00	6.91E+00	6.90E+00	6.90E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	2.33E-04	8.65E-05	1.13E-06	5.27E-07	5.20E-07	5.14E-07	5.08E-07	5.02E-07	4.96E-07	4.90E-07	4.84E-07
u233	2.96E-01	2.99E-01	3.14E-01	3.43E-01	4.00E-01	4.56E-01	5.12E-01	5.68E-01	6.23E-01	6.77E-01	7.31E-01
u234	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.50E+01	1.50E+01	1.49E+01	1.48E+01	1.48E+01	1.47E+01	1.46E+01
u235	3.38E-01	3.38E-01	3.39E-01	3.39E-01	3.40E-01	3.41E-01	3.42E-01	3.43E-01	3.44E-01	3.45E-01	3.45E-01
u236	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.84E+00	2.84E+00	2.84E+00	2.84E+00	2.84E+00	2.85E+00	2.85E+00
u237	1.32E-12	1.09E-14	3.16E-16	2.91E-16	2.47E-16	2.10E-16	1.78E-16	1.52E-16	1.29E-16	1.09E-16	9.29E-17
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.23E-26	1.31E-26	1.69E-26	2.45E-26	3.96E-26	5.47E-26	6.97E-26	8.46E-26	9.95E-26	1.14E-25	1.29E-25
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	5.97E-06	5.97E-06	5.95E-06	5.92E-06	5.85E-06	5.78E-06	5.71E-06	5.64E-06	5.57E-06	5.50E-06	5.44E-06
np237	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.92E+00	6.92E+00	6.92E+00	6.91E+00	6.91E+00	6.90E+00	6.90E+00
np238	1.13E-05	6.91E-06	5.92E-07	4.34E-09	2.33E-13	1.25E-17	6.72E-22	3.61E-26	1.94E-30	.00E+00	.00E+00
np239	6.65E-05	6.59E-05	6.29E-05	5.72E-05	4.74E-05	3.93E-05	3.26E-05	2.70E-05	2.23E-05	1.85E-05	1.53E-05
np240m	1.23E-26	1.31E-26	1.69E-26	2.45E-26	3.96E-26	5.47E-26	6.97E-26	8.46E-26	9.95E-26	1.14E-25	1.29E-25
np240	1.48E-29	1.57E-29	2.02E-29	2.93E-29	4.75E-29	6.56E-29	8.36E-29	1.02E-28	1.19E-28	1.37E-28	1.55E-28
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	5.32E-07	5.31E-07	5.30E-07	5.27E-07	5.20E-07	5.14E-07	5.08E-07	5.02E-07	4.96E-07	4.90E-07	4.84E-07
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	3.94E+00	1.79E+00	3.46E-02	1.36E-05	1.15E-10	6.11E-15	3.28E-19	1.76E-23	9.47E-28	4.56E-32	.00E+00
pu239	5.54E+02	5.53E+02	5.45E+02	5.29E+02	5.00E+02	4.72E+02	4.46E+02	4.21E+02	3.97E+02	3.75E+02	3.54E+02
pu240	6.98E+01	6.91E+01	6.55E+01	5.90E+01	4.77E+01	3.86E+01	3.13E+01	2.53E+01	2.05E+01	1.66E+01	1.34E+01
pu241	5.52E-08	4.54E-10	1.32E-11	1.22E-11	1.03E-11	8.79E-12	7.47E-12	6.34E-12	5.39E-12	4.58E-12	3.89E-12
pu242	1.52E-04	1.52E-04	1.52E-04	1.52E-04	1.51E-04	1.51E-04	1.50E-04	1.49E-04	1.49E-04	1.48E-04	1.48E-04
pu243	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20
pu244	1.23E-26	1.31E-26	1.69E-26	2.45E-26	3.96E-26	5.47E-26	6.98E-26	8.47E-26	9.97E-26	1.15E-25	1.29E-25
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	6.64E+00	5.65E+00	2.54E+00	5.11E-01	2.07E-02	8.40E-04	3.41E-05	1.38E-06	5.60E-08	2.28E-09	9.61E-11
am242m	2.51E-03	1.54E-03	1.32E-04	9.64E-07	5.18E-11	2.78E-15	1.49E-19	8.02E-24	4.31E-28	2.28E-32	.00E+00
am242	2.50E-03	1.53E-03	1.31E-04	9.59E-07	5.15E-11	2.77E-15	1.49E-19	7.99E-24	4.29E-28	2.28E-32	.00E+00
am243	6.65E-05	6.59E-05	6.29E-05	5.72E-05	4.74E-05	3.93E-05	3.26E-05	2.70E-05	2.23E-05	1.85E-05	1.53E-05
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 86

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cm242	2.07E-03	1.26E-03	1.08E-04	7.94E-07	4.28E-11	2.30E-15	1.23E-19	6.63E-24	3.56E-28	2.28E-32	.00E+00
cm243	7.01E-17	6.16E-18	3.22E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	7.45E-13	1.62E-14	7.81E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	1.39E-11	1.37E-11	1.32E-11	1.22E-11	1.03E-11	8.77E-12	7.45E-12	6.33E-12	5.38E-12	4.57E-12	3.88E-12
cm246	2.13E-13	2.10E-13	1.95E-13	1.69E-13	1.26E-13	9.38E-14	7.00E-14	5.22E-14	3.90E-14	2.91E-14	2.17E-14
cm247	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20
cm248	9.59E-22	9.59E-22	9.58E-22	9.56E-22	9.52E-22	9.48E-22	9.44E-22	9.40E-22	9.36E-22	9.32E-22	9.29E-22
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	2.73E-23	2.24E-23	8.35E-24	1.15E-24	2.21E-26	4.23E-28	8.10E-30	1.60E-31	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	4.56E-29	4.22E-29	2.87E-29	1.33E-29	2.83E-30	5.93E-31	1.37E-31	2.28E-32	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	6.88E+02	6.83E+02	6.67E+02	6.45E+02	6.06E+02	5.72E+02	5.41E+02	5.13E+02	4.87E+02	4.64E+02	4.43E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 87

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
h 3	6.74E-15	2.44E-17	1.51E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04
li 7	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06
be 9	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06
be 10	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.86E-05	5.86E-05	5.85E-05	5.85E-05	5.84E-05	5.84E-05	5.83E-05
c 14	6.57E-06	6.50E-06	6.11E-06	5.42E-06	4.25E-06	3.34E-06	2.62E-06	2.06E-06	1.62E-06	1.27E-06	9.96E-07
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08
zn 68	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08
zn 70	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 88

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	2.25E+00	2.25E+00	2.25E+00	2.24E+00	2.24E+00	2.23E+00	2.22E+00	2.21E+00	2.20E+00	2.19E+00	2.18E+00
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	2.56E-02	2.61E-02	2.85E-02	3.32E-02	4.26E-02	5.20E-02	6.13E-02	7.06E-02	7.99E-02	8.91E-02	9.83E-02
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05

cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01
kr 81	2.83E-07	2.83E-07	2.83E-07	2.82E-07	2.80E-07	2.78E-07	2.76E-07	2.75E-07	2.73E-07	2.71E-07	2.69E-07
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 89

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	1.24E-13	1.92E-16	1.75E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02
rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02
sr 87	2.74E-04	2.74E-04	2.75E-04	2.77E-04	2.81E-04	2.85E-04	2.89E-04	2.93E-04	2.97E-04	3.01E-04	3.05E-04
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 90

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	6.81E-05	5.80E-06	2.61E-11	5.26E-22	2.52E-43	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	1.77E-08	1.51E-09	6.77E-15	1.37E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02
nb 91	1.84E-11	1.66E-11	1.00E-11	3.61E-12	4.70E-13	6.12E-14	7.96E-15	1.04E-15	1.35E-16	1.76E-17	2.29E-18
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02
nb 92	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	2.49E+02	2.49E+02	2.49E+02	2.48E+02	2.48E+02	2.48E+02	2.48E+02	2.48E+02	2.47E+02	2.47E+02	2.47E+02
nb 93	6.12E-01	6.23E-01	6.80E-01	7.92E-01	1.02E+00	1.24E+00	1.47E+00	1.69E+00	1.92E+00	2.14E+00	2.36E+00
nb 93m	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.61E-03	2.61E-03	2.61E-03	2.61E-03	2.60E-03
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 91

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02
nb 94	1.44E-04	1.44E-04	1.41E-04	1.36E-04	1.27E-04	1.19E-04	1.11E-04	1.04E-04	9.70E-05	9.06E-05	8.46E-05
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02
tc 98	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.27E-05	8.27E-05	8.27E-05	8.27E-05	8.26E-05	8.26E-05
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	3.86E+02	3.86E+02	3.86E+02	3.84E+02	3.82E+02	3.79E+02	3.77E+02	3.74E+02	3.72E+02	3.70E+02	3.67E+02
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	6.92E+00	7.05E+00	7.68E+00	8.94E+00	1.15E+01	1.40E+01	1.64E+01	1.89E+01	2.14E+01	2.38E+01	2.62E+01

rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 92

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 93
0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.53E+01	2.53E+01
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	1.25E-02	1.28E-02	1.42E-02	1.69E-02	2.23E-02	2.77E-02	3.31E-02	3.85E-02	4.39E-02	4.93E-02	5.47E-02
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01
ag108	4.42E-18	2.56E-18	1.67E-19	7.13E-22	1.29E-26	2.35E-31	4.27E-36	6.20E-41	.00E+00	.00E+00	.00E+00
ag108m	1.43E-09	8.30E-10	5.42E-11	2.31E-13	4.19E-18	7.62E-23	1.38E-27	2.51E-32	4.56E-37	8.32E-42	.00E+00
cd108	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00
ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 94
0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cd110	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01
cd113m	1.61E-13	1.18E-15	2.50E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 95

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sn115	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02

tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 96

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	2.46E-11	6.98E-12	1.28E-14	4.31E-20	4.89E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	5.65E-07	1.60E-07	2.94E-10	9.90E-16	1.12E-26	1.27E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00
te123	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	4.35E+00	4.34E+00	4.33E+00	4.30E+00	4.24E+00	4.18E+00	4.12E+00	4.07E+00	4.01E+00	3.95E+00	3.90E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 97

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sb126	2.06E-07	2.06E-07	2.06E-07	2.04E-07	2.01E-07	1.99E-07	1.96E-07	1.93E-07	1.91E-07	1.88E-07	1.85E-07
sb126m	1.57E-09	1.57E-09	1.56E-09	1.55E-09	1.53E-09	1.51E-09	1.49E-09	1.47E-09	1.45E-09	1.43E-09	1.41E-09
te126	1.94E-01	1.97E-01	2.12E-01	2.42E-01	3.01E-01	3.60E-01	4.17E-01	4.74E-01	5.30E-01	5.85E-01	6.39E-01
xe126	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01
xe129	1.59E-02	1.62E-02	1.77E-02	2.06E-02	2.66E-02	3.26E-02	3.85E-02	4.45E-02	5.04E-02	5.64E-02	6.24E-02
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 98

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06

in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02
ba133	1.11E-22	1.53E-25	7.52E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.80E+02	5.80E+02	5.80E+02	5.79E+02	5.79E+02	5.79E+02
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	9.45E-01	9.63E-01	1.05E+00	1.23E+00	1.58E+00	1.93E+00	2.28E+00	2.62E+00	2.97E+00	3.32E+00	3.67E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 99

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.37E-04	2.35E-05	2.26E-10	2.08E-20	1.77E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02
ba137m	3.62E-11	3.59E-12	3.44E-17	3.17E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02
la138	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 100

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02

i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02
pm145	1.07E-16	2.12E-18	6.66E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02
pm146	4.88E-32	1.75E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 101

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sm148	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01
eu150	1.22E-11	1.76E-12	1.10E-16	4.31E-25	6.52E-42	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	2.81E-02	1.30E-02	2.77E-04	1.25E-07	2.55E-14	5.20E-21	1.06E-27	2.16E-34	4.40E-41	.00E+00	.00E+00
eu151	2.82E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01
eu152	3.36E-11	1.85E-13	9.41E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 102

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sm154	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00
eu154	1.47E-17	4.61E-21	1.38E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	6.27E-29	2.32E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 103

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
dy161	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	5.03E-07	4.75E-07	3.56E-07	2.00E-07	6.29E-08	1.98E-08	6.24E-09	1.97E-09	6.19E-10	1.95E-10	6.14E-11
er166	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04
er167	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07
total	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 104

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
h 3	6.52E-11	2.36E-13	1.46E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.30E-06	1.30E-06
c 14	2.93E-05	2.90E-05	2.73E-05	2.42E-05	1.90E-05	1.49E-05	1.17E-05	9.18E-06	7.20E-06	5.66E-06	4.44E-06
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 105

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	3.09E-02	3.09E-02	3.09E-02	3.08E-02	3.07E-02	3.05E-02	3.04E-02	3.03E-02	3.02E-02	3.00E-02	2.99E-02
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	5.87E-09	5.87E-09	5.86E-09	5.84E-09	5.80E-09	5.77E-09	5.73E-09	5.69E-09	5.65E-09	5.62E-09	5.58E-09
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 106

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	4.86E-11	7.55E-14	6.86E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 107

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	9.61E-03	8.19E-04	3.68E-09	7.42E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	9.62E-03	8.19E-04	3.68E-09	7.43E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	1.07E-10	9.62E-11	5.78E-11	2.09E-11	2.72E-12	3.53E-13	4.60E-14	5.99E-15	7.80E-16	1.02E-16	1.32E-17
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.24E-01	6.24E-01	6.23E-01	6.22E-01	6.22E-01	6.21E-01	6.21E-01
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.24E-01	6.24E-01	6.23E-01	6.22E-01	6.22E-01	6.21E-01	6.21E-01
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 108

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	2.70E-05	2.69E-05	2.65E-05	2.56E-05	2.39E-05	2.23E-05	2.08E-05	1.95E-05	1.82E-05	1.70E-05	1.59E-05
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	7.20E-08	7.20E-08	7.20E-08	7.20E-08	7.19E-08	7.19E-08	7.19E-08	7.19E-08	7.18E-08	7.18E-08	7.18E-08
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	6.61E+00	6.61E+00	6.60E+00	6.58E+00	6.54E+00	6.49E+00	6.45E+00	6.41E+00	6.37E+00	6.32E+00	6.28E+00
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 109

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 110

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	3.25E-09	1.88E-09	1.23E-10	5.24E-13	9.51E-18	1.73E-22	3.14E-27	4.56E-32	.00E+00	.00E+00	.00E+00
ag108m	3.73E-08	2.16E-08	1.41E-09	6.02E-12	1.09E-16	1.99E-21	3.61E-26	6.62E-31	.00E+00	.00E+00	.00E+00
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 111

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14
cd113m	3.62E-11	2.66E-13	5.62E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 112

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 113

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	2.36E-05	6.68E-06	1.23E-08	4.13E-14	4.68E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	3.03E-05	8.61E-06	1.58E-08	5.32E-14	6.03E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	1.23E-01	1.23E-01	1.23E-01	1.22E-01	1.20E-01	1.19E-01	1.17E-01	1.15E-01	1.14E-01	1.12E-01	1.11E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 114

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sb126	1.73E-02	1.73E-02	1.72E-02	1.71E-02	1.68E-02	1.66E-02	1.64E-02	1.62E-02	1.59E-02	1.57E-02	1.55E-02
sb126m	1.23E-01	1.23E-01	1.23E-01	1.22E-01	1.20E-01	1.19E-01	1.17E-01	1.15E-01	1.14E-01	1.12E-01	1.11E-01

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 115

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	2.84E-20	3.91E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	6.70E-01	6.70E-01	6.69E-01	6.69E-01	6.69E-01	6.68E-01	6.68E-01	6.68E-01	6.67E-01	6.67E-01	6.66E-01
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 116

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.06E-02	2.04E-03	1.96E-08	1.81E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	1.95E-02	1.93E-03	1.85E-08	1.71E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 117

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10
i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	1.49E-14	2.96E-16	9.28E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	2.16E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 118

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sm148	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	8.14E-10	1.17E-10	7.34E-15	2.87E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	7.40E-01	3.43E-01	7.28E-03	3.29E-06	6.70E-13	1.37E-19	2.79E-26	.00E+00	.00E+00	.00E+00	.00E+00
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	5.93E-09	3.27E-11	1.66E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 119

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	3.98E-15	1.25E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	3.09E-26	2.28E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 120

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	9.04E-07	8.53E-07	6.39E-07	3.59E-07	1.13E-07	3.56E-08	1.12E-08	3.53E-09	1.11E-09	3.50E-10	1.10E-10
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	9.65E+00	9.20E+00	8.85E+00	8.81E+00	8.77E+00	8.72E+00	8.67E+00	8.62E+00	8.58E+00	8.53E+00	8.48E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 121

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
he 4	1.02E+02	1.08E+02	1.14E+02	1.20E+02	1.25E+02	1.30E+02	1.35E+02	1.40E+02	1.44E+02	1.53E+02	1.57E+02
tl206	1.73E-14	1.86E-14	1.99E-14	2.11E-14	2.24E-14	2.35E-14	2.47E-14	2.58E-14	2.69E-14	2.91E-14	3.01E-14
tl207	8.15E-10	8.56E-10	8.96E-10	9.34E-10	9.71E-10	1.01E-09	1.04E-09	1.07E-09	1.10E-09	1.16E-09	1.19E-09
tl208	4.95E-15	5.29E-15	5.62E-15	5.95E-15	6.29E-15	6.62E-15	6.96E-15	7.29E-15	7.62E-15	8.29E-15	8.63E-15
tl209	2.30E-11	2.56E-11	2.82E-11	3.08E-11	3.34E-11	3.60E-11	3.87E-11	4.13E-11	4.39E-11	4.91E-11	5.17E-11
pb206	1.39E+01	1.63E+01	1.89E+01	2.16E+01	2.45E+01	2.75E+01	3.07E+01	3.40E+01	3.75E+01	4.49E+01	4.88E+01
pb207	9.29E-01	1.06E+00	1.19E+00	1.33E+00	1.48E+00	1.63E+00	1.79E+00	1.95E+00	2.11E+00	2.46E+00	2.64E+00
pb208	2.55E-02	2.55E-02	2.55E-02	2.55E-02	2.55E-02	2.55E-02	2.55E-02	2.56E-02	2.56E-02	2.56E-02	2.56E-02
pb209	9.71E-08	1.08E-07	1.19E-07	1.30E-07	1.41E-07	1.52E-07	1.63E-07	1.74E-07	1.85E-07	2.07E-07	2.18E-07
pb210	3.74E-02	4.02E-02	4.29E-02	4.56E-02	4.82E-02	5.08E-02	5.33E-02	5.57E-02	5.81E-02	6.27E-02	6.49E-02
pb211	6.30E-09	6.62E-09	6.93E-09	7.22E-09	7.51E-09	7.78E-09	8.04E-09	8.30E-09	8.54E-09	9.00E-09	9.21E-09
pb212	2.94E-12	3.13E-12	3.33E-12	3.53E-12	3.73E-12	3.93E-12	4.12E-12	4.32E-12	4.52E-12	4.92E-12	5.12E-12
pb214	8.70E-08	9.36E-08	1.00E-07	1.06E-07	1.12E-07	1.18E-07	1.24E-07	1.30E-07	1.35E-07	1.46E-07	1.51E-07
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.84E+00	2.22E+00	2.65E+00	3.11E+00	3.62E+00	4.17E+00	4.75E+00	5.39E+00	6.06E+00	7.53E+00	8.32E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.30E-05	2.47E-05	2.64E-05	2.81E-05	2.97E-05	3.13E-05	3.28E-05	3.43E-05	3.57E-05	3.86E-05	3.99E-05
bi211	3.74E-10	3.93E-10	4.11E-10	4.28E-10	4.45E-10	4.61E-10	4.77E-10	4.92E-10	5.06E-10	5.33E-10	5.46E-10
bi212	2.78E-13	2.97E-13	3.16E-13	3.35E-13	3.54E-13	3.72E-13	3.91E-13	4.10E-13	4.29E-13	4.66E-13	4.85E-13
bi213	2.31E-08	2.57E-08	2.83E-08	3.09E-08	3.36E-08	3.62E-08	3.89E-08	4.15E-08	4.41E-08	4.94E-08	5.20E-08
bi214	6.46E-08	6.95E-08	7.42E-08	7.89E-08	8.34E-08	8.78E-08	9.21E-08	9.63E-08	1.00E-07	1.08E-07	1.12E-07
po210	6.35E-04	6.83E-04	7.29E-04	7.75E-04	8.20E-04	8.63E-04	9.05E-04	9.47E-04	9.87E-04	1.06E-03	1.10E-03
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	4.13E-15	4.34E-15	4.54E-15	4.73E-15	4.92E-15	5.10E-15	5.27E-15	5.44E-15	5.59E-15	5.89E-15	6.04E-15
po212	1.46E-23	1.56E-23	1.66E-23	1.76E-23	1.86E-23	1.96E-23	2.06E-23	2.15E-23	2.25E-23	2.45E-23	2.55E-23
po213	3.47E-17	3.86E-17	4.26E-17	4.65E-17	5.05E-17	5.45E-17	5.84E-17	6.24E-17	6.64E-17	7.42E-17	7.81E-17
po214	8.89E-15	9.56E-15	1.02E-14	1.08E-14	1.15E-14	1.21E-14	1.27E-14	1.33E-14	1.38E-14	1.49E-14	1.54E-14

po215	5.28E-15	5.55E-15	5.80E-15	6.05E-15	6.29E-15	6.52E-15	6.74E-15	6.95E-15	7.15E-15	7.53E-15	7.72E-15
po216	1.13E-17	1.21E-17	1.29E-17	1.36E-17	1.44E-17	1.51E-17	1.59E-17	1.67E-17	1.74E-17	1.90E-17	1.97E-17
po218	1.03E-08	1.10E-08	1.18E-08	1.25E-08	1.32E-08	1.39E-08	1.46E-08	1.53E-08	1.59E-08	1.72E-08	1.78E-08
at217	2.78E-13	3.09E-13	3.41E-13	3.72E-13	4.04E-13	4.36E-13	4.68E-13	5.00E-13	5.31E-13	5.94E-13	6.25E-13
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	1.20E-11	1.26E-11	1.31E-11	1.37E-11	1.42E-11	1.48E-11	1.53E-11	1.57E-11	1.62E-11	1.71E-11	1.75E-11
rn220	4.42E-15	4.72E-15	5.02E-15	5.32E-15	5.62E-15	5.91E-15	6.21E-15	6.51E-15	6.81E-15	7.41E-15	7.71E-15
rn222	1.85E-05	1.99E-05	2.13E-05	2.26E-05	2.39E-05	2.52E-05	2.65E-05	2.77E-05	2.88E-05	3.11E-05	3.22E-05
fr221	2.58E-09	2.87E-09	3.16E-09	3.45E-09	3.75E-09	4.04E-09	4.34E-09	4.63E-09	4.92E-09	5.51E-09	5.80E-09
fr223	5.55E-11	5.83E-11	6.10E-11	6.36E-11	6.61E-11	6.85E-11	7.09E-11	7.31E-11	7.52E-11	7.92E-11	8.12E-11
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	3.04E-06	3.19E-06	3.34E-06	3.48E-06	3.62E-06	3.75E-06	3.88E-06	4.00E-06	4.12E-06	4.34E-06	4.44E-06
ra224	2.56E-11	2.73E-11	2.91E-11	3.08E-11	3.25E-11	3.42E-11	3.60E-11	3.77E-11	3.94E-11	4.29E-11	4.46E-11
ra225	1.14E-05	1.27E-05	1.40E-05	1.53E-05	1.66E-05	1.79E-05	1.92E-05	2.05E-05	2.18E-05	2.44E-05	2.57E-05
ra226	2.89E+00	3.10E+00	3.32E+00	3.52E+00	3.72E+00	3.92E+00	4.12E+00	4.30E+00	4.49E+00	4.84E+00	5.01E+00
ra228	1.32E-08	1.42E-08	1.52E-08	1.63E-08	1.73E-08	1.83E-08	1.94E-08	2.04E-08	2.14E-08	2.35E-08	2.45E-08
ac225	7.71E-06	8.58E-06	9.45E-06	1.03E-05	1.12E-05	1.21E-05	1.30E-05	1.39E-05	1.47E-05	1.65E-05	1.73E-05
ac227	2.15E-03	2.26E-03	2.36E-03	2.47E-03	2.56E-03	2.66E-03	2.75E-03	2.83E-03	2.91E-03	3.07E-03	3.14E-03
ac228	1.61E-12	1.73E-12	1.86E-12	1.99E-12	2.11E-12	2.24E-12	2.36E-12	2.49E-12	2.61E-12	2.87E-12	2.99E-12
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	4.99E-06	5.25E-06	5.49E-06	5.72E-06	5.95E-06	6.16E-06	6.37E-06	6.57E-06	6.76E-06	7.13E-06	7.30E-06
th228	4.98E-09	5.31E-09	5.65E-09	5.98E-09	6.32E-09	6.66E-09	6.99E-09	7.33E-09	7.66E-09	8.34E-09	8.67E-09
th229	2.26E+00	2.51E+00	2.77E+00	3.03E+00	3.28E+00	3.54E+00	3.80E+00	4.06E+00	4.32E+00	4.83E+00	5.08E+00
th230	1.51E+02	1.61E+02	1.71E+02	1.80E+02	1.90E+02	1.99E+02	2.08E+02	2.17E+02	2.25E+02	2.42E+02	2.50E+02
th231	6.49E-07	6.50E-07	6.52E-07	6.53E-07	6.54E-07	6.55E-07	6.56E-07	6.57E-07	6.58E-07	6.59E-07	6.60E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 122

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
th232	3.28E+01	3.53E+01	3.79E+01	4.05E+01	4.30E+01	4.56E+01	4.81E+01	5.07E+01	5.33E+01	5.84E+01	6.09E+01
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04
pa231	3.29E+00	3.46E+00	3.62E+00	3.77E+00	3.92E+00	4.06E+00	4.20E+00	4.33E+00	4.46E+00	4.70E+00	4.81E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.32E-04	3.32E-04	3.32E-04	3.32E-04	3.31E-04	3.31E-04	3.31E-04	3.31E-04	3.30E-04	3.30E-04	3.30E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	2.19E-08	2.17E-08	2.14E-08	2.11E-08	2.09E-08	2.06E-08	2.04E-08	2.01E-08	1.99E-08	1.94E-08	1.92E-08
u233	7.58E+01	8.14E+01	8.69E+01	9.23E+01	9.77E+01	1.03E+02	1.08E+02	1.14E+02	1.19E+02	1.29E+02	1.34E+02
u234	2.35E+03	2.34E+03	2.33E+03	2.32E+03	2.31E+03	2.30E+03	2.29E+03	2.28E+03	2.27E+03	2.25E+03	2.24E+03
u235	1.60E+05	1.60E+05	1.60E+05	1.61E+05	1.61E+05	1.61E+05	1.61E+05	1.62E+05	1.62E+05	1.62E+05	1.62E+05
u236	4.40E+04	4.40E+04	4.40E+04	4.40E+04	4.40E+04	4.40E+04	4.40E+04	4.40E+04	4.40E+04	4.40E+04	4.40E+04
u237	1.14E-21	9.67E-22	8.21E-22	6.98E-22	5.93E-22	5.03E-22	4.28E-22	3.63E-22	3.09E-22	2.23E-22	1.89E-22
u238	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.39E-31	1.55E-31	1.71E-31	1.87E-31	2.03E-31	2.18E-31	2.34E-31	2.49E-31	2.65E-31	2.95E-31	3.11E-31
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	4.13E-04	4.08E-04	4.03E-04	3.98E-04	3.93E-04	3.89E-04	3.84E-04	3.79E-04	3.75E-04	3.66E-04	3.61E-04
np237	9.78E+03	9.77E+03	9.77E+03	9.76E+03	9.76E+03	9.75E+03	9.74E+03	9.74E+03	9.73E+03	9.72E+03	9.71E+03
np238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np239	6.61E-11	5.48E-11	4.54E-11	3.76E-11	3.12E-11	2.58E-11	2.14E-11	1.77E-11	1.47E-11	1.01E-11	8.35E-12
np240m	1.19E-33	1.33E-33	1.46E-33	1.59E-33	1.73E-33	1.86E-33	1.99E-33	2.13E-33	2.26E-33	2.52E-33	2.65E-33
np240	1.22E-35	1.36E-35	1.50E-35	1.64E-35	1.78E-35	1.92E-35	2.05E-35	2.19E-35	2.32E-35	2.59E-35	2.73E-35
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	9.26E-10	9.15E-10	9.04E-10	8.93E-10	8.83E-10	8.72E-10	8.62E-10	8.51E-10	8.41E-10	8.21E-10	8.11E-10
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	1.59E-37	8.34E-42	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu239	5.70E+03	5.38E+03	5.08E+03	4.80E+03	4.53E+03	4.28E+03	4.04E+03	3.81E+03	3.60E+03	3.21E+03	3.03E+03
pu240	5.92E+01	4.79E+01	3.88E+01	3.14E+01	2.54E+01	2.06E+01	1.67E+01	1.35E+01	1.09E+01	7.16E+00	5.79E+00
pu241	3.76E-14	3.19E-14	2.71E-14	2.30E-14	1.96E-14	1.66E-14	1.41E-14	1.20E-14	1.02E-14	7.36E-15	6.25E-15
pu242	3.74E-02	3.72E-02	3.71E-02	3.69E-02	3.68E-02	3.67E-02	3.65E-02	3.64E-02	3.63E-02	3.60E-02	3.59E-02
pu243	4.55E-27	4.54E-27	4.54E-27	4.54E-27	4.54E-27	4.54E-27	4.54E-27	4.54E-27	4.54E-27	4.54E-27	4.54E-27
pu244	7.06E-21	7.86E-21	8.66E-21	9.46E-21	1.03E-20	1.10E-20	1.18E-20	1.26E-20	1.34E-20	1.50E-20	1.57E-20
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	2.80E-11	2.09E-12	8.97E-13	7.27E-13	6.16E-13	5.23E-13	4.44E-13	3.77E-13	3.21E-13	2.32E-13	1.97E-13
am242m	1.19E-37	6.44E-42	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am243	7.68E-05	6.37E-05	5.27E-05	4.37E-05	3.62E-05	3.00E-05	2.49E-05	2.06E-05	1.71E-05	1.17E-05	9.70E-06
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1 actinides page 123

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
cm242	3.10E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	2.26E-11	1.92E-11	1.63E-11	1.39E-11	1.18E-11	1.00E-11	8.49E-12	7.21E-12	6.13E-12	4.42E-12	3.76E-12	
cm246	7.05E-14	5.26E-14	3.93E-14	2.93E-14	2.18E-14	1.63E-14	1.22E-14	9.07E-15	6.77E-15	3.77E-15	2.81E-15	
cm247	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	
cm248	2.19E-19	2.18E-19	2.17E-19	2.16E-19	2.15E-19	2.15E-19	2.14E-19	2.13E-19	2.12E-19	2.10E-19	2.09E-19	
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cm250	1.78E-34	1.64E-34	1.52E-34	1.40E-34	1.29E-34	1.19E-34	1.10E-34	1.02E-34	9.40E-35	8.01E-35	7.40E-35	
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cf249	2.65E-37	5.08E-39	9.73E-41	1.74E-42	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cf251	1.69E-34	3.61E-35	7.72E-36	1.65E-36	3.52E-37	7.52E-38	1.61E-38	3.43E-39	7.32E-40	3.34E-41	7.03E-42	
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
total	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	

1 actinides page 124

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	3.77E-06	4.05E-06	4.33E-06	4.60E-06	4.86E-06	5.12E-06	5.37E-06	5.62E-06	5.86E-06	6.32E-06	6.54E-06	

tl207	1.55E-01	1.63E-01	1.71E-01	1.78E-01	1.85E-01	1.92E-01	1.98E-01	2.04E-01	2.10E-01	2.22E-01	2.27E-01
tl208	1.47E-06	1.57E-06	1.66E-06	1.76E-06	1.86E-06	1.96E-06	2.06E-06	2.16E-06	2.26E-06	2.46E-06	2.56E-06
tl209	9.40E-03	1.05E-02	1.15E-02	1.26E-02	1.37E-02	1.47E-02	1.58E-02	1.69E-02	1.80E-02	2.01E-02	2.11E-02
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	4.48E-01	4.98E-01	5.49E-01	5.99E-01	6.51E-01	7.02E-01	7.53E-01	8.04E-01	8.55E-01	9.57E-01	1.01E+00
pb210	2.85E+00	3.07E+00	3.28E+00	3.48E+00	3.68E+00	3.88E+00	4.07E+00	4.25E+00	4.44E+00	4.79E+00	4.95E+00
pb211	1.56E-01	1.64E-01	1.71E-01	1.78E-01	1.85E-01	1.92E-01	1.99E-01	2.05E-01	2.11E-01	2.22E-01	2.28E-01
pb212	4.08E-06	4.36E-06	4.63E-06	4.91E-06	5.18E-06	5.46E-06	5.73E-06	6.01E-06	6.28E-06	6.84E-06	7.11E-06
pb214	2.85E+00	3.07E+00	3.28E+00	3.48E+00	3.68E+00	3.88E+00	4.07E+00	4.26E+00	4.44E+00	4.79E+00	4.95E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.85E+00	3.07E+00	3.28E+00	3.48E+00	3.68E+00	3.88E+00	4.07E+00	4.25E+00	4.44E+00	4.79E+00	4.95E+00
bi211	1.56E-01	1.64E-01	1.71E-01	1.78E-01	1.85E-01	1.92E-01	1.99E-01	2.05E-01	2.11E-01	2.22E-01	2.28E-01
bi212	4.08E-06	4.36E-06	4.63E-06	4.91E-06	5.18E-06	5.46E-06	5.73E-06	6.01E-06	6.28E-06	6.84E-06	7.11E-06
bi213	4.48E-01	4.98E-01	5.49E-01	5.99E-01	6.51E-01	7.02E-01	7.53E-01	8.04E-01	8.55E-01	9.57E-01	1.01E+00
bi214	2.85E+00	3.07E+00	3.28E+00	3.48E+00	3.68E+00	3.88E+00	4.07E+00	4.26E+00	4.44E+00	4.79E+00	4.95E+00
po210	2.85E+00	3.07E+00	3.28E+00	3.48E+00	3.68E+00	3.88E+00	4.07E+00	4.25E+00	4.44E+00	4.79E+00	4.95E+00
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	4.28E-04	4.50E-04	4.71E-04	4.91E-04	5.10E-04	5.28E-04	5.46E-04	5.63E-04	5.80E-04	6.11E-04	6.26E-04
po212	2.61E-06	2.79E-06	2.97E-06	3.14E-06	3.32E-06	3.50E-06	3.67E-06	3.85E-06	4.03E-06	4.38E-06	4.56E-06
po213	4.38E-01	4.87E-01	5.37E-01	5.87E-01	6.37E-01	6.87E-01	7.37E-01	7.87E-01	8.37E-01	9.37E-01	9.86E-01
po214	2.85E+00	3.07E+00	3.28E+00	3.48E+00	3.68E+00	3.88E+00	4.07E+00	4.25E+00	4.44E+00	4.79E+00	4.95E+00
po215	1.56E-01	1.64E-01	1.71E-01	1.78E-01	1.85E-01	1.92E-01	1.99E-01	2.05E-01	2.11E-01	2.22E-01	2.28E-01
po216	4.08E-06	4.36E-06	4.63E-06	4.91E-06	5.18E-06	5.46E-06	5.73E-06	6.01E-06	6.28E-06	6.84E-06	7.11E-06
po218	2.85E+00	3.07E+00	3.28E+00	3.48E+00	3.68E+00	3.88E+00	4.07E+00	4.26E+00	4.44E+00	4.79E+00	4.96E+00
at217	4.48E-01	4.98E-01	5.49E-01	6.00E-01	6.51E-01	7.02E-01	7.53E-01	8.04E-01	8.55E-01	9.57E-01	1.01E+00
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	1.56E-01	1.64E-01	1.71E-01	1.78E-01	1.85E-01	1.92E-01	1.99E-01	2.05E-01	2.11E-01	2.22E-01	2.28E-01
rn220	4.08E-06	4.36E-06	4.63E-06	4.91E-06	5.18E-06	5.46E-06	5.73E-06	6.01E-06	6.28E-06	6.84E-06	7.11E-06
rn222	2.85E+00	3.07E+00	3.28E+00	3.48E+00	3.68E+00	3.88E+00	4.07E+00	4.26E+00	4.44E+00	4.79E+00	4.96E+00
fr221	4.48E-01	4.98E-01	5.49E-01	6.00E-01	6.51E-01	7.02E-01	7.53E-01	8.04E-01	8.55E-01	9.57E-01	1.01E+00
fr223	2.15E-03	2.26E-03	2.36E-03	2.46E-03	2.56E-03	2.65E-03	2.74E-03	2.83E-03	2.91E-03	3.07E-03	3.14E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	1.56E-01	1.64E-01	1.71E-01	1.78E-01	1.85E-01	1.92E-01	1.99E-01	2.05E-01	2.11E-01	2.22E-01	2.28E-01
ra224	4.08E-06	4.36E-06	4.63E-06	4.91E-06	5.18E-06	5.46E-06	5.73E-06	6.01E-06	6.28E-06	6.84E-06	7.11E-06
ra225	4.48E-01	4.98E-01	5.49E-01	6.00E-01	6.51E-01	7.02E-01	7.53E-01	8.04E-01	8.55E-01	9.57E-01	1.01E+00
ra226	2.85E+00	3.07E+00	3.28E+00	3.48E+00	3.68E+00	3.88E+00	4.07E+00	4.26E+00	4.44E+00	4.79E+00	4.96E+00
ra228	3.60E-06	3.88E-06	4.16E-06	4.44E-06	4.72E-06	5.00E-06	5.28E-06	5.56E-06	5.84E-06	6.41E-06	6.69E-06
ac225	4.48E-01	4.98E-01	5.49E-01	6.00E-01	6.51E-01	7.02E-01	7.53E-01	8.04E-01	8.55E-01	9.57E-01	1.01E+00
ac227	1.56E-01	1.64E-01	1.71E-01	1.78E-01	1.85E-01	1.92E-01	1.99E-01	2.05E-01	2.11E-01	2.22E-01	2.28E-01
ac228	3.60E-06	3.88E-06	4.16E-06	4.44E-06	4.72E-06	5.00E-06	5.28E-06	5.56E-06	5.84E-06	6.41E-06	6.69E-06
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	1.54E-01	1.61E-01	1.69E-01	1.76E-01	1.83E-01	1.90E-01	1.96E-01	2.02E-01	2.08E-01	2.19E-01	2.24E-01
th228	4.08E-06	4.36E-06	4.63E-06	4.91E-06	5.18E-06	5.46E-06	5.73E-06	6.01E-06	6.28E-06	6.84E-06	7.11E-06
th229	4.48E-01	4.98E-01	5.49E-01	6.00E-01	6.51E-01	7.02E-01	7.53E-01	8.04E-01	8.55E-01	9.57E-01	1.01E+00
th230	3.11E+00	3.31E+00	3.52E+00	3.72E+00	3.91E+00	4.10E+00	4.29E+00	4.47E+00	4.64E+00	4.98E+00	5.15E+00
th231	3.45E-01	3.46E-01	3.47E-01	3.47E-01	3.48E-01	3.48E-01	3.49E-01	3.49E-01	3.50E-01	3.51E-01	3.51E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 125

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
th232	3.60E-06	3.88E-06	4.16E-06	4.44E-06	4.72E-06	5.00E-06	5.28E-06	5.56E-06	5.84E-06	6.41E-06	6.69E-06	
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	
pa231	1.56E-01	1.63E-01	1.71E-01	1.78E-01	1.85E-01	1.92E-01	1.99E-01	2.05E-01	2.11E-01	2.22E-01	2.27E-01	
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	

pa233	6.90E+00	6.89E+00	6.89E+00	6.88E+00	6.88E+00	6.87E+00	6.87E+00	6.87E+00	6.86E+00	6.85E+00	6.85E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	4.84E-07	4.78E-07	4.73E-07	4.67E-07	4.61E-07	4.56E-07	4.50E-07	4.45E-07	4.40E-07	4.29E-07	4.24E-07
u233	7.31E-01	7.85E-01	8.37E-01	8.90E-01	9.42E-01	9.93E-01	1.04E+00	1.09E+00	1.14E+00	1.24E+00	1.29E+00
u234	1.46E+01	1.46E+01	1.45E+01	1.44E+01	1.44E+01	1.43E+01	1.42E+01	1.42E+01	1.41E+01	1.40E+01	1.39E+01
u235	3.45E-01	3.46E-01	3.47E-01	3.47E-01	3.48E-01	3.48E-01	3.49E-01	3.49E-01	3.50E-01	3.51E-01	3.51E-01
u236	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00
u237	9.29E-17	7.89E-17	6.71E-17	5.70E-17	4.84E-17	4.11E-17	3.49E-17	2.97E-17	2.52E-17	1.82E-17	1.54E-17
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.29E-25	1.44E-25	1.59E-25	1.73E-25	1.88E-25	2.02E-25	2.17E-25	2.31E-25	2.45E-25	2.74E-25	2.88E-25
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	5.44E-06	5.37E-06	5.31E-06	5.25E-06	5.18E-06	5.12E-06	5.06E-06	5.00E-06	4.94E-06	4.82E-06	4.76E-06
np237	6.90E+00	6.89E+00	6.89E+00	6.88E+00	6.88E+00	6.87E+00	6.87E+00	6.87E+00	6.86E+00	6,85E+00	6.85E+00
np238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np239	1.53E-05	1.27E-05	1.05E-05	8.73E-06	7.23E-06	5.99E-06	4.96E-06	4.11E-06	3.41E-06	2.34E-06	1.94E-06
np240m	1.29E-25	1.44E-25	1.59E-25	1.73E-25	1.88E-25	2.02E-25	2.17E-25	2.31E-25	2.45E-25	2.74E-25	2.88E-25
np240	1.55E-28	1.73E-28	1.90E-28	2.08E-28	2.25E-28	2.43E-28	2.60E-28	2.77E-28	2.94E-28	3.28E-28	3.45E-28
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	4.84E-07	4.78E-07	4.73E-07	4.67E-07	4.61E-07	4.56E-07	4.50E-07	4.45E-07	4.40E-07	4.29E-07	4.24E-07
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu239	3.54E+02	3.34E+02	3.16E+02	2.98E+02	2.81E+02	2.66E+02	2.51E+02	2.37E+02	2.23E+02	1.99E+02	1.88E+02
pu240	1.34E+01	1.09E+01	8.81E+00	7.13E+00	5.77E+00	4.67E+00	3.78E+00	3.06E+00	2.48E+00	1.62E+00	1.32E+00
pu241	3.89E-12	3.30E-12	2.81E-12	2.38E-12	2.02E-12	1.72E-12	1.46E-12	1.24E-12	1.05E-12	7.61E-13	6.46E-13
pu242	1.48E-04	1.47E-04	1.47E-04	1.46E-04	1.46E-04	1.45E-04	1.45E-04	1.44E-04	1.43E-04	1.42E-04	1.42E-04
pu243	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20
pu244	1.29E-25	1.44E-25	1.59E-25	1.73E-25	1.88E-25	2.02E-25	2.17E-25	2.31E-25	2.45E-25	2.74E-25	2.88E-25
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	9.61E-11	7.18E-12	3.08E-12	2.49E-12	2.11E-12	1.79E-12	1.52E-12	1.30E-12	1.10E-12	7.97E-13	6.75E-13
am242m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am243	1.53E-05	1.27E-05	1.05E-05	8.73E-06	7.23E-06	5.99E-06	4.96E-06	4.11E-06	3.41E-06	2.34E-06	1.94E-06
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 126

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cm242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	3.88E-12	3.30E-12	2.80E-12	2.38E-12	2.02E-12	1.72E-12	1.46E-12	1.24E-12	1.05E-12	7.59E-13	6.45E-13
cm246	2.17E-14	1.62E-14	1.21E-14	9.00E-15	6.71E-15	5.01E-15	3.74E-15	2.79E-15	2.08E-15	1.16E-15	8.63E-16
cm247	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20
cm248	9.29E-22	9.25E-22	9.21E-22	9.17E-22	9.14E-22	9.10E-22	9.06E-22	9.02E-22	8.99E-22	8.92E-22	8.88E-22
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	4.43E+02	4.23E+02	4.05E+02	3.88E+02	3.72E+02	3.58E+02	3.45E+02	3.32E+02	3.21E+02	3.00E+02	2.90E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 127

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04
li 7	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06
be 9	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06
be 10	5.83E-05	5.83E-05	5.82E-05	5.82E-05	5.81E-05	5.81E-05	5.80E-05	5.80E-05	5.79E-05	5.78E-05	5.78E-05
c 14	9.96E-07	7.82E-07	6.14E-07	4.82E-07	3.78E-07	2.97E-07	2.33E-07	1.83E-07	1.44E-07	8.85E-08	6.95E-08
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08
zn 68	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08
zn 70	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 128

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ge 76	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
se 76	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
se 77	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
se 78	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
se 79	2.18E+00	2.17E+00	2.16E+00	2.15E+00	2.14E+00	2.13E+00	2.13E+00	2.12E+00	2.11E+00	2.09E+00	2.08E+00	
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
br 79	9.83E-02	1.07E-01	1.17E-01	1.26E-01	1.35E-01	1.44E-01	1.53E-01	1.61E-01	1.70E-01	1.88E-01	1.97E-01	
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
se 80	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
kr 80	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	

cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01
kr 81	2.69E-07	2.67E-07	2.66E-07	2.64E-07	2.62E-07	2.61E-07	2.59E-07	2.57E-07	2.56E-07	2.52E-07	2.51E-07
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 129

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02
rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02
sr 87	3.05E-04	3.09E-04	3.13E-04	3.17E-04	3.21E-04	3.25E-04	3.29E-04	3.33E-04	3.37E-04	3.45E-04	3.49E-04
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 130

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02
nb 91	2.29E-18	2.98E-19	3.88E-20	5.05E-21	6.57E-22	8.56E-23	1.11E-23	1.45E-24	1.89E-25	3.20E-27	4.17E-28
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02
nb 92	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	2.47E+02	2.47E+02	2.46E+02	2.46E+02	2.46E+02	2.46E+02	2.46E+02	2.45E+02	2.45E+02	2.45E+02	2.44E+02
nb 93	2.36E+00	2.59E+00	2.81E+00	3.03E+00	3.26E+00	3.48E+00	3.70E+00	3.92E+00	4.15E+00	4.59E+00	4.81E+00
nb 93m	2.60E-03	2.60E-03	2.60E-03	2.60E-03	2.59E-03	2.59E-03	2.59E-03	2.59E-03	2.58E-03	2.58E-03	2.58E-03
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 131

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02
nb 94	8.46E-05	7.90E-05	7.38E-05	6.89E-05	6.44E-05	6.01E-05	5.62E-05	5.25E-05	4.90E-05	4.27E-05	3.99E-05
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02
tc 98	8.26E-05	8.26E-05	8.25E-05	8.25E-05	8.25E-05	8.25E-05	8.24E-05	8.24E-05	8.24E-05	8.23E-05	8.23E-05
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	3.67E+02	3.65E+02	3.62E+02	3.60E+02	3.58E+02	3.55E+02	3.53E+02	3.51E+02	3.48E+02	3.44E+02	3.42E+02
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	2.62E+01	2.86E+01	3.10E+01	3.34E+01	3.57E+01	3.81E+01	4.04E+01	4.27E+01	4.50E+01	4.96E+01	5.18E+01

rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 132

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 133

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	2.53E+01	2.53E+01	2.53E+01	2.53E+01	2.53E+01	2.53E+01	2.53E+01	2.53E+01	2.53E+01	2.53E+01	2.53E+01
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	5.47E-02	6.02E-02	6.56E-02	7.10E-02	7.64E-02	8.18E-02	8.72E-02	9.26E-02	9.80E-02	1.09E-01	1.14E-01
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01
ag108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd108	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00
ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 134

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
cd110	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd111	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd112	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd113	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	
cd113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in113	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd114	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn114	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in115	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 135

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
sn115	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	

tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 136

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00
te123	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	3.90E+00	3.85E+00	3.79E+00	3.74E+00	3.69E+00	3.64E+00	3.59E+00	3.54E+00	3.49E+00	3.40E+00	3.35E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 137

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sb126	1.85E-07	1.83E-07	1.80E-07	1.78E-07	1.75E-07	1.73E-07	1.71E-07	1.68E-07	1.66E-07	1.61E-07	1.59E-07
sb126m	1.41E-09	1.39E-09	1.37E-09	1.35E-09	1.33E-09	1.31E-09	1.30E-09	1.28E-09	1.26E-09	1.23E-09	1.21E-09
te126	6.39E-01	6.93E-01	7.46E-01	7.98E-01	8.50E-01	9.01E-01	9.51E-01	1.00E+00	1.05E+00	1.14E+00	1.19E+00
xe126	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.74E+01	6.74E+01	6.74E+01	6.74E+01	6.74E+01	6.74E+01
xe129	6.24E-02	6.83E-02	7.43E-02	8.02E-02	8.62E-02	9.22E-02	9.81E-02	1.04E-01	1.10E-01	1.22E-01	1.28E-01
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 138

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06

in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02
ba133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	5.79E+02	5.78E+02	5.78E+02	5.78E+02	5.77E+02	5.77E+02	5.76E+02	5.76E+02	5.76E+02	5.75E+02	5.75E+02
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	3.67E+00	4.02E+00	4.37E+00	4.72E+00	5.07E+00	5.41E+00	5.76E+00	6.11E+00	6.46E+00	7.15E+00	7.50E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 139

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02
ba137m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02
la138	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 140

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
nd143	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
nd144	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	

i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02
pm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02
pm146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 141

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sm148	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01
eu150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu151	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01
eu152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 142

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sm154	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00
eu154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 143

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
dy161	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
dy162	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
dy163	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
dy164	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	

ho165	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	6.14E-11	1.93E-11	6.09E-12	1.92E-12	6.04E-13	1.90E-13	6.00E-14	1.89E-14	5.95E-15	5.90E-16	1.86E-16
er166	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04
er167	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07
total	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 144

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.29E-06	1.29E-06	1.29E-06
c 14	4.44E-06	3.49E-06	2.74E-06	2.15E-06	1.69E-06	1.32E-06	1.04E-06	8.16E-07	6.41E-07	3.95E-07	3.10E-07
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 145

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	2.99E-02	2.98E-02	2.97E-02	2.95E-02	2.94E-02	2.93E-02	2.92E-02	2.90E-02	2.89E-02	2.87E-02	2.86E-02
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	5.58E-09	5.54E-09	5.51E-09	5.47E-09	5.44E-09	5.40E-09	5.37E-09	5.33E-09	5.30E-09	5.23E-09	5.20E-09
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 146

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 147

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	1.32E-17	1.72E-18	2.24E-19	2.92E-20	3.80E-21	4.94E-22	6.44E-23	8.38E-24	1.09E-24	1.85E-26	2.41E-27
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	6.21E-01	6.20E-01	6.20E-01	6.19E-01	6.18E-01	6.18E-01	6.17E-01	6.17E-01	6.16E-01	6.15E-01	6.15E-01
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	6.21E-01	6.20E-01	6.20E-01	6.19E-01	6.18E-01	6.18E-01	6.17E-01	6.17E-01	6.16E-01	6.15E-01	6.15E-01
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 148

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	1.59E-05	1.48E-05	1.38E-05	1.29E-05	1.21E-05	1.13E-05	1.05E-05	9.83E-06	9.18E-06	8.01E-06	7.48E-06
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	7.18E-08	7.18E-08	7.18E-08	7.17E-08	7.17E-08	7.17E-08	7.17E-08	7.16E-08	7.16E-08	7.16E-08	7.15E-08
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	6.28E+00	6.24E+00	6.20E+00	6.16E+00	6.12E+00	6.08E+00	6.04E+00	6.00E+00	5.96E+00	5.88E+00	5.85E+00
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 149

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	

tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 150

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 151

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14
cd113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 152

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 153

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
te123	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sn126	1.11E-01	1.09E-01	1.08E-01	1.06E-01	1.05E-01	1.03E-01	1.02E-01	1.00E-01	9.91E-02	9.64E-02	9.50E-02	

1

0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 154

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
sb126	1.55E-02	1.53E-02	1.51E-02	1.49E-02	1.47E-02	1.45E-02	1.43E-02	1.41E-02	1.39E-02	1.35E-02	1.33E-02	
sb126m	1.11E-01	1.09E-01	1.08E-01	1.06E-01	1.05E-01	1.03E-01	1.02E-01	1.00E-01	9.91E-02	9.64E-02	9.50E-02	

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 155

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	6.66E-01	6.66E-01	6.66E-01	6.65E-01	6.65E-01	6.64E-01	6.64E-01	6.64E-01	6.63E-01	6.62E-01	6.62E-01
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 156

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 157

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10
i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 158

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sm148	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 159

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
eu154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
eu155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	

eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel

0 fission products page 160

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	

eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	1.10E-10	3.47E-11	1.09E-11	3.45E-12	1.09E-12	3.42E-13	1.08E-13	3.39E-14	1.07E-14	1.06E-15	3.34E-16
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.48E+00	8.44E+00	8.39E+00	8.35E+00	8.30E+00	8.26E+00	8.21E+00	8.17E+00	8.12E+00	8.04E+00	7.99E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 161

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
he 4	1.57E+02	1.61E+02	1.70E+02	1.78E+02	1.86E+02	1.93E+02	1.99E+02	2.06E+02	2.38E+02	3.25E+02	3.68E+02
tl206	3.01E-14	3.11E-14	3.34E-14	3.57E-14	3.78E-14	3.97E-14	4.16E-14	4.33E-14	5.25E-14	6.05E-14	5.97E-14
tl207	1.19E-09	1.22E-09	1.28E-09	1.34E-09	1.39E-09	1.44E-09	1.48E-09	1.52E-09	1.68E-09	1.85E-09	1.86E-09
tl208	8.63E-15	8.96E-15	9.80E-15	1.06E-14	1.15E-14	1.23E-14	1.32E-14	1.40E-14	1.90E-14	3.59E-14	4.43E-14
tl209	5.17E-11	5.43E-11	6.06E-11	6.68E-11	7.29E-11	7.89E-11	8.47E-11	9.04E-11	1.22E-10	2.10E-10	2.25E-10
pb206	4.88E+01	5.29E+01	6.35E+01	7.50E+01	8.71E+01	9.99E+01	1.13E+02	1.27E+02	2.22E+02	6.03E+02	8.01E+02
pb207	2.64E+00	2.83E+00	3.31E+00	3.81E+00	4.33E+00	4.87E+00	5.43E+00	6.00E+00	9.69E+00	2.34E+01	3.05E+01
pb208	2.56E-02	2.56E-02	2.56E-02	2.56E-02	2.56E-02	2.57E-02	2.57E-02	2.57E-02	2.59E-02	2.68E-02	2.74E-02
pb209	2.18E-07	2.29E-07	2.56E-07	2.82E-07	3.08E-07	3.33E-07	3.58E-07	3.82E-07	5.15E-07	8.87E-07	9.50E-07
pb210	6.49E-02	6.70E-02	7.21E-02	7.69E-02	8.15E-02	8.57E-02	8.96E-02	9.33E-02	1.13E-01	1.30E-01	1.29E-01
pb211	9.21E-09	9.42E-09	9.91E-09	1.03E-08	1.07E-08	1.11E-08	1.14E-08	1.17E-08	1.30E-08	1.43E-08	1.44E-08
pb212	5.12E-12	5.31E-12	5.81E-12	6.31E-12	6.80E-12	7.30E-12	7.80E-12	8.30E-12	1.13E-11	2.13E-11	2.63E-11
pb214	1.51E-07	1.56E-07	1.68E-07	1.79E-07	1.90E-07	2.00E-07	2.09E-07	2.17E-07	2.64E-07	3.04E-07	3.00E-07
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	8.32E+00	9.16E+00	1.14E+01	1.39E+01	1.67E+01	1.97E+01	2.29E+01	2.64E+01	5.16E+01	1.85E+02	2.70E+02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	3.99E-05	4.12E-05	4.44E-05	4.74E-05	5.01E-05	5.27E-05	5.52E-05	5.74E-05	6.96E-05	8.02E-05	7.92E-05
bi211	5.46E-10	5.59E-10	5.87E-10	6.13E-10	6.37E-10	6.58E-10	6.78E-10	6.95E-10	7.70E-10	8.47E-10	8.54E-10
bi212	4.85E-13	5.04E-13	5.51E-13	5.98E-13	6.45E-13	6.93E-13	7.40E-13	7.87E-13	1.07E-12	2.02E-12	2.49E-12
bi213	5.20E-08	5.46E-08	6.09E-08	6.72E-08	7.33E-08	7.93E-08	8.51E-08	9.09E-08	1.23E-07	2.11E-07	2.26E-07
bi214	1.12E-07	1.16E-07	1.25E-07	1.33E-07	1.41E-07	1.48E-07	1.55E-07	1.61E-07	1.96E-07	2.25E-07	2.23E-07
po210	1.10E-03	1.14E-03	1.23E-03	1.31E-03	1.38E-03	1.46E-03	1.52E-03	1.59E-03	1.92E-03	2.22E-03	2.19E-03
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	6.04E-15	6.17E-15	6.49E-15	6.78E-15	7.04E-15	7.27E-15	7.49E-15	7.68E-15	8.51E-15	9.36E-15	9.44E-15
po212	2.55E-23	2.65E-23	2.90E-23	3.14E-23	3.39E-23	3.64E-23	3.89E-23	4.13E-23	5.62E-23	1.06E-22	1.31E-22
po213	7.81E-17	8.20E-17	9.16E-17	1.01E-16	1.10E-16	1.19E-16	1.28E-16	1.37E-16	1.84E-16	3.17E-16	3.40E-16
po214	1.54E-14	1.59E-14	1.72E-14	1.83E-14	1.94E-14	2.04E-14	2.13E-14	2.22E-14	2.69E-14	3.10E-14	3.06E-14

po215	7.72E-15	7.89E-15	8.30E-15	8.66E-15	9.00E-15	9.30E-15	9.57E-15	9.82E-15	1.09E-14	1.20E-14	1.21E-14
po216	1.97E-17	2.05E-17	2.24E-17	2.43E-17	2.62E-17	2.82E-17	3.01E-17	3.20E-17	4.35E-17	8.20E-17	1.01E-16
po218	1.78E-08	1.84E-08	1.98E-08	2.11E-08	2.24E-08	2.35E-08	2.46E-08	2.56E-08	3.11E-08	3.58E-08	3.53E-08
at217	6.25E-13	6.56E-13	7.33E-13	8.08E-13	8.82E-13	9.54E-13	1.02E-12	1.09E-12	1.47E-12	2.54E-12	2.72E-12
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	1.75E-11	1.79E-11	1.88E-11	1.96E-11	2.04E-11	2.11E-11	2.17E-11	2.22E-11	2.46E-11	2.71E-11	2.73E-11
rn220	7.71E-15	8.01E-15	8.75E-15	9.50E-15	1.03E-14	1.10E-14	1.17E-14	1.25E-14	1.70E-14	3.20E-14	3.96E-14
rn222	3.22E-05	3.33E-05	3.58E-05	3.82E-05	4.04E-05	4.25E-05	4.45E-05	4.63E-05	5.62E-05	6.47E-05	6.39E-05
fr221	5.80E-09	6.09E-09	6.80E-09	7.49E-09	8.18E-09	8.84E-09	9.50E-09	1.01E-08	1.37E-08	2.36E-08	2.52E-08
fr223	8.12E-11	8.30E-11	8.72E-11	9.11E-11	9.46E-11	9.78E-11	1.01E-10	1.03E-10	1.14E-10	1.26E-10	1.27E-10
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	4.44E-06	4.54E-06	4.78E-06	4.99E-06	5.18E-06	5.35E-06	5.51E-06	5.65E-06	6.26E-06	6.88E-06	6.94E-06
ra224	4.46E-11	4.64E-11	5.07E-11	5.50E-11	5.94E-11	6.37E-11	6.80E-11	7.24E-11	9.84E-11	1.85E-10	2.29E-10
ra225	2.57E-05	2.70E-05	3.01E-05	3.32E-05	3.62E-05	3.92E-05	4.21E-05	4.49E-05	6.05E-05	1.04E-04	1.12E-04
ra226	5.01E+00	5.18E+00	5.57E+00	5.94E+00	6.29E+00	6.62E+00	6.92E+00	7.21E+00	8.74E+00	1.01E+01	9.94E+00
ra228	2.45E-08	2.55E-08	2.81E-08	3.07E-08	3.33E-08	3.58E-08	3.84E-08	4.10E-08	5.64E-08	1.08E-07	1.33E-07
ac225	1.73E-05	1.82E-05	2.03E-05	2.24E-05	2.45E-05	2.65E-05	2.84E-05	3.03E-05	4.09E-05	7.05E-05	7.55E-05
ac227	3.14E-03	3.22E-03	3.38E-03	3.53E-03	3.67E-03	3.79E-03	3.90E-03	4.00E-03	4.43E-03	4.87E-03	4.92E-03
ac228	2.99E-12	3.12E-12	3.43E-12	3.74E-12	4.06E-12	4.37E-12	4.69E-12	5.00E-12	6.88E-12	1.31E-11	1.63E-11
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	7.30E-06	7.46E-06	7.85E-06	8.19E-06	8.51E-06	8.79E-06	9.05E-06	9.29E-06	1.03E-05	1.13E-05	1.14E-05
th228	8.67E-09	9.01E-09	9.85E-09	1.07E-08	1.15E-08	1.24E-08	1.32E-08	1.41E-08	1.91E-08	3.60E-08	4.45E-08
th229	5.08E+00	5.33E+00	5.96E+00	6.57E+00	7.17E+00	7.75E+00	8.33E+00	8.88E+00	1.20E+01	2.06E+01	2.21E+01
th230	2.50E+02	2.57E+02	2.76E+02	2.93E+02	3.09E+02	3.24E+02	3.38E+02	3.52E+02	4.13E+02	4.79E+02	4.70E+02
th231	6.60E-07	6.61E-07	6.62E-07	6.63E-07	6.65E-07	6.66E-07	6.66E-07	6.67E-07	6.70E-07	6.72E-07	6.72E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 162

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
th232	6.09E+01	6.35E+01	6.99E+01	7.63E+01	8.27E+01	8.91E+01	9.55E+01	1.02E+02	1.40E+02	2.68E+02	3.32E+02
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04
pa231	4.81E+00	4.92E+00	5.17E+00	5.40E+00	5.61E+00	5.80E+00	5.97E+00	6.12E+00	6.78E+00	7.46E+00	7.53E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.30E-04	3.30E-04	3.29E-04	3.29E-04	3.28E-04	3.27E-04	3.27E-04	3.26E-04	3.23E-04	3.13E-04	3.08E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	1.92E-08	1.90E-08	1.84E-08	1.79E-08	1.73E-08	1.68E-08	1.63E-08	1.58E-08	1.32E-08	7.23E-09	5.35E-09
u233	1.34E+02	1.39E+02	1.51E+02	1.63E+02	1.75E+02	1.86E+02	1.98E+02	2.08E+02	2.69E+02	4.15E+02	4.65E+02
u234	2.24E+03	2.23E+03	2.20E+03	2.18E+03	2.15E+03	2.13E+03	2.11E+03	2.08E+03	1.95E+03	1.59E+03	1.44E+03
u235	1.62E+05	1.62E+05	1.63E+05	1.63E+05	1.63E+05	1.64E+05	1.64E+05	1.64E+05	1.65E+05	1.65E+05	1.65E+05
u236	4.40E+04	4.40E+04	4.40E+04	4.40E+04	4.40E+04	4.40E+04	4.40E+04	4.40E+04	4.39E+04	4.38E+04	4.37E+04
u237	1.89E-22	1.61E-22	1.07E-22	7.11E-23	4.73E-23	3.14E-23	2.09E-23	1.39E-23	1.20E-24	3.45E-28	5.85E-30
u238	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	3.11E-31	3.26E-31	3.63E-31	4.01E-31	4.38E-31	4.74E-31	5.10E-31	5.46E-31	7.53E-31	1.36E-30	1.62E-30
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	3.61E-04	3.57E-04	3.46E-04	3.36E-04	3.26E-04	3.17E-04	3.07E-04	2.98E-04	2.49E-04	1.36E-04	1.01E-04
np237	9.71E+03	9.70E+03	9.69E+03	9.67E+03	9.66E+03	9.64E+03	9.63E+03	9.61E+03	9.52E+03	9.21E+03	9.07E+03
np238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np239	8.35E-12	6.92E-12	4.32E-12	2.70E-12	1.69E-12	1.05E-12	6.59E-13	4.12E-13	2.45E-14	2.02E-18	1.83E-20
np240m	2.65E-33	2.78E-33	3.10E-33	3.42E-33	3.73E-33	4.05E-33	4.36E-33	4.66E-33	6.43E-33	1.16E-32	1.38E-32
np240	2.73E-35	2.86E-35	3.19E-35	3.52E-35	3.84E-35	4.16E-35	4.48E-35	4.79E-35	6.61E-35	1.19E-34	1.42E-34
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	8.11E-10	8.02E-10	7.78E-10	7.55E-10	7.32E-10	7.10E-10	6.89E-10	6.69E-10	5.58E-10	3.06E-10	2.26E-10
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu239	3.03E+03	2.86E+03	2.48E+03	2.15E+03	1.86E+03	1.61E+03	1.39E+03	1.21E+03	5.10E+02	2.87E+01	6.82E+00
pu240	5.79E+00	4.69E+00	2.77E+00	1.63E+00	9.62E-01	5.67E-01	3.34E-01	1.97E-01	8.29E-03	2.14E-07	1.09E-09
pu241	6.25E-15	5.31E-15	3.53E-15	2.35E-15	1.56E-15	1.04E-15	6.91E-16	4.59E-16	3.98E-17	1.14E-20	1.93E-22
pu242	3.59E-02	3.57E-02	3.54E-02	3.51E-02	3.48E-02	3.44E-02	3.41E-02	3.38E-02	3.20E-02	2.66E-02	2.42E-02
pu243	4.54E-27	4.54E-27	4.54E-27	4.54E-27	4.54E-27	4.54E-27	4.54E-27	4.54E-27	4.53E-27	4.51E-27	4.50E-27
pu244	1.57E-20	1.65E-20	1.84E-20	2.03E-20	2.22E-20	2.40E-20	2.58E-20	2.77E-20	3.81E-20	6.88E-20	8.19E-20
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	1.97E-13	1.67E-13	1.06E-13	7.08E-14	4.71E-14	3.13E-14	2.08E-14	1.39E-14	1.20E-15	3.62E-19	5.82E-21
am242m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am243	9.70E-06	8.04E-06	5.02E-06	3.14E-06	1.96E-06	1.23E-06	7.66E-07	4.79E-07	2.85E-08	2.34E-12	2.13E-14
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 163

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cm242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	3.76E-12	3.19E-12	2.12E-12	1.41E-12	9.39E-13	6.24E-13	4.15E-13	2.76E-13	2.39E-14	6.86E-18	1.16E-19
cm246	2.81E-15	2.10E-15	1.01E-15	4.84E-16	2.33E-16	1.12E-16	5.38E-17	2.58E-17	3.19E-19	1.38E-25	9.08E-29
cm247	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.31E-16	1.30E-16	1.30E-16	1.30E-16	1.30E-16	1.29E-16
cm248	2.09E-19	2.08E-19	2.06E-19	2.04E-19	2.02E-19	2.00E-19	1.98E-19	1.96E-19	1.84E-19	1.50E-19	1.36E-19
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	7.40E-35	6.83E-35	5.60E-35	4.59E-35	3.76E-35	3.08E-35	2.52E-35	2.07E-35	6.26E-36	1.16E-37	1.59E-38
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	7.03E-42	1.41E-42	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 164

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	6.54E-06	6.75E-06	7.27E-06	7.76E-06	8.21E-06	8.64E-06	9.03E-06	9.41E-06	1.14E-05	1.31E-05	1.30E-05

tl207	2.27E-01	2.32E-01	2.44E-01	2.55E-01	2.65E-01	2.73E-01	2.81E-01	2.89E-01	3.20E-01	3.52E-01	3.55E-01
tl208	2.56E-06	2.65E-06	2.90E-06	3.15E-06	3.40E-06	3.65E-06	3.90E-06	4.14E-06	5.64E-06	1.06E-05	1.31E-05
tl209	2.11E-02	2.22E-02	2.48E-02	2.73E-02	2.98E-02	3.23E-02	3.46E-02	3.70E-02	4.98E-02	8.59E-02	9.20E-02
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	1.01E+00	1.06E+00	1.18E+00	1.30E+00	1.42E+00	1.54E+00	1.65E+00	1.76E+00	2.37E+00	4.09E+00	4.38E+00
pb210	4.95E+00	5.12E+00	5.51E+00	5.88E+00	6.22E+00	6.54E+00	6.84E+00	7.13E+00	8.64E+00	9.96E+00	9.83E+00
pb211	2.28E-01	2.33E-01	2.45E-01	2.55E-01	2.65E-01	2.74E-01	2.82E-01	2.90E-01	3.21E-01	3.53E-01	3.56E-01
pb212	7.11E-06	7.39E-06	8.08E-06	8.77E-06	9.46E-06	1.01E-05	1.08E-05	1.15E-05	1.57E-05	2.96E-05	3.65E-05
pb214	4.95E+00	5.12E+00	5.51E+00	5.88E+00	6.22E+00	6.54E+00	6.85E+00	7.13E+00	8.64E+00	9.96E+00	9.83E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	4.95E+00	5.12E+00	5.51E+00	5.88E+00	6.22E+00	6.54E+00	6.84E+00	7.13E+00	8.64E+00	9.96E+00	9.83E+00
bi211	2.28E-01	2.33E-01	2.45E-01	2.55E-01	2.65E-01	2.74E-01	2.82E-01	2.90E-01	3.21E-01	3.53E-01	3.56E-01
bi212	7.11E-06	7.39E-06	8.08E-06	8.77E-06	9.46E-06	1.01E-05	1.08E-05	1.15E-05	1.57E-05	2.96E-05	3.65E-05
bi213	1.01E+00	1.06E+00	1.18E+00	1.30E+00	1.42E+00	1.54E+00	1.65E+00	1.76E+00	2.37E+00	4.09E+00	4.38E+00
bi214	4.95E+00	5.12E+00	5.51E+00	5.88E+00	6.22E+00	6.54E+00	6.85E+00	7.13E+00	8.64E+00	9.96E+00	9.83E+00
po210	4.95E+00	5.12E+00	5.51E+00	5.88E+00	6.22E+00	6.54E+00	6.84E+00	7.13E+00	8.64E+00	9.96E+00	9.83E+00
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	6.26E-04	6.40E-04	6.73E-04	7.03E-04	7.30E-04	7.54E-04	7.76E-04	7.96E-04	8.82E-04	9.70E-04	9.78E-04
po212	4.56E-06	4.73E-06	5.17E-06	5.62E-06	6.06E-06	6.50E-06	6.94E-06	7.39E-06	1.00E-05	1.89E-05	2.34E-05
po213	9.86E-01	1.03E+00	1.16E+00	1.27E+00	1.39E+00	1.50E+00	1.62E+00	1.72E+00	2.32E+00	4.01E+00	4.29E+00
po214	4.95E+00	5.12E+00	5.51E+00	5.88E+00	6.22E+00	6.54E+00	6.84E+00	7.13E+00	8.64E+00	9.96E+00	9.83E+00
po215	2.28E-01	2.33E-01	2.45E-01	2.55E-01	2.65E-01	2.74E-01	2.82E-01	2.90E-01	3.21E-01	3.53E-01	3.56E-01
po216	7.11E-06	7.39E-06	8.08E-06	8.77E-06	9.46E-06	1.01E-05	1.08E-05	1.15E-05	1.57E-05	2.96E-05	3.65E-05
po218	4.96E+00	5.12E+00	5.51E+00	5.88E+00	6.22E+00	6.55E+00	6.85E+00	7.13E+00	8.65E+00	9.96E+00	9.83E+00
at217	1.01E+00	1.06E+00	1.18E+00	1.30E+00	1.42E+00	1.54E+00	1.65E+00	1.76E+00	2.37E+00	4.09E+00	4.38E+00
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	2.28E-01	2.33E-01	2.45E-01	2.55E-01	2.65E-01	2.74E-01	2.82E-01	2.90E-01	3.21E-01	3.53E-01	3.56E-01
rn220	7.11E-06	7.39E-06	8.08E-06	8.77E-06	9.46E-06	1.01E-05	1.08E-05	1.15E-05	1.57E-05	2.96E-05	3.65E-05
rn222	4.96E+00	5.12E+00	5.51E+00	5.88E+00	6.22E+00	6.55E+00	6.85E+00	7.13E+00	8.65E+00	9.96E+00	9.83E+00
fr221	1.01E+00	1.06E+00	1.18E+00	1.30E+00	1.42E+00	1.54E+00	1.65E+00	1.76E+00	2.37E+00	4.09E+00	4.38E+00
fr223	3.14E-03	3.21E-03	3.38E-03	3.53E-03	3.66E-03	3.78E-03	3.90E-03	4.00E-03	4.42E-03	4.87E-03	4.91E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	2.28E-01	2.33E-01	2.45E-01	2.55E-01	2.65E-01	2.74E-01	2.82E-01	2.90E-01	3.21E-01	3.53E-01	3.56E-01
ra224	7.11E-06	7.39E-06	8.08E-06	8.77E-06	9.46E-06	1.01E-05	1.08E-05	1.15E-05	1.57E-05	2.96E-05	3.65E-05
ra225	1.01E+00	1.06E+00	1.18E+00	1.30E+00	1.42E+00	1.54E+00	1.65E+00	1.76E+00	2.37E+00	4.09E+00	4.38E+00
ra226	4.96E+00	5.12E+00	5.51E+00	5.88E+00	6.22E+00	6.55E+00	6.85E+00	7.13E+00	8.65E+00	9.96E+00	9.83E+00
ra228	6.69E-06	6.97E-06	7.67E-06	8.37E-06	9.08E-06	9.78E-06	1.05E-05	1.12E-05	1.54E-05	2.94E-05	3.64E-05
ac225	1.01E+00	1.06E+00	1.18E+00	1.30E+00	1.42E+00	1.54E+00	1.65E+00	1.76E+00	2.37E+00	4.09E+00	4.38E+00
ac227	2.28E-01	2.33E-01	2.45E-01	2.55E-01	2.65E-01	2.74E-01	2.82E-01	2.90E-01	3.21E-01	3.53E-01	3.56E-01
ac228	6.69E-06	6.97E-06	7.67E-06	8.37E-06	9.08E-06	9.78E-06	1.05E-05	1.12E-05	1.54E-05	2.94E-05	3.64E-05
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	2.24E-01	2.29E-01	2.41E-01	2.52E-01	2.62E-01	2.70E-01	2.78E-01	2.86E-01	3.16E-01	3.48E-01	3.51E-01
th228	7.11E-06	7.39E-06	8.08E-06	8.77E-06	9.46E-06	1.01E-05	1.08E-05	1.15E-05	1.57E-05	2.96E-05	3.65E-05
th229	1.01E+00	1.06E+00	1.18E+00	1.30E+00	1.42E+00	1.54E+00	1.65E+00	1.76E+00	2.37E+00	4.09E+00	4.38E+00
th230	5.15E+00	5.31E+00	5.69E+00	6.04E+00	6.38E+00	6.69E+00	6.98E+00	7.25E+00	8.53E+00	9.89E+00	9.70E+00
th231	3.51E-01	3.51E-01	3.52E-01	3.53E-01	3.53E-01	3.54E-01	3.54E-01	3.55E-01	3.56E-01	3.57E-01	3.57E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 165

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
th232	6.69E-06	6.97E-06	7.67E-06	8.37E-06	9.08E-06	9.78E-06	1.05E-05	1.12E-05	1.54E-05	2.94E-05	3.64E-05
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	2.27E-01	2.33E-01	2.45E-01	2.55E-01	2.65E-01	2.74E-01	2.82E-01	2.89E-01	3.21E-01	3.53E-01	3.56E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.85E+00	6.84E+00	6.83E+00	6.82E+00	6.81E+00	6.80E+00	6.79E+00	6.78E+00	6.71E+00	6.50E+00	6.39E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	4.24E-07	4.19E-07	4.06E-07	3.94E-07	3.83E-07	3.71E-07	3.60E-07	3.50E-07	2.92E-07	1.60E-07	1.18E-07
u233	1.29E+00	1.34E+00	1.46E+00	1.57E+00	1.69E+00	1.80E+00	1.90E+00	2.01E+00	2.59E+00	4.00E+00	4.48E+00
u234	1.39E+01	1.39E+01	1.37E+01	1.35E+01	1.34E+01	1.33E+01	1.31E+01	1.30E+01	1.21E+01	9.88E+00	8.96E+00
u235	3.51E-01	3.51E-01	3.52E-01	3.53E-01	3.53E-01	3.54E-01	3.54E-01	3.55E-01	3.56E-01	3.57E-01	3.57E-01
u236	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.84E+00	2.83E+00	2.83E+00
u237	1.54E-17	1.31E-17	8.73E-18	5.80E-18	3.86E-18	2.57E-18	1.71E-18	1.14E-18	9.83E-20	2.82E-23	4.78E-25
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	2.88E-25	3.02E-25	3.37E-25	3.71E-25	4.05E-25	4.39E-25	4.73E-25	5.06E-25	6.98E-25	1.26E-24	1.50E-24
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	4.76E-06	4.71E-06	4.57E-06	4.43E-06	4.30E-06	4.17E-06	4.05E-06	3.93E-06	3.28E-06	1.79E-06	1.33E-06
np237	6.85E+00	6.84E+00	6.83E+00	6.82E+00	6.81E+00	6.80E+00	6.79E+00	6.78E+00	6.71E+00	6.50E+00	6.39E+00
np238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np239	1.94E-06	1.61E-06	1.00E-06	6.27E-07	3.92E-07	2.45E-07	1.53E-07	9.56E-08	5.69E-09	4.68E-13	4.25E-15
np240m	2.88E-25	3.02E-25	3.37E-25	3.71E-25	4.05E-25	4.39E-25	4.73E-25	5.06E-25	6.98E-25	1.26E-24	1.50E-24
np240	3.45E-28	3.62E-28	4.04E-28	4.45E-28	4.87E-28	5.27E-28	5.67E-28	6.07E-28	8.38E-28	1.51E-27	1.80E-27
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	4.24E-07	4.19E-07	4.06E-07	3.94E-07	3.83E-07	3.71E-07	3.60E-07	3.50E-07	2.92E-07	1.60E-07	1.18E-07
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu239	1.88E+02	1.78E+02	1.54E+02	1.33E+02	1.15E+02	9.99E+01	8.65E+01	7.49E+01	3.16E+01	1.78E+00	4.24E-01
pu240	1.32E+00	1.06E+00	6.28E-01	3.70E-01	2.18E-01	1.29E-01	7.59E-02	4.48E-02	1.88E-03	4.87E-08	2.48E-10
pu241	6.46E-13	5.49E-13	3.65E-13	2.43E-13	1.62E-13	1.07E-13	7.14E-14	4.75E-14	4.11E-15	1.18E-18	2.00E-20
pu242	1.42E-04	1.41E-04	1.40E-04	1.39E-04	1.37E-04	1.36E-04	1.35E-04	1.34E-04	1.26E-04	1.05E-04	9.57E-05
pu243	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.17E-20	1.17E-20
pu244	2.88E-25	3.02E-25	3.37E-25	3.72E-25	4.06E-25	4.40E-25	4.73E-25	5.07E-25	6.99E-25	1.26E-24	1.50E-24
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	6.75E-13	5.73E-13	3.65E-13	2.43E-13	1.62E-13	1.07E-13	7.15E-14	4.75E-14	4.11E-15	1.24E-18	2.00E-20
am242m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am243	1.94E-06	1.61E-06	1.00E-06	6.27E-07	3.92E-07	2.45E-07	1.53E-07	9.56E-08	5.69E-09	4.68E-13	4.25E-15
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 166

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cm242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	6.45E-13	5.48E-13	3.65E-13	2.42E-13	1.61E-13	1.07E-13	7.13E-14	4.74E-14	4.11E-15	1.18E-18	1.99E-20
cm246	8.63E-16	6.44E-16	3.09E-16	1.49E-16	7.15E-17	3.44E-17	1.65E-17	7.94E-18	9.79E-20	4.24E-26	2.79E-29
cm247	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.18E-20	1.17E-20	1.17E-20
cm248	8.88E-22	8.84E-22	8.75E-22	8.66E-22	8.58E-22	8.49E-22	8.40E-22	8.32E-22	7.82E-22	6.38E-22	5.76E-22
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	2.90E+02	2.82E+02	2.62E+02	2.46E+02	2.33E+02	2.21E+02	2.12E+02	2.04E+02	1.80E+02	1.76E+02	1.75E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 167

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04
li 7	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06
be 9	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06
be 10	5.78E-05	5.77E-05	5.76E-05	5.75E-05	5.73E-05	5.72E-05	5.71E-05	5.70E-05	5.62E-05	5.39E-05	5.27E-05
c 14	6.95E-08	5.46E-08	2.98E-08	1.63E-08	8.89E-09	4.85E-09	2.65E-09	1.45E-09	3.84E-11	2.14E-16	5.04E-19
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08
zn 68	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08	5.26E-08
zn 70	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09	1.39E-09
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 168

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	2.08E+00	2.07E+00	2.05E+00	2.03E+00	2.01E+00	1.99E+00	1.97E+00	1.95E+00	1.83E+00	1.48E+00	1.33E+00
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	1.97E-01	2.05E-01	2.27E-01	2.49E-01	2.70E-01	2.91E-01	3.12E-01	3.32E-01	4.51E-01	7.97E-01	9.45E-01
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05

cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01
kr 81	2.51E-07	2.49E-07	2.45E-07	2.41E-07	2.37E-07	2.33E-07	2.30E-07	2.26E-07	2.05E-07	1.48E-07	1.26E-07
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02
rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02
sr 87	3.49E-04	3.53E-04	3.63E-04	3.73E-04	3.83E-04	3.93E-04	4.03E-04	4.13E-04	4.73E-04	6.73E-04	7.72E-04
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 170

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02	3.29E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02
nb 91	4.17E-28	5.42E-29	3.32E-31	2.03E-33	1.24E-35	7.59E-38	4.64E-40	2.81E-42	.00E+00	.00E+00	.00E+00
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02
nb 92	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.40E-08	4.39E-08	4.38E-08	4.38E-08
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	2.44E+02	2.44E+02	2.44E+02	2.43E+02	2.43E+02	2.42E+02	2.41E+02	2.41E+02	2.38E+02	2.27E+02	2.22E+02
nb 93	4.81E+00	5.03E+00	5.59E+00	6.14E+00	6.69E+00	7.24E+00	7.79E+00	8.33E+00	1.16E+01	2.21E+01	2.72E+01
nb 93m	2.58E-03	2.58E-03	2.57E-03	2.56E-03	2.56E-03	2.55E-03	2.55E-03	2.54E-03	2.51E-03	2.39E-03	2.34E-03
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 171

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02
nb 94	3.99E-05	3.73E-05	3.14E-05	2.65E-05	2.23E-05	1.88E-05	1.59E-05	1.34E-05	4.80E-06	1.58E-07	2.86E-08
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02
tc 98	8.23E-05	8.23E-05	8.22E-05	8.21E-05	8.21E-05	8.20E-05	8.19E-05	8.19E-05	8.15E-05	8.01E-05	7.95E-05
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	3.42E+02	3.39E+02	3.34E+02	3.28E+02	3.23E+02	3.18E+02	3.13E+02	3.08E+02	2.79E+02	2.01E+02	1.70E+02
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	5.18E+01	5.40E+01	5.96E+01	6.50E+01	7.04E+01	7.56E+01	8.08E+01	8.59E+01	1.15E+02	1.93E+02	2.23E+02

rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 172

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 173

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	2.53E+01	2.53E+01	2.53E+01	2.52E+01	2.52E+01	2.52E+01	2.52E+01	2.52E+01	2.51E+01	2.48E+01	2.47E+01
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	1.14E-01	1.20E-01	1.33E-01	1.46E-01	1.60E-01	1.73E-01	1.87E-01	2.00E-01	2.81E-01	5.47E-01	6.79E-01
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01
ag108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd108	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00
ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 174

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cd110	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01
cd113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 175

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sn115	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02

tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 176

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00
te123	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07	3.07E-07
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	3.35E+00	3.30E+00	3.19E+00	3.08E+00	2.98E+00	2.88E+00	2.78E+00	2.68E+00	2.18E+00	1.09E+00	7.70E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 177

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sb126	1.59E-07	1.57E-07	1.52E-07	1.46E-07	1.41E-07	1.37E-07	1.32E-07	1.27E-07	1.04E-07	5.18E-08	3.66E-08
sb126m	1.21E-09	1.19E-09	1.15E-09	1.11E-09	1.08E-09	1.04E-09	1.00E-09	9.69E-10	7.87E-10	3.94E-10	2.78E-10
te126	1.19E+00	1.24E+00	1.35E+00	1.46E+00	1.56E+00	1.66E+00	1.76E+00	1.86E+00	2.36E+00	3.45E+00	3.77E+00
xe126	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10	4.59E-10
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	6.74E+01	6.74E+01	6.74E+01	6.74E+01	6.74E+01	6.73E+01	6.73E+01	6.73E+01	6.72E+01	6.69E+01	6.68E+01
xe129	1.28E-01	1.34E-01	1.49E-01	1.64E-01	1.78E-01	1.93E-01	2.08E-01	2.23E-01	3.12E-01	6.08E-01	7.56E-01
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 178

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06

in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02
ba133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	5.75E+02	5.74E+02	5.74E+02	5.73E+02	5.72E+02	5.71E+02	5.70E+02	5.69E+02	5.64E+02	5.47E+02	5.39E+02
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	7.50E+00	7.84E+00	8.71E+00	9.57E+00	1.04E+01	1.13E+01	1.22E+01	1.30E+01	1.81E+01	3.49E+01	4.31E+01
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 179

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02	5.65E+02
ba137m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02
la138	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 180

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02

i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02
pm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02
pm146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 181

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sm148	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01
eu150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu151	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01	2.83E+01
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01
eu152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00	7.11E+00
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 182

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sm154	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00
eu154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01	5.97E-01
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 183

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
dy161	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	1.86E-16	5.85E-17	3.26E-18	1.81E-19	1.01E-20	5.62E-22	3.13E-23	1.74E-24	5.19E-32	.00E+00	.00E+00
er166	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04
er167	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07	3.51E-07
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07	3.96E-07
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07	2.57E-07
total	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 184

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	1.29E-06	1.29E-06	1.29E-06	1.28E-06	1.28E-06	1.28E-06	1.28E-06	1.27E-06	1.26E-06	1.20E-06	1.18E-06
c 14	3.10E-07	2.43E-07	1.33E-07	7.26E-08	3.96E-08	2.16E-08	1.18E-08	6.45E-09	1.71E-10	9.52E-16	2.25E-18
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 185

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	2.86E-02	2.84E-02	2.81E-02	2.78E-02	2.76E-02	2.73E-02	2.70E-02	2.67E-02	2.51E-02	2.03E-02	1.83E-02
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	5.20E-09	5.16E-09	5.08E-09	5.00E-09	4.92E-09	4.84E-09	4.76E-09	4.68E-09	4.25E-09	3.07E-09	2.61E-09
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 186

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 187

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	2.41E-27	3.13E-28	1.92E-30	2.28E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.89E-12	4.88E-12	4.88E-12	4.88E-12	4.88E-12	4.87E-12	4.87E-12
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	6.15E-01	6.14E-01	6.13E-01	6.11E-01	6.10E-01	6.08E-01	6.07E-01	6.06E-01	5.98E-01	5.71E-01	5.58E-01
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	6.15E-01	6.14E-01	6.13E-01	6.11E-01	6.10E-01	6.08E-01	6.07E-01	6.06E-01	5.98E-01	5.71E-01	5.58E-01
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 188

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	7.48E-06	6.99E-06	5.89E-06	4.97E-06	4.19E-06	3.53E-06	2.98E-06	2.51E-06	9.01E-07	2.96E-08	5.37E-09
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	7.15E-08	7.15E-08	7.15E-08	7.14E-08	7.13E-08	7.13E-08	7.12E-08	7.12E-08	7.08E-08	6.97E-08	6.91E-08
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	5.85E+00	5.81E+00	5.71E+00	5.62E+00	5.53E+00	5.44E+00	5.35E+00	5.26E+00	4.77E+00	3.43E+00	2.91E+00
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 189

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 190

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.29E-02	1.28E-02	1.27E-02
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 191

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14	7.43E-14
cd113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12	6.60E-12
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 192

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 193

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17	7.20E-17
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	9.50E-02	9.37E-02	9.05E-02	8.75E-02	8.45E-02	8.16E-02	7.88E-02	7.61E-02	6.18E-02	3.09E-02	2.19E-02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 194

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sb126	1.33E-02	1.31E-02	1.27E-02	1.22E-02	1.18E-02	1.14E-02	1.10E-02	1.07E-02	8.66E-03	4.33E-03	3.06E-03
sb126m	9.50E-02	9.37E-02	9.05E-02	8.75E-02	8.45E-02	8.16E-02	7.88E-02	7.61E-02	6.18E-02	3.09E-02	2.19E-02

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.18E-02	1.18E-02
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 195

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	6.62E-01	6.62E-01	6.61E-01	6.60E-01	6.59E-01	6.58E-01	6.57E-01	6.56E-01	6.50E-01	6.30E-01	6.21E-01
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 196

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11	7.84E-11
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 197

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10	6.13E-10
i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.07E-09	6.06E-09	6.06E-09	6.06E-09
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 198

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sm148	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13	7.86E-13
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12	1.93E-12
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.0QE+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10	1.55E-10
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 199

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 200

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	3.34E-16	1.05E-16	5.85E-18	3.26E-19	1.81E-20	1.01E-21	5.62E-23	3.13E-24	9.13E-32	.00E+00	.00E+00
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	7.99E+00	7.95E+00	7.85E+00	7.74E+00	7.64E+00	7.54E+00	7.44E+00	7.34E+00	6.80E+00	5.32E+00	4.74E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 201

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
he 4	3.68E+02	4.10E+02	5.69E+02	8.91E+02
tl206	5.97E-14	5.70E-14	4.28E-14	2.40E-14
tl207	1.86E-09	1.87E-09	1.87E-09	1.87E-09
tl208	4.43E-14	5.27E-14	8.63E-14	1.70E-13
tl209	2.25E-10	2.45E-10	2.90E-10	2.75E-10
pb206	8.01E+02	9.93E+02	1.65E+03	2.69E+03
pb207	3.05E+01	3.77E+01	6.63E+01	1.38E+02
pb208	2.74E-02	2.82E-02	3.29E-02	5.42E-02
pb209	9.50E-07	1.03E-06	1.23E-06	1.16E-06
pb210	1.29E-01	1.23E-01	9.24E-02	5.18E-02
pb211	1.44E-08	1.44E-08	1.45E-08	1.45E-08
pb212	2.63E-11	3.13E-11	5.12E-11	1.01E-10
pb214	3.00E-07	2.86E-07	2.15E-07	1.21E-07
bi208	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.70E+02	3.63E+02	7.97E+02	1.94E+03
bi210m	.00E+00	.00E+00	.00E+00	.00E+00
bi210	7.92E-05	7.57E-05	5.68E-05	3.19E-05
bi211	8.54E-10	8.57E-10	8.57E-10	8.57E-10
bi212	2.49E-12	2.96E-12	4.86E-12	9.55E-12
bi213	2.26E-07	2.46E-07	2.92E-07	2.77E-07
bi214	2.23E-07	2.13E-07	1.60E-07	8.96E-08
po210	2.19E-03	2.09E-03	1.57E-03	8.81E-04
po211m	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.44E-15	9.47E-15	9.48E-15	9.47E-15
po212	1.31E-22	1.56E-22	2.55E-22	5.02E-22
po213	3.40E-16	3.70E-16	4.39E-16	4.16E-16
po214	3.06E-14	2.93E-14	2.20E-14	1.23E-14

po215	1.21E-14	1.21E-14	1.21E-14	1.21E-14
po216	1.01E-16	1.21E-16	1.98E-16	3.88E-16
po218	3.53E-08	3.38E-08	2.54E-08	1.42E-08
at217	2.72E-12	2.96E-12	3.51E-12	3.33E-12
rn218	.00E+00	.00E+00	.00E+00	.00E+00
rn219	2.73E-11	2.74E-11	2.74E-11	2.74E-11
rn220	3.96E-14	4.71E-14	7.71E-14	1.52E-13
rn222	6.39E-05	6.11E-05	4.59E-05	2.57E-05
fr221	2.52E-08	2.75E-08	3.26E-08	3.08E-08
fr223	1.27E-10	1.27E-10	1.27E-10	1.27E-10
ra222	.00E+00	.00E+00	.00E+00	.00E+00
ra223	6.94E-06	6.96E-06	6.97E-06	6.97E-06
ra224	2.29E-10	2.73E-10	4.47E-10	8.78E-10
ra225	1.12E-04	1.22E-04	1.44E-04	1.37E-04
ra226	9.94E+00	9.50E+00	7.14E+00	4.00E+00
ra228	1.33E-07	1.59E-07	2.61E-07	5.13E-07
ac225	7.55E-05	8.21E-05	9.75E-05	9.23E-05
ac227	4.92E-03	4.93E-03	4.94E-03	4.93E-03
ac228	1.63E-11	1.94E-11	3.18E-11	6.26E-11
th226	.00E+00	.00E+00	.00E+00	.00E+00
th227	1.14E-05	1.14E-05	1.15E-05	1.15E-05
th228	4.45E-08	5.30E-08	8.68E-08	1.71E-07
th229	2.21E+01	2.41E+01	2.86E+01	2.70E+01
th230	4.70E+02	4.49E+02	3.41E+02	1.92E+02
th231	6.72E-07	6.72E-07	6.72E-07	6.71E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 202

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
th232	3.32E+02	3.95E+02	6.49E+02	1.28E+03
th233	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.25E-04	1.25E-04	1.25E-04	1.25E-04
pa231	7.53E+00	7.55E+00	7.56E+00	7.56E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.08E-04	3.03E-04	2.84E-04	2.42E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00
u232	5.35E-09	3.96E-09	1.19E-09	5.82E-11
u233	4.65E+02	5.03E+02	5.76E+02	5.52E+02
u234	1.44E+03	1.31E+03	9.48E+02	5.85E+02
u235	1.65E+05	1.65E+05	1.65E+05	1.65E+05
u236	4.37E+04	4.37E+04	4.34E+04	4.28E+04
u237	5.85E-30	9.91E-32	8.15E-39	.00E+00
u238	8.64E+06	8.64E+06	8.64E+06	8.64E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.62E-30	1.85E-30	2.58E-30	3.50E-30
u241	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00
np236	1.01E-04	7.45E-05	2.23E-05	1.10E-06
np237	9.07E+03	8.92E+03	8.36E+03	7.11E+03
np238	.00E+00	.00E+00	.00E+00	.00E+00
np239	1.83E-20	1.66E-22	4.99E-26	4.89E-26
np240m	1.38E-32	1.58E-32	2.20E-32	2.98E-32
np240	1.42E-34	1.63E-34	2.27E-34	3.07E-34
np241	.00E+00	.00E+00	.00E+00	.00E+00

pu236	2.26E-10	1.67E-10	5.01E-11	2.46E-12
pu237	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00
pu239	6.82E+00	1.62E+00	5.15E-03	2.94E-09
pu240	1.09E-09	5.54E-12	3.72E-21	1.43E-23
pu241	1.93E-22	3.27E-24	2.69E-31	.00E+00
pu242	2.42E-02	2.21E-02	1.52E-02	6.02E-03
pu243	4.50E-27	4.49E-27	4.45E-27	4.36E-27
pu244	8.19E-20	9.38E-20	1.31E-19	1.77E-19
pu245	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00
am241	5.82E-21	9.86E-23	8.55E-30	.00E+00
am242m	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00
am243	2.13E-14	1.93E-16	5.80E-20	5.68E-20
am244m	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 203

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
cm242	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00
cm245	1.16E-19	1.97E-21	1.62E-28	.00E+00
cm246	9.08E-29	5.98E-32	.00E+00	.00E+00
cm247	1.29E-16	1.29E-16	1.28E-16	1.25E-16
cm248	1.36E-19	1.23E-19	8.16E-20	2.94E-20
cm249	.00E+00	.00E+00	.00E+00	.00E+00
cm250	1.59E-38	2.17E-39	7.01E-43	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00
total	8.87E+06	8.87E+06	8.87E+06	8.87E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 204

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00
tl206	1.30E-05	1.24E-05	9.31E-06	5.22E-06

tl207	3.55E-01	3.56E-01	3.56E-01	3.56E-01
tl208	1.31E-05	1.56E-05	2.56E-05	5.03E-05
tl209	9.20E-02	1.00E-01	1.19E-01	1.13E-01
pb206	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00
pb209	4.38E+00	4.77E+00	5.66E+00	5.36E+00
pb210	9.83E+00	9.39E+00	7.05E+00	3.96E+00
pb211	3.56E-01	3.57E-01	3.57E-01	3.57E-01
pb212	3.65E-05	4.34E-05	7.12E-05	1.40E-04
pb214	9.83E+00	9.40E+00	7.06E+00	3.96E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00
bi210	9.83E+00	9.39E+00	7.05E+00	3.96E+00
bi211	3.56E-01	3.57E-01	3.57E-01	3.57E-01
bi212	3.65E-05	4.34E-05	7.12E-05	1.40E-04
bi213	4.38E+00	4.77E+00	5.66E+00	5.36E+00
bi214	9.83E+00	9.40E+00	7.06E+00	3.96E+00
po210	9.83E+00	9.39E+00	7.05E+00	3.96E+00
po211m	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.78E-04	9.81E-04	9.82E-04	9.82E-04
po212	2.34E-05	2.78E-05	4.56E-05	8.97E-05
po213	4.29E+00	4.67E+00	5.54E+00	5.24E+00
po214	9.83E+00	9.39E+00	7.05E+00	3.96E+00
po215	3.56E-01	3.57E-01	3.57E-01	3.57E-01
po216	3.65E-05	4.34E-05	7.12E-05	1.40E-04
po218	9.83E+00	9.40E+00	7.06E+00	3.96E+00
at217	4.38E+00	4.77E+00	5.66E+00	5.36E+00
rn218	.00E+00	.00E+00	.00E+00	.00E+00
rn219	3.56E-01	3.57E-01	3.57E-01	3.57E-01
rn220	3.65E-05	4.34E-05	7.12E-05	1.40E-04
rn222	9.83E+00	9.40E+00	7.06E+00	3.96E+00
fr221	4.38E+00	4.77E+00	5.66E+00	5.36E+00
fr223	4.91E-03	4.92E-03	4.93E-03	4.93E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00
ra223	3.56E-01	3.57E-01	3.57E-01	3.57E-01
ra224	3.65E-05	4.34E-05	7.12E-05	1.40E-04
ra225	4.38E+00	4.77E+00	5.66E+00	5.36E+00
ra226	9.83E+00	9.40E+00	7.06E+00	3.96E+00
ra228	3.64E-05	4.34E-05	7.12E-05	1.40E-04
ac225	4.38E+00	4.77E+00	5.66E+00	5.36E+00
ac227	3.56E-01	3.57E-01	3.57E-01	3.57E-01
ac228	3.64E-05	4.34E-05	7.12E-05	1.40E-04
th226	.00E+00	.00E+00	.00E+00	.00E+00
th227	3.51E-01	3.52E-01	3.52E-01	3.52E-01
th228	3.65E-05	4.34E-05	7.12E-05	1.40E-04
th229	4.38E+00	4.77E+00	5.66E+00	5.36E+00
th230	9.70E+00	9.26E+00	7.03E+00	3.96E+00
th231	3.57E-01	3.57E-01	3.57E-01	3.57E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel

0 actinides page 205

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
th232	3.64E-05	4.34E-05	7.12E-05	1.40E-04
th233	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	3.56E-01	3.57E-01	3.57E-01	3.57E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.39E+00	6.29E+00	5.90E+00	5.01E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00
u232	1.18E-07	8.74E-08	2.62E-08	1.28E-09
u233	4.48E+00	4.85E+00	5.55E+00	5.33E+00
u234	8.96E+00	8.16E+00	5.90E+00	3.64E+00
u235	3.57E-01	3.57E-01	3.57E-01	3.57E-01
u236	2.83E+00	2.83E+00	2.81E+00	2.77E+00
u237	4.78E-25	8.09E-27	.00E+00	.00E+00
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.50E-24	1.72E-24	2.39E-24	3.24E-24
u241	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00
np236	1.33E-06	9.82E-07	2.94E-07	1.44E-08
np237	6.39E+00	6.29E+00	5.90E+00	5.01E+00
np238	.00E+00	.00E+00	.00E+00	.00E+00
np239	4.25E-15	3.86E-17	1.16E-20	1.13E-20
np240m	1.50E-24	1.72E-24	2.39E-24	3.24E-24
np240	1.80E-27	2.06E-27	2.87E-27	3.89E-27
np241	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.18E-07	8.74E-08	2.62E-08	1.28E-09
pu237	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00
pu239	4.24E-01	1.01E-01	3.20E-04	1.82E-10
pu240	2.48E-10	1.26E-12	8.44E-22	3.24E-24
pu241	2.00E-20	3.38E-22	2.79E-29	.00E+00
pu242	9.57E-05	8.73E-05	6.02E-05	2.38E-05
pu243	1.17E-20	1.17E-20	1.16E-20	1.13E-20
pu244	1.50E-24	1.72E-24	2.39E-24	3.24E-24
pu245	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00
am241	2.00E-20	3.38E-22	2.93E-29	.00E+00
am242m	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00
am243	4.25E-15	3.86E-17	1.16E-20	1.13E-20
am244m	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel actinides page 206

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
cm242	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00
cm245	1.99E-20	3.38E-22	2.78E-29	.00E+00
cm246	2.79E-29	2.28E-32	.00E+00	.00E+00
cm247	1.17E-20	1.17E-20	1.16E-20	1.13E-20
cm248	5.76E-22	5.20E-22	3.46E-22	1.25E-22
cm249	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00
total	1.75E+02	1.73E+02	1.55E+02	1.17E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 207

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00
li 6	1.83E-04	1.83E-04	1.83E-04	1.83E-04
li 7	4.58E-06	4.58E-06	4.58E-06	4.58E-06
be 9	8.83E-06	8.83E-06	8.83E-06	8.83E-06
be 10	5.27E-05	5.16E-05	4.73E-05	3.81E-05
c 14	5.04E-19	1.19E-21	3.68E-32	.00E+00
ni 66	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	1.66E-07	1.66E-07	1.66E-07	1.66E-07
cu 67	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	2.71E-08	2.71E-08	2.71E-08	2.71E-08
zn 68	1.61E-09	1.61E-09	1.61E-09	1.61E-09
zn 69	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	5.26E-08	5.26E-08	5.26E-08	5.26E-08
zn 70	1.32E-06	1.32E-06	1.32E-06	1.32E-06
ga 70	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	1.39E-09	1.39E-09	1.39E-09	1.39E-09
zn 71	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	1.57E-05	1.57E-05	1.57E-05	1.57E-05
ge 71	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	1.45E-03	1.45E-03	1.45E-03	1.45E-03
co 73	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	5.82E-03	5.82E-03	5.82E-03	5.82E-03
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	5.01E-03	5.01E-03	5.01E-03	5.01E-03
co 75	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00
as 75	5.65E-02	5.65E-02	5.65E-02	5.65E-02
ni 76	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 208

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	1.84E-01	1.84E-01	1.84E-01	1.84E-01
as 76	.00E+00	.00E+00	.00E+00	.00E+00
se 76	3.71E-05	3.71E-05	3.71E-05	3.71E-05
ni 77	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00
se 77	4.12E-01	4.12E-01	4.12E-01	4.12E-01
se 77m	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00
se 78	1.12E+00	1.12E+00	1.12E+00	1.12E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00
se 79	1.33E+00	1.20E+00	7.88E-01	2.76E-01
se 79m	.00E+00	.00E+00	.00E+00	.00E+00
br 79	9.45E-01	1.08E+00	1.49E+00	2.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00
se 80	6.71E+00	6.71E+00	6.71E+00	6.71E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	2.49E-05	2.49E-05	2.49E-05	2.49E-05

cu 81	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.00E+01	1.00E+01	1.00E+01	1.00E+01
kr 81	1.26E-07	1.07E-07	5.57E-08	1.09E-08
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 209

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00
se 82	1.70E+01	1.70E+01	1.70E+01	1.70E+01
br 82	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	1.67E-02	1.67E-02	1.67E-02	1.67E-02
zn 83	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	2.78E+01	2.78E+01	2.78E+01	2.78E+01
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	5.71E+01	5.71E+01	5.71E+01	5.71E+01
ga 85	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	6.55E+01	6.55E+01	6.55E+01	6.55E+01
ge 86	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.06E+02	1.06E+02	1.06E+02	1.06E+02
rb 86	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	4.05E-03	4.05E-03	4.05E-03	4.05E-03
ge 87	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.38E+02	1.38E+02	1.38E+02	1.38E+02
sr 87	7.72E-04	8.72E-04	1.27E-03	2.27E-03
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 210

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	1.99E+02	1.99E+02	1.99E+02	1.99E+02
as 89	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00
y 89	2.70E+02	2.70E+02	2.70E+02	2.70E+02
y 89m	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	3.29E+02	3.29E+02	3.29E+02	3.29E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	3.38E+02	3.38E+02	3.38E+02	3.38E+02
nb 91	.00E+00	.00E+00	.00E+00	.00E+00
se 92	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	3.46E+02	3.46E+02	3.46E+02	3.46E+02
nb 92	4.38E-08	4.38E-08	4.36E-08	4.31E-08
se 93	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00

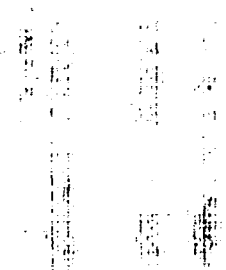
zr 93	2.22E+02	2.17E+02	1.98E+02	1.58E+02
nb 93	2.72E+01	3.22E+01	5.10E+01	9.12E+01
nb 93m	2.34E-03	2.29E-03	2.09E-03	1.67E-03
br 94	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 211

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	3.86E+02	3.86E+02	3.86E+02	3.86E+02
nb 94	2.86E-08	5.19E-09	5.62E-12	2.16E-19
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	3.94E+02	3.94E+02	3.94E+02	3.94E+02
br 96	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	3.88E+02	3.88E+02	3.88E+02	3.88E+02
nb 96	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	9.32E-01	9.32E-01	9.32E-01	9.32E-01
kr 97	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	3.55E+02	3.55E+02	3.55E+02	3.55E+02
kr 98	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	3.71E+02	3.71E+02	3.71E+02	3.71E+02
tc 98	7.95E-05	7.88E-05	7.63E-05	7.02E-05
rb 99	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	1.70E+02	1.45E+02	7.49E+01	1.45E+01
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	2.23E+02	2.49E+02	3.18E+02	3.79E+02



rb100	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 212

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00
mo100	4.11E+02	4.11E+02	4.11E+02	4.11E+02
tc100	.00E+00	.00E+00	.00E+00	.00E+00
ru100	1.72E+00	1.72E+00	1.72E+00	1.72E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00
ru101	3.40E+02	3.40E+02	3.40E+02	3.40E+02
sr102	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00
ru102	2.94E+02	2.94E+02	2.94E+02	2.94E+02
rh102	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00
rh103	2.22E+02	2.22E+02	2.22E+02	2.22E+02
rh103m	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00
ru104	1.47E+02	1.47E+02	1.47E+02	1.47E+02
rh104	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00
pd104	4.78E+00	4.78E+00	4.78E+00	4.78E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00
pd105	9.04E+01	9.04E+01	9.04E+01	9.04E+01

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 213

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
y106	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00
pd106	4.82E+01	4.82E+01	4.82E+01	4.82E+01
ag106	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00
pd107	2.47E+01	2.46E+01	2.41E+01	2.28E+01
pd107m	.00E+00	.00E+00	.00E+00	.00E+00
ag107	6.79E-01	8.11E-01	1.33E+00	2.58E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00
pd108	1.45E+01	1.45E+01	1.45E+01	1.45E+01
ag108	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00
cd108	2.11E-05	2.11E-05	2.11E-05	2.11E-05
zr109	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00
ag109	1.05E+01	1.05E+01	1.05E+01	1.05E+01
ag109m	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00
pd110	4.79E+00	4.79E+00	4.79E+00	4.79E+00
ag110	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 214

nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
cd110	1.56E-01	1.56E-01	1.56E-01	1.56E-01
nb111	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00
cd111	2.78E+00	2.78E+00	2.78E+00	2.78E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00
cd112	1.79E+00	1.79E+00	1.79E+00	1.79E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00
cd113	2.18E-01	2.18E-01	2.18E-01	2.18E-01
cd113m	.00E+00	.00E+00	.00E+00	.00E+00
in113	2.46E-02	2.46E-02	2.46E-02	2.46E-02
in113m	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00
cd114	2.58E+00	2.58E+00	2.58E+00	2.58E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00
sn114	3.20E-05	3.20E-05	3.20E-05	3.20E-05
mo115	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00
in115	9.35E-01	9.35E-01	9.35E-01	9.35E-01
in115m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 215

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sn115	4.80E-02	4.80E-02	4.80E-02	4.80E-02

tc116	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00
cd116	1.49E+00	1.49E+00	1.49E+00	1.49E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00
sn116	2.24E-02	2.24E-02	2.24E-02	2.24E-02
tc117	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00
sn117	1.09E+00	1.09E+00	1.09E+00	1.09E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00
sn118	1.03E+00	1.03E+00	1.03E+00	1.03E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00
sn119	1.13E+00	1.13E+00	1.13E+00	1.13E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00
sn120	1.12E+00	1.12E+00	1.12E+00	1.12E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 216

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
pd121	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00
sb121	1.22E+00	1.22E+00	1.22E+00	1.22E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00
sn122	1.44E+00	1.44E+00	1.44E+00	1.44E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00
te122	1.05E-03	1.05E-03	1.05E-03	1.05E-03
rh123	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00
sb123	1.47E+00	1.47E+00	1.47E+00	1.47E+00
te123	3.07E-07	3.07E-07	3.07E-07	3.07E-07
te123m	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00
sn124	2.44E+00	2.44E+00	2.44E+00	2.44E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00
te124	2.18E-03	2.18E-03	2.18E-03	2.18E-03
pd125	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00
te125	2.85E+00	2.85E+00	2.85E+00	2.85E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00
sn126	7.70E-01	5.45E-01	1.36E-01	4.26E-03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 217

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sb126	3.66E-08	2.59E-08	6.47E-09	2.02E-10
sb126m	2.78E-10	1.97E-10	4.92E-11	1.54E-12
te126	3.77E+00	4.00E+00	4.40E+00	4.54E+00
xe126	4.59E-10	4.59E-10	4.59E-10	4.59E-10
ag127	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00
i127	1.21E+01	1.21E+01	1.21E+01	1.21E+01
xe127	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00
te128	3.17E+01	3.17E+01	3.17E+01	3.17E+01
i128	.00E+00	.00E+00	.00E+00	.00E+00
xe128	9.50E-03	9.50E-03	9.50E-03	9.50E-03
cd129	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00
i129	6.68E+01	6.66E+01	6.60E+01	6.46E+01
xe129	7.56E-01	9.03E-01	1.49E+00	2.93E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00
te130	1.52E+02	1.52E+02	1.52E+02	1.52E+02
i130	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00
xe130	1.79E-01	1.79E-01	1.79E-01	1.79E-01
cd131	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00
xe131	2.49E+02	2.49E+02	2.49E+02	2.49E+02
xe131m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 218

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
cd132	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00
xe132	3.83E+02	3.83E+02	3.83E+02	3.83E+02
cs132	.00E+00	.00E+00	.00E+00	.00E+00
ba132	1.54E-06	1.54E-06	1.54E-06	1.54E-06

in133	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00
cs133	5.81E+02	5.81E+02	5.81E+02	5.81E+02
ba133	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00
xe134	6.84E+02	6.84E+02	6.84E+02	6.84E+02
xe134m	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00
ba134	3.17E+00	3.17E+00	3.17E+00	3.17E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00
cs135	5.39E+02	5.31E+02	5.00E+02	4.30E+02
cs135m	.00E+00	.00E+00	.00E+00	.00E+00
ba135	4.31E+01	5.11E+01	8.22E+01	1.52E+02
ba135m	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00
xe136	5.63E+02	5.63E+02	5.63E+02	5.63E+02
cs136	.00E+00	.00E+00	.00E+00	.00E+00
ba136	1.59E+00	1.59E+00	1.59E+00	1.59E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 219

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00
ba137	5.65E+02	5.65E+02	5.65E+02	5.65E+02
ba137m	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00

ba138	5.99E+02	5.99E+02	5.99E+02	5.99E+02
la138	3.18E-03	3.18E-03	3.18E-03	3.18E-03
sb139	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00
la139	5.72E+02	5.72E+02	5.72E+02	5.72E+02
ce139	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00
ce140	5.73E+02	5.73E+02	5.73E+02	5.73E+02
pr140	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00
pr141	5.30E+02	5.30E+02	5.30E+02	5.30E+02
nd141	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00
ce142	5.38E+02	5.38E+02	5.38E+02	5.38E+02
pr142	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00
nd142	5.58E-01	5.58E-01	5.58E-01	5.58E-01
i143	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 220

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	300000. yr	500000. yr	999999. yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00
nd143	5.30E+02	5.30E+02	5.30E+02	5.30E+02
i144	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00
nd144	5.16E+02	5.16E+02	5.16E+02	5.16E+02

i145	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00
nd145	3.64E+02	3.64E+02	3.64E+02	3.64E+02
pm145	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00
nd146	2.84E+02	2.84E+02	2.84E+02	2.84E+02
pm146	.00E+00	.00E+00	.00E+00	.00E+00
sm146	2.55E-04	2.55E-04	2.54E-04	2.53E-04
xe147	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00
sm147	2.14E+02	2.14E+02	2.14E+02	2.14E+02
cs148	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00
nd148	1.63E+02	1.63E+02	1.63E+02	1.63E+02
pm148	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 221

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sm148	2.58E+00	2.58E+00	2.58E+00	2.58E+00
cs149	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00
sm149	8.02E+00	8.02E+00	8.02E+00	8.02E+00
eu149	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00
nd150	6.73E+01	6.73E+01	6.73E+01	6.73E+01
pm150	.00E+00	.00E+00	.00E+00	.00E+00
sm150	9.83E+01	9.83E+01	9.83E+01	9.83E+01
eu150	.00E+00	.00E+00	.00E+00	.00E+00

ba151	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00
eu151	2.83E+01	2.83E+01	2.83E+01	2.83E+01
ba152	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00
sm152	3.80E+01	3.80E+01	3.80E+01	3.80E+01
eu152	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00
gd152	7.11E+00	7.11E+00	7.11E+00	7.11E+00
la153	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00
eu153	1.90E+01	1.90E+01	1.90E+01	1.90E+01
gd153	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 222

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sm154	8.99E+00	8.99E+00	8.99E+00	8.99E+00
eu154	.00E+00	.00E+00	.00E+00	.00E+00
gd154	5.97E-01	5.97E-01	5.97E-01	5.97E-01
la155	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00
gd155	8.62E-01	8.62E-01	8.62E-01	8.62E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00
gd156	5.66E+00	5.66E+00	5.66E+00	5.66E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00
gd157	7.02E-02	7.02E-02	7.02E-02	7.02E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00
gd158	1.65E+00	1.65E+00	1.65E+00	1.65E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00
tb159	2.45E-01	2.45E-01	2.45E-01	2.45E-01
nd160	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00
gd160	9.96E-02	9.96E-02	9.96E-02	9.96E-02
tb160	.00E+00	.00E+00	.00E+00	.00E+00
dy160	6.86E-04	6.86E-04	6.86E-04	6.86E-04
nd161	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 223

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
dy161	4.06E-02	4.06E-02	4.06E-02	4.06E-02
pm162	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00
dy162	1.93E-02	1.93E-02	1.93E-02	1.93E-02
sm163	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00
dy163	7.35E-03	7.35E-03	7.35E-03	7.35E-03
sm164	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00
dy164	2.40E-03	2.40E-03	2.40E-03	2.40E-03
sm165	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00

ho165	1.34E-03	1.34E-03	1.34E-03	1.34E-03
dy166	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	.00E+00	.00E+00	.00E+00	.00E+00
er166	1.64E-04	1.64E-04	1.64E-04	1.64E-04
er167	3.51E-07	3.51E-07	3.51E-07	3.51E-07
er167m	.00E+00	.00E+00	.00E+00	.00E+00
er168	1.36E-07	1.36E-07	1.36E-07	1.36E-07
yb168	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00
tm169	2.71E-07	2.71E-07	2.71E-07	2.71E-07
yb169	.00E+00	.00E+00	.00E+00	.00E+00
er170	2.85E-07	2.85E-07	2.85E-07	2.85E-07
tm170	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00
yb170	1.63E-09	1.63E-09	1.63E-09	1.63E-09
er171	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00
yb171	3.96E-07	3.96E-07	3.96E-07	3.96E-07
er172	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00
yb172	2.57E-07	2.57E-07	2.57E-07	2.57E-07
total	1.51E+04	1.51E+04	1.51E+04	1.51E+04

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 224

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00
li 6	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00
be 10	1.18E-06	1.15E-06	1.06E-06	8.51E-07
c 14	2.25E-18	5.30E-21	1.60E-31	.00E+00
ni 66	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 225

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
zn 76	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00
se 79	1.83E-02	1.65E-02	1.08E-02	3.78E-03
se 79m	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	2.61E-09	2.21E-09	1.16E-09	2.27E-10
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 226

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
ge 82	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	1.18E-05	1.18E-05	1.18E-05	1.18E-05
sr 87	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 227

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
br 88	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	.00E+00	.00E+00	.00E+00	.00E+00
se 92	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	4.87E-12	4.86E-12	4.84E-12	4.79E-12
se 93	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	5.58E-01	5.46E-01	4.98E-01	3.97E-01
nb 93	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	5.58E-01	5.46E-01	4.98E-01	3.97E-01
br 94	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 228

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	5.37E-09	9.74E-10	1.05E-12	4.05E-20
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	6.91E-08	6.85E-08	6.63E-08	6.10E-08
rb 99	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	2.91E+00	2.47E+00	1.28E+00	2.48E-01
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 229

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
zr100	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00
rh102	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 230

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
y106	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00
pd107	1.27E-02	1.26E-02	1.24E-02	1.17E-02
pd107m	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00
ag108	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00
cd108	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00

ag110	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 231

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
cd110	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00
cd113	7.43E-14	7.43E-14	7.43E-14	7.43E-14
cd113m	.00E+00	.00E+00	.00E+00	.00E+00
in113	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00
in115	6.60E-12	6.60E-12	6.60E-12	6.60E-12
in115m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 232

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 233

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00
sb121	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00
te123	7.20E-17	7.20E-17	7.20E-17	7.20E-17
te123m	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00
sn126	2.19E-02	1.55E-02	3.87E-03	1.21E-04

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 234

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sb126	3.06E-03	2.16E-03	5.41E-04	1.69E-05
sb126m	2.19E-02	1.55E-02	3.87E-03	1.21E-04

te126	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00
i129	1.18E-02	1.18E-02	1.17E-02	1.14E-02
xe129	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 235

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
cd132	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00
ba133	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00
cs135	6.21E-01	6.12E-01	5.76E-01	4.95E-01
cs135m	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 236

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sb137	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00
ba137	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00
la138	7.84E-11	7.84E-11	7.84E-11	7.84E-11
sb139	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00
ce139	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00
ce142	1.29E-05	1.29E-05	1.29E-05	1.29E-05
pr142	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 237

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00
nd144	6.13E-10	6.13E-10	6.13E-10	6.13E-10
i145	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00
pm145	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00
pm146	.00E+00	.00E+00	.00E+00	.00E+00
sm146	6.06E-09	6.06E-09	6.05E-09	6.03E-09
xe147	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00
sm147	4.91E-06	4.91E-06	4.91E-06	4.91E-06
cs148	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00
pm148	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 238

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sm148	7.86E-13	7.86E-13	7.86E-13	7.86E-13
cs149	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00
sm149	1.93E-12	1.93E-12	1.93E-12	1.93E-12
eu149	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00
eu150	.00E+00	.00E+00	.00E+00	.00E+00
ba151	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00
eu151	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00
eu152	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00
gd152	1.55E-10	1.55E-10	1.55E-10	1.55E-10
la153	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 239

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00
eu154	.00E+00	.00E+00	.00E+00	.00E+00
gd154	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00
tb160	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel fission products page 240

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

initial300000. yr500000. yr999999. yr

dy161	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00

```
     eu165    .00E+00   .00E+00   .00E+00   .00E+00
     gd165    .00E+00   .00E+00   .00E+00   .00E+00
     tb165    .00E+00   .00E+00   .00E+00   .00E+00
     dy165    .00E+00   .00E+00   .00E+00   .00E+00
     dy165m   .00E+00   .00E+00   .00E+00   .00E+00
     ho165    .00E+00   .00E+00   .00E+00   .00E+00
     dy166    .00E+00   .00E+00   .00E+00   .00E+00
     ho166    .00E+00   .00E+00   .00E+00   .00E+00
     ho166m   .00E+00   .00E+00   .00E+00   .00E+00
     er166    .00E+00   .00E+00   .00E+00   .00E+00
     er167    .00E+00   .00E+00   .00E+00   .00E+00
     er167m   .00E+00   .00E+00   .00E+00   .00E+00
     er168    .00E+00   .00E+00   .00E+00   .00E+00
     yb168    .00E+00   .00E+00   .00E+00   .00E+00
     er169    .00E+00   .00E+00   .00E+00   .00E+00
     tm169    .00E+00   .00E+00   .00E+00   .00E+00
     yb169    .00E+00   .00E+00   .00E+00   .00E+00
     er170    .00E+00   .00E+00   .00E+00   .00E+00
     tm170    .00E+00   .00E+00   .00E+00   .00E+00
     tm170m   .00E+00   .00E+00   .00E+00   .00E+00
     yb170    .00E+00   .00E+00   .00E+00   .00E+00
     er171    .00E+00   .00E+00   .00E+00   .00E+00
     tm171    .00E+00   .00E+00   .00E+00   .00E+00
     yb171    .00E+00   .00E+00   .00E+00   .00E+00
     er172    .00E+00   .00E+00   .00E+00   .00E+00
     tm172    .00E+00   .00E+00   .00E+00   .00E+00
     yb172    .00E+00   .00E+00   .00E+00   .00E+00
   total     4.74E+00  4.25E+00  2.90E+00  1.57E+00
1  * normal termination of execution *
0                                        table of contents for material tables
0                                          case or subcase printed      page

                                                     1                   1
                                                     2                  41
                                                     3                  81
                                                     4                 121
                                                     5                 161
                                                     6                 201
0ndset          33
            21           4           1          27           6           0           0           0           0           0
             0           0           0           0           0           0          -1        1698         690         130
           880        7935           0           5          99           3          13          96          18          18
            18           0          71
0   35$ array      1 entries read
0    0t
   54$$ a8 1 e
    56$$ 0 7 a5 1 a13 -1 a15 3 0 4 e   5t
0   56$ array     20 entries read
0    5t
     l90   97344
     l116  60787
     l32   33663 nudata (library) storage size
     l44   33734
     l103  75921
   61** f1-20
   65$$ a4 1 2z 1 2z 1 5z 1 2z 1
    a25 1 2z 1 2z 1 5z 1 2z 1
    a46 1 2z 1 2z 1 5z 1 2z 1 e
0   60* array      7 entries read
0   65$ array     63 entries read
```

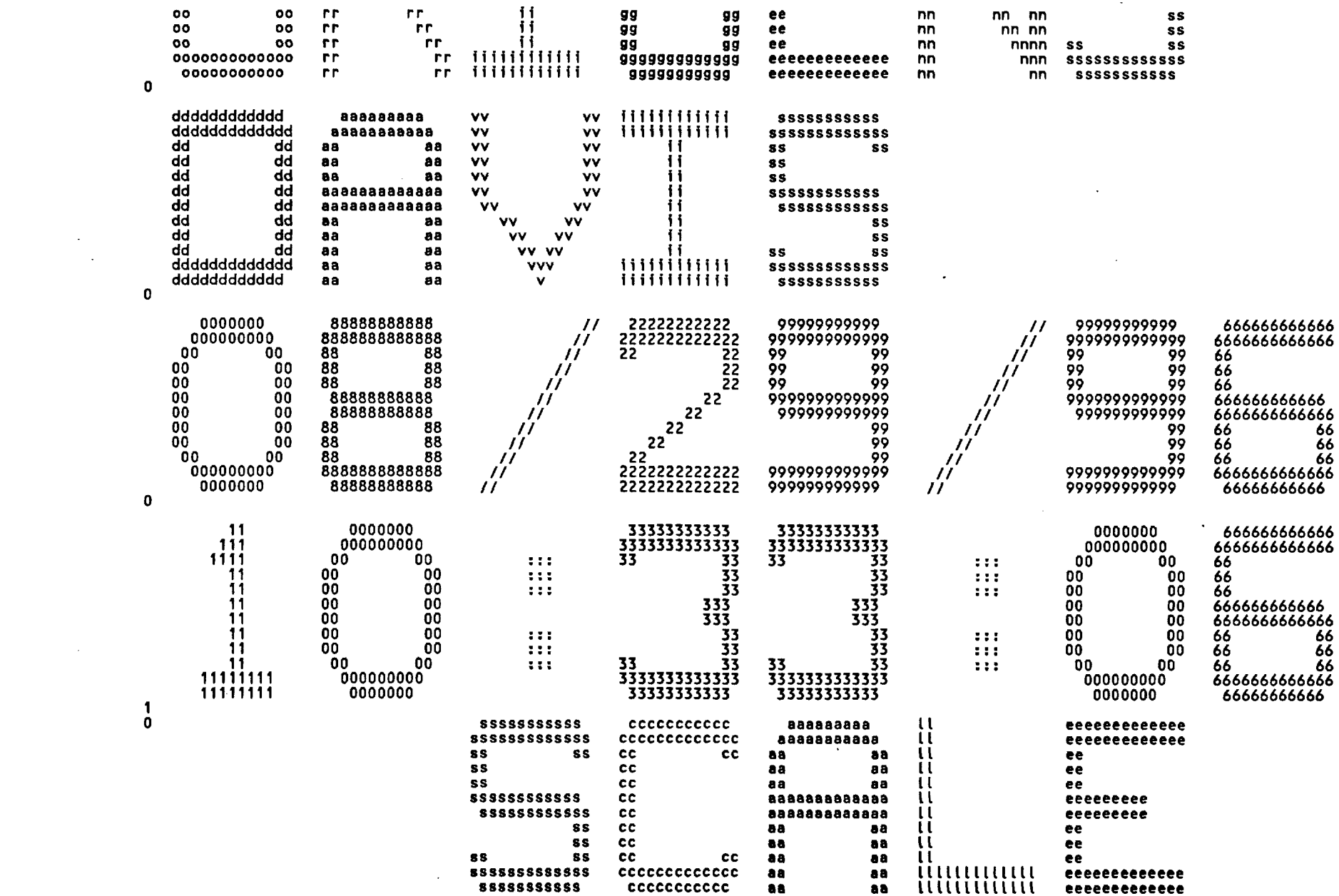
```
0    6t
     l140  66851
     used   100723 in size   150000
0jopt            12
            0            0            0            0            0            0            0            0            0            0
            0            0
0therm            4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non              5
         7935           20            6           18         1697
0mmn             19
            0            7            0            0            1            1            0            0            0            0
           21          100           -1            4            3            0            4            0            0
0tconst           5
  8.640000E+04  .000000E+00  .000000E+00  .000000E+00 5.000000E-02
0mzero            4
            0          689          129          879
0pow              3
   .000000E+00  .000000E+00  .000000E+00
0 linp            9
            6            0           51           26            2         3000         1000         1697            5
0 case or subcase    1  Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel
    56$$ 0 -6 a10 1  e  t
0   56$ array     20 entries read
0   57* array      5 entries read
0    5t
     l90  102444
     l116  66199
     l32   33663 nudata (library) storage size
     l44   33734
     l103  81099
   61** f1-20
   65$$ a4 1 2z 1 2z 1 5z 1 2z 1
    a25 1 2z 1 2z 1 5z 1 2z 1
    a46 1 2z 1 2z 1 5z 1 2z 1 e
0   60* array     10 entries read
0   65$ array     63 entries read
0    6t
     l140  71957
     used   107068 in size   150000
0jopt            12
            0            0            0            0            0            0            0            0            0            0
            0            0
0therm            4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non              5
         7935           20            6           18         1697
0mmn             19
            0           10            0            0            1            1            0            0            0            7
           21          100            0            5            0            0            4            0            0
0tconst           5
  3.156000E+07 1.000000E+01 2.300000E+01  .000000E+00 5.000000E-02
0mzero            4
           18          689          129          879
0pow              3
   .000000E+00  .000000E+00  .000000E+00
0 linp            9
            6            0           51           26            2         3000         1000         1697            5
0 case or subcase    2  Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel
0   56$ array     20 entries read
```

```
0   57* array      5 entries read
0    5t
     l90  102444
     l116  66199
     l32   33663 nudata (library) storage size
     l44   33734
     l103  81099
     61** f1-20
0   60* array      10 entries read
0   65$ array      63 entries read
0    6t
     l140  71957
     used   107068 in size   150000
0jopt             12
              0             0             0             0             0             0             0             0             0             0
              0             0
0therm             4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non               5
           7935            20             6            18          1697
0mmn              19
              0             10             0             0             1             1             0             0             0            10
             21            100             0             5             0             0             4             0             0
0tconst            5
  3.156000E+07 4.000000E+02 2.800000E+01  .000000E+00 5.000000E-02
0mzero             4
             21           689           129           879
0pow               3
   .000000E+00  .000000E+00  .000000E+00
0 linp             9
              6             0            51            26             2          3000          1000          1697             5
0 case or subcase    3  Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel
0   56$ array      20 entries read
0   57* array       5 entries read
0    5t
     l90  102444
     l116  66199
     l32   33663 nudata (library) storage size
     l44   33734
     l103  81099
    61** f1-20
0   60* array      10 entries read
0   65$ array      63 entries read
0    6t
     l140  71957
     used   107068 in size   150000
0jopt             12
              0             0             0             0             0             0             0             0             0             0
              0             0
0therm             4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non               5
           7935            20             6            18          1697
0mmn              19
              0             10             0             0             1             1             0             0             0            10
             21            100             0             5             0             0             4             0             0
0tconst            5
  3.156000E+07 1.600000E+04 2.500000E+01  .000000E+00 5.000000E-02
0mzero             4
             21           689           129           879
```

```
0pow              3
   .000000E+00  .000000E+00  .000000E+00
0 linp            9
             6            0           51           26            2         3000         1000         1697            5
0 case or subcase    4  Part B 8% UO2 in Tuff (47% H2O) DBF Fuel
0   56$ array     20 entries read
0   57* array      5 entries read
0    5t
     l90  102444
     l116  66199
     l32   33663 nudata (library) storage size
     l44   33734
     l103  81099
     61** f1-20
0   60* array     10 entries read
0   65$ array     63 entries read
0    6t
     l140  71957
     used   107068 in size   150000
0jopt            12
             0            0            0            0            0            0            0            0            0            0
             0            0
0therm            4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non              5
          7935           20            6           18         1697
0mmn             19
             0           10            0            0            1            1            0            0            0           10
            21          100            0            5            0            0            4            0            0
0tconst           5
  3.156000E+07 3.800000E+04 2.500000E+01  .000000E+00 5.000000E-02
0mzero            4
            21          689          129          879
0pow              3
   .000000E+00  .000000E+00  .000000E+00
0 linp            9
             6            0           51           26            2         3000         1000         1697            5
0 case or subcase    5  Part B 8% UO2 in Tuff (47% H2O) DBF Fuel
0   56$ array     20 entries read
0   57* array      5 entries read
0    5t
     l90   90544
     l116  53571
     l32   33663 nudata (library) storage size
     l44   33734
     l103  69017
   61** f1-20
0   60* array      3 entries read
0   65$ array     63 entries read
0    6t
     l140  60057
     used    92263 in size   150000
0jopt            12
             0            0            0            0            0            0            0            0            0            0
             0            0
0therm            4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non              5
          7935           20            6           18         1697
0mmn             19
```

```
            0           3           0           0           1           1           0           0           0          10
           21         100           0           5           0           0           4           0           0
0tconst           5
  3.156000E+07 2.500000E+05 2.600000E+01  .000000E+00 5.000000E-02
0mzero            4
           21         689         129         879
0pow              3
   .000000E+00  .000000E+00  .000000E+00
0 linp            9
            6           0          51          26           2        3000        1000        1697           5
0 case or subcase    6  Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel
    56$$ 0 -10 a10 1 e  t
0   56$ array     20 entries read
0    0t
```

```
1          primary module access and input record ( scale driver - 95/03/29 - 09:06:37 )
-    module origens  will be called
       0$$  a8 26 a11 71 e
       1$$ 1  1t
        DBF Fuel 8% UO2 in Tuff (47% water) 100k year cycle
       3$$ 21 0 1 e
       '   3$$ 21 0 1  a33  -88
       2t
       35$$ 0  t
       '  54$$ a8 1 e
       '   56$$ 0 7 a5 1 a13 -1 a15 3 0 4 e   5t
       56$$ 0 7 a13 -1 a15 3 0 4 e   5t
       Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel  100k year cycle
       per critical mass 10.1 MT UO2
       60**  0 1 90 365.25 730.5 1826.25  3652.5
       '  61** f1-20
       '  65$$ a4 1 2z 1 2z 1 5z 1 2z 1
       '   a25 1 2z 1 2z 1 5z 1 2z 1
       '   a46 1 2z 1 2z 1 5z 1 2z 1 e
       65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
       6t
       '   56$$ 0 -6 a10 1  e  t
       56$$ 0 10 a10 7 a14 5 a17 4 e  57** 10  e  5t
       60**  15 20 30 50 100 150 200 250 300 400
       '  61** f1-20
       '  65$$ a4 1 2z 1 2z 1 5z 1 2z 1
       '   a25 1 2z 1 2z 1 5z 1 2z 1
       '   a46 1 2z 1 2z 1 5z 1 2z 1 e
       65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
       6t
       56$$ 0 10 a10 10 a14 5 a17 4 e  57** 400  e  5t
       60**  500 1+3 2+3 4+3 6+3 8+3 1+4 1.2+4 1.4+4 1.6+4
       '    61** f1-20
       65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
       6t
       56$$ 0 10 a10 10 a14 5 a17 4 e  57** 1.6+4  e  5t
       60**  1.8+4 2.0+4 2.2+4 2.4+4 2.6+4 2.8+4 3+4 3.2+4 3.6+4 3.8+4
       '  61** f1-20
       65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
       6t
       56$$ 0 10 a10 10 a14 5 a17 4 e  57** 3.8+4  e  5t
       60**  4+4 4.5+4 5+4 5.5+4 6+4 6.5+4 7+4 1+5 2+5 2.5+5
       '    61** f1-20
       65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
       6t
       56$$ 0 3 a10 10 a14 5 a17 4 e  57** 2.5+5  e  5t
       60**  3+5 5+5 999999
       '  61** f1-20
       65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
       6t
       '   56$$ 0 -10 a10 1 e  t
       56$$ f0  t
0    module origens  is finished. completion code     0. cpu time used     7.00 (seconds).
1     ooooooooooo    rrrrrrrrrrr    iiiiiiiiiii     ggggggggggg    eeeeeeeeeeee   nn          nn   sssssssssss
    ooooooooooooo   rrrrrrrrrrrr   iiiiiiiiiii    ggggggggggggg   eeeeeeeeeeee   nnn         nn  sssssssssssss
    oo         oo   rr         rr        ii        gg          gg  ee             nnnn        nn  ss          ss
    oo         oo   rr         rr        ii        gg              ee             nn nn       nn  ss
    oo         oo   rr         rr        ii        gg              ee             nn   nn     nn  ss
    oo         oo   rrrrrrrrrrrr         ii        gg    ggggggg   eeeeeeeee      nn     nn   nn  sssssssssss
    oo         oo   rrrrrrrrrrr          ii        gg    ggggggg   eeeeeeeee      nn      nn  nn   sssssssssss
```



```
   oo         oo   rr       rr          ii         gg         gg   ee              nn      nn  nn            ss
   oo         oo   rr        rr         ii         gg         gg   ee              nn       nn nn            ss
   oo         oo   rr         rr        ii         gg         gg   ee              nn        nnnn  ss        ss
   oooooooooooo   rr          rr  iiiiiiiiiiii    gggggggggggg   eeeeeeeeeeeee   nn         nnn  sssssssssssss
    ooooooooooo   rr          rr  iiiiiiiiiiii     gggggggggg    eeeeeeeeeeeee   nn          nn   sssssssssss
0

   dddddddddddd     aaaaaaaaa     vv          vv  iiiiiiiiiiii     sssssssssss
   dddddddddddd    aaaaaaaaaaa    vv          vv  iiiiiiiiiiii    sssssssssssss
   dd         dd   aa         aa   vv          vv       ii         ss         ss
   dd         dd   aa         aa   vv          vv       ii         ss
   dd         dd   aa         aa   vv          vv       ii         ss
   dd         dd   aaaaaaaaaaaaa   vv          vv       ii         sssssssssssss
   dd         dd   aaaaaaaaaaaaa    vv        vv        ii          sssssssssssss
   dd         dd   aa         aa      vv     vv         ii                     ss
   dd         dd   aa         aa       vv   vv          ii                     ss
   dd         dd   aa         aa        vv vv           ii         ss         ss
   dddddddddddd   aa         aa         vvv       iiiiiiiiiiii    sssssssssssss
   dddddddddddd   aa         aa          v        iiiiiiiiiiii     sssssssssss
0

     0000000      88888888888              //   22222222222    99999999999              //   99999999999    666666666666
    000000000    8888888888888            //   2222222222222  9999999999999            //   9999999999999  6666666666666
   00       00   88         88            //   22         22  99         99            //   99         99  66
  00         00  88         88           //                22  99         99           //    99         99  66
  00         00  88         88          //                 22  99         99          //     99         99  66
  00         00   88888888888          //               22    9999999999999         //      9999999999999  666666666666
  00         00   88888888888         //              22       999999999999        //       999999999999  6666666666666
  00         00  88         88       //            22                   99       //                   99  66         66
  00         00  88         88      //           22                    99      //                    99  66         66
   00       00   88         88     //          22                      99     //                     99  66         66
    000000000    8888888888888    //           2222222222222  9999999999999    //           9999999999999  6666666666666
     0000000      88888888888    //            2222222222222  999999999999    //            999999999999    66666666666
0

        11          0000000                     33333333333    33333333333                     0000000      666666666666
       111         000000000                   3333333333333  3333333333333                  000000000    6666666666666
      1111        00       00        :::       33         33  33         33        :::       00       00  66
        11       00         00       :::                  33             33        :::      00         00  66
        11       00         00       :::                  33             33        :::      00         00  66
        11       00         00                          333            333                  00         00  666666666666
        11       00         00                          333            333                  00         00  6666666666666
        11       00         00       :::                  33             33        :::      00         00  66         66
        11       00         00       :::                  33             33        :::      00         00  66         66
        11        00       00        :::       33         33  33         33        :::       00       00  66         66
    11111111      000000000                   3333333333333  3333333333333                  000000000    6666666666666
    11111111       0000000                     33333333333    33333333333                     0000000      66666666666
1
0                                 sssssssssss    cccccccccc     aaaaaaaaa    ll              eeeeeeeeeeeee
                                 sssssssssssss  cccccccccccc   aaaaaaaaaaa   ll              eeeeeeeeeeeee
                                 ss         ss  cc         cc  aa         aa  ll              ee
                                 ss             cc             aa         aa  ll              ee
                                 ss             cc             aa         aa  ll              ee
                                 sssssssssssss  cc             aaaaaaaaaaaaa  ll              eeeeeeeee
                                  sssssssssssss cc             aaaaaaaaaaaaa  ll              eeeeeeeee
                                            ss  cc             aa         aa  ll              ee
                                            ss  cc             aa         aa  ll              ee
                                 ss         ss  cc         cc  aa         aa  ll              ee
                                 sssssssssssss  cccccccccccc   aa         aa  lllllllllllll   eeeeeeeeeeeee
                                  sssssssssss    cccccccccc    aa         aa  lllllllllllll   eeeeeeeeeeeee
```

```
*********************************************************************************
*********************************************************************************
*********************************************************************************
*****                                                                       *****
*****                  program verification information                  *****
*****                                                                       *****
*****                 code system:    scale  version:    4.3             *****
*****                                                                       *****
*********************************************************************************
*********************************************************************************
*****                                                                       *****
*****                                                                       *****
*****              program:  origen                                         *****
*****                                                                       *****
*****         creation date:  03/13/96                                      *****
*****                                                                       *****
*****              library:  /usr1/ornl/Scale/bin                           *****
*****                                                                       *****
*****                                                                       *****
*****             test code:  origens                                       *****
*****                                                                       *****
*****               version:  3.0                                           *****
*****                                                                       *****
*****               jobname:  davis                                         *****
*****                                                                       *****
*****     date of execution:  08/29/96                                      *****
*****                                                                       *****
*****     time of execution:  10:33:06                                      *****
*****                                                                       *****
*****                                                                       *****
*********************************************************************************
*********************************************************************************
*********************************************************************************
```

```
1
1             * input echo * (with break between col. 1-72 and 73-80)
0        note:  only comments are permitted after column 72.
0--------------------only this is used as input data.--------------------        comment or title end
0.............................columns 1-72.............................              ..73-80.

 0$$  a8 26 a11 71 e
 1$$ 1  1t
  DBF Fuel 8% UO2 in Tuff (47% water) 100k year cycle
 3$$ 21 0 1 e
 '   3$$ 21 0 1  a33  -88
 2t
 35$$ 0  t
 '  54$$ a8 1 e
 '   56$$ 0 7 a5 1 a13 -1 a15 3 0 4 e   5t
 56$$ 0 7 a13 -1 a15 3 0 4 e   5t
 Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel  100k year cycle
 per critical mass 10.1 MT UO2
 60**  0 1 90 365.25 730.5 1826.25  3652.5
 '  61** f1-20
 '  65$$ a4 1 2z 1 2z 1 5z 1 2z 1
 '   a25 1 2z 1 2z 1 5z 1 2z 1
```

```
'   a46 1 2z 1 2z 1 5z 1 2z 1 e
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
'   56$$ 0 -6 a10 1  e  t
56$$ 0 10 a10 7 a14 5 a17 4 e  57** 10  e  5t
60**  15 20 30 50 100 150 200 250 300 400
'  61** f1-20
'  65$$ a4 1 2z 1 2z 1 5z 1 2z 1
'   a25 1 2z 1 2z 1 5z 1 2z 1
'   a46 1 2z 1 2z 1 5z 1 2z 1 e
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
56$$ 0 10 a10 10 a14 5 a17 4 e  57** 400  e  5t
60**  500 1+3 2+3 4+3 6+3 8+3 1+4 1.2+4 1.4+4 1.6+4
'    61** f1-20
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
56$$ 0 10 a10 10 a14 5 a17 4 e  57** 1.6+4  e  5t
60**  1.8+4 2.0+4 2.2+4 2.4+4 2.6+4 2.8+4 3+4 3.2+4 3.6+4 3.8+4
'  61** f1-20
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
56$$ 0 10 a10 10 a14 5 a17 4 e  57** 3.8+4  e  5t
60**  4+4 4.5+4 5+4 5.5+4 6+4 6.5+4 7+4 1+5 2+5 2.5+5
'    61** f1-20
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
56$$ 0 3 a10 10 a14 5 a17 4 e  57** 2.5+5  e  5t
60**  3+5 5+5 999999
'  61** f1-20
65$$ a25 1 0 0 1 0 0 0 a46 1 0 0 1 0 0 0 e
6t
'   56$$ 0 -10 a10 1 e  t
56$$ f0  t
0when job "fails", make sure no fido input.....................................is out here!

0    0$ array     12 entries read
0    1$ array      1 entries read
0    1t
0         dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0             short-lived split test fraction, qxn =    9.1188E-04
0             half-norm of matrix used, axn =    7.0000E+00
0             4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
    3$$ 21 0 1  a33  -88
0    3$ array     33 entries read
0    2t
1library information...

          cross-section data taken from position number  1 of library on unit 21.

          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
          *                                                                              *
          *            prelim lwr origen-s binary working library--id = 1143             *
```

```
          *        made from modified card-image origen-s libraries of scale 4.2       *
          *      data from the light element, actinide, and fission product libraries   *
          *        decay data, including gamma and total energy, are from endf/b-vi     *
          *                                                                             *
          *      neutron flux spectrum factors and cross sections were produced from    *
          *     the "presas2" case updating all nuclides on the scale "burnup" library  *
          *                                                                             *
          *                  fission product yields are from endf/b-v                   *
          *                                                                             *
          *             photon libraries use an 18-energy-group structure               *
          *            the photon data are from the master photon data base,            *
          *             produced to include bremsstrahlung from uo2 matrix              *
          *                                                                             *
          *        see information above this box (if present) for later updates        *
          *                                                                             *
          *******************************************************************************
          *                                                                             *
0         *******************************************************************************
0                  .other identification and sizes of library.
0                   data set name:  /usr1/ornl/Scale/data/prlimlwr
0                3/13/1996     date library was produced
0                     1697     total number of nuclides in library
                       689     number of light-element nuclides
                       129     number of actinide nuclides
                       879     number of fission product nuclides
0                     7935     number of nonzero off-diagonal matrix elements
0         *******************************************************************************
0obtaining data from position no.     1 on unit no.   71
1
     Part B 8% UO2 in Tuff (47% H2O) DBF Fuel  100k year cycle                                  actinides        page    1
0                                          nuclide concentrations, grams
                                           basis =per critical mass 10.1 MT UO2
            charge  discharge     .0 d     1.0 d    90.0 d   365.3 d   730.5 d  1826.3 d  3652.5 d
     he  4 2.70E+02  2.70E+02  2.70E+02  2.70E+02  2.70E+02  2.70E+02  2.70E+02  2.70E+02  2.70E+02
     tl206 4.29E-14  4.29E-14  4.29E-14  4.29E-14  4.29E-14  4.29E-14  4.29E-14  4.29E-14  4.29E-14
     tl207 1.78E-09  1.78E-09  1.78E-09  1.78E-09  1.78E-09  1.78E-09  1.78E-09  1.78E-09  1.78E-09
     tl208 8.12E-12  8.12E-12  8.12E-12  8.29E-12  8.16E-12  8.14E-12  8.10E-12  7.92E-12  7.56E-12
     tl209 8.03E-11  8.03E-11  8.03E-11  8.04E-11  8.03E-11  8.03E-11  8.03E-11  8.03E-11  8.03E-11
     pb206 1.12E+02  1.12E+02  1.12E+02  1.12E+02  1.12E+02  1.12E+02  1.12E+02  1.12E+02  1.12E+02
     pb207 6.37E+00  6.37E+00  6.37E+00  6.37E+00  6.37E+00  6.37E+00  6.37E+00  6.37E+00  6.37E+00
     pb208 2.03E-01  2.03E-01  2.03E-01  2.03E-01  2.03E-01  2.03E-01  2.03E-01  2.03E-01  2.03E-01
     pb209 3.39E-07  3.39E-07  3.39E-07  3.23E-07  3.39E-07  3.39E-07  3.39E-07  3.39E-07  3.39E-07
     pb210 9.24E-02  9.24E-02  9.24E-02  9.24E-02  9.24E-02  9.24E-02  9.24E-02  9.24E-02  9.24E-02
     pb211 1.38E-08  1.38E-08  1.38E-08  1.38E-08  1.38E-08  1.38E-08  1.38E-08  1.38E-08  1.38E-08
     pb212 4.81E-09  4.81E-09  4.81E-09  4.81E-09  4.84E-09  4.82E-09  4.80E-09  4.70E-09  4.48E-09
     pb214 2.15E-07  2.15E-07  2.15E-07  2.15E-07  2.15E-07  2.15E-07  2.15E-07  2.15E-07  2.15E-07
     bi208  .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     bi209 2.21E+01  2.21E+01  2.21E+01  2.21E+01  2.21E+01  2.21E+01  2.21E+01  2.21E+01  2.21E+01
     bi210m  .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     bi210 5.69E-05  5.69E-05  5.69E-05  5.69E-05  5.69E-05  5.69E-05  5.69E-05  5.69E-05  5.69E-05
     bi211 8.16E-10  8.16E-10  8.16E-10  8.16E-10  8.16E-10  8.18E-10  8.18E-10  8.18E-10  8.18E-10
     bi212 4.57E-10  4.57E-10  4.57E-10  4.66E-10  4.59E-10  4.58E-10  4.56E-10  4.45E-10  4.25E-10
     bi213 8.08E-08  8.08E-08  8.08E-08  8.08E-08  8.08E-08  8.08E-08  8.08E-08  8.08E-08  8.08E-08
     bi214 1.60E-07  1.60E-07  1.60E-07  1.60E-07  1.60E-07  1.60E-07  1.60E-07  1.60E-07  1.60E-07
     po210 1.57E-03  1.57E-03  1.57E-03  1.57E-03  1.56E-03  1.55E-03  1.55E-03  1.56E-03  1.57E-03
     po211m  .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     po211 9.02E-15  9.02E-15  9.02E-15  9.02E-15  9.02E-15  9.04E-15  9.04E-15  9.04E-15  9.04E-15
     po212 2.40E-20  2.40E-20  2.40E-20  2.45E-20  2.41E-20  2.40E-20  2.39E-20  2.34E-20  2.23E-20
     po213 1.21E-16  1.21E-16  1.21E-16  1.21E-16  1.21E-16  1.21E-16  1.21E-16  1.21E-16  1.21E-16
     po214 2.20E-14  2.20E-14  2.20E-14  2.20E-14  2.20E-14  2.20E-14  2.20E-14  2.20E-14  2.20E-14
```

po215	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.16E-14	1.16E-14	1.16E-14	1.16E-14
po216	1.86E-14	1.86E-14	1.86E-14	1.86E-14	1.87E-14	1.86E-14	1.85E-14	1.81E-14	1.73E-14
po218	2.54E-08	2.54E-08	2.54E-08	2.54E-08	2.54E-08	2.54E-08	2.54E-08	2.54E-08	2.54E-08
at217	9.72E-13	9.72E-13	9.72E-13	9.72E-13	9.72E-13	9.72E-13	9.72E-13	9.72E-13	9.72E-13
rn218	8.78E-27	8.78E-27	8.78E-27	8.51E-27	4.38E-28	4.55E-32	2.35E-37	.00E+00	.00E+00
rn219	2.61E-11	2.61E-11	2.61E-11	2.61E-11	2.61E-11	2.62E-11	2.62E-11	2.62E-11	2.62E-11
rn220	7.25E-12	7.25E-12	7.25E-12	7.25E-12	7.28E-12	7.27E-12	7.24E-12	7.07E-12	6.75E-12
rn222	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05
fr221	9.01E-09	9.01E-09	9.01E-09	9.01E-09	9.01E-09	9.01E-09	9.01E-09	9.01E-09	9.01E-09
fr223	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10
ra222	9.71E-24	9.71E-24	9.71E-24	9.40E-24	4.84E-25	5.03E-29	2.60E-34	.00E+00	.00E+00
ra223	6.64E-06	6.64E-06	6.64E-06	6.64E-06	6.64E-06	6.65E-06	6.65E-06	6.65E-06	6.65E-06
ra224	4.20E-08	4.20E-08	4.20E-08	4.20E-08	4.22E-08	4.21E-08	4.19E-08	4.10E-08	3.91E-08
ra225	3.99E-05	3.99E-05	3.99E-05	3.99E-05	3.99E-05	3.99E-05	3.99E-05	3.99E-05	3.99E-05
ra226	7.14E+00	7.14E+00	7.14E+00	7.14E+00	7.14E+00	7.14E+00	7.14E+00	7.14E+00	7.14E+00
ra228	3.88E-08	3.88E-08	3.88E-08	3.88E-08	3.88E-08	3.88E-08	3.88E-08	3.88E-08	3.88E-08
ac225	2.70E-05	2.70E-05	2.70E-05	2.70E-05	2.70E-05	2.70E-05	2.70E-05	2.70E-05	2.70E-05
ac227	4.70E-03	4.70E-03	4.70E-03	4.70E-03	4.70E-03	4.70E-03	4.70E-03	4.70E-03	4.70E-03
ac228	4.73E-12	4.73E-12	4.73E-12	4.73E-12	4.73E-12	4.73E-12	4.73E-12	4.73E-12	4.73E-12
th226	4.82E-22	4.82E-22	4.82E-22	4.67E-22	2.41E-23	2.50E-27	1.29E-32	.00E+00	.00E+00
th227	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05
th228	8.16E-06	8.16E-06	8.16E-06	8.16E-06	8.16E-06	8.15E-06	8.11E-06	7.95E-06	7.59E-06
th229	7.90E+00	7.90E+00	7.90E+00	7.90E+00	7.90E+00	7.90E+00	7.90E+00	7.90E+00	7.90E+00
th230	3.50E+02	3.50E+02	3.50E+02	3.50E+02	3.50E+02	3.50E+02	3.50E+02	3.50E+02	3.50E+02
th231	8.21E-07	8.21E-07	8.21E-07	7.27E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 2

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
th232	9.64E+01	9.64E+01	9.64E+01	9.64E+01	9.64E+01	9.64E+01	9.64E+01	9.64E+01	9.65E+01
th233	1.10E-10	1.10E-10	1.10E-10	4.02E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04
pa231	7.19E+00	7.19E+00	7.19E+00	7.19E+00	7.19E+00	7.19E+00	7.19E+00	7.19E+00	7.19E+00
pa232	1.55E-08	1.55E-08	1.55E-08	9.14E-09	3.25E-29	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.24E-04	3.24E-04	3.24E-04	3.24E-04	3.24E-04	3.24E-04	3.24E-04	3.24E-04	3.24E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	4.76E-19	4.76E-19	4.76E-19	4.60E-19	2.37E-20	2.46E-24	1.27E-29	.00E+00	.00E+00
u231	1.71E-14	1.71E-14	1.71E-14	1.45E-14	6.10E-21	1.16E-40	.00E+00	.00E+00	.00E+00
u232	3.02E-04	3.02E-04	3.02E-04	3.02E-04	3.02E-04	2.99E-04	2.97E-04	2.88E-04	2.74E-04
u233	1.87E+02	1.87E+02	1.87E+02	1.87E+02	1.87E+02	1.87E+02	1.87E+02	1.87E+02	1.87E+02
u234	2.38E+03	2.38E+03	2.38E+03	2.38E+03	2.38E+03	2.38E+03	2.38E+03	2.38E+03	2.38E+03
u235	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05
u236	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04
u237	9.93E-05	9.93E-05	9.93E-05	8.96E-05	9.71E-09	8.52E-11	8.12E-11	7.02E-11	5.51E-11
u238	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06
u239	9.03E-06	9.03E-06	9.03E-06	3.04E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.27E-31	1.27E-31	1.27E-31	1.27E-31	1.27E-31	1.27E-31	1.27E-31	1.27E-31	1.27E-31
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	2.40E-10	2.40E-10	2.40E-10	2.40E-10	2.05E-10	1.27E-10	6.69E-11	9.83E-12	4.03E-13
np236m	5.72E-11	5.72E-11	5.72E-11	2.73E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	6.33E-04	6.33E-04	6.33E-04	6.33E-04	6.33E-04	6.33E-04	6.33E-04	6.33E-04	6.33E-04
np237	9.53E+03	9.53E+03	9.53E+03	9.53E+03	9.53E+03	9.53E+03	9.53E+03	9.53E+03	9.53E+03
np238	4.33E-05	4.33E-05	4.33E-05	3.12E-05	9.36E-13	9.32E-13	9.28E-13	9.14E-13	8.92E-13
np239	1.30E-03	1.30E-03	1.30E-03	9.79E-04	3.58E-11	3.58E-11	3.58E-11	3.58E-11	3.58E-11
np240m	1.08E-33	1.08E-33	1.08E-33	1.08E-33	1.08E-33	1.08E-33	1.08E-33	1.08E-33	1.08E-33
np240	3.31E-14	3.31E-14	3.31E-14	3.29E-21	1.11E-35	1.11E-35	1.11E-35	1.11E-35	1.11E-35
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	3.25E-08	3.25E-08	3.25E-08	3.25E-08	3.07E-08	2.59E-08	2.07E-08	1.08E-08	4.27E-09
pu237	6.91E-12	6.91E-12	6.91E-12	6.81E-12	1.74E-12	2.54E-14	9.37E-17	4.67E-24	3.16E-36
pu238	6.56E-01	6.56E-01	6.56E-01	6.56E-01	6.55E-01	6.51E-01	6.46E-01	6.31E-01	6.06E-01
pu239	5.81E+03	5.81E+03	5.81E+03	5.81E+03	5.81E+03	5.81E+03	5.81E+03	5.81E+03	5.81E+03
pu240	5.87E+01	5.87E+01	5.87E+01	5.87E+01	5.87E+01	5.87E+01	5.87E+01	5.87E+01	5.87E+01
pu241	2.95E-03	2.95E-03	2.95E-03	2.95E-03	2.91E-03	2.81E-03	2.68E-03	2.32E-03	1.82E-03
pu242	1.18E-02	1.18E-02	1.18E-02	1.18E-02	1.18E-02	1.18E-02	1.18E-02	1.18E-02	1.18E-02
pu243	3.06E-12	3.06E-12	3.06E-12	1.06E-13	8.11E-28	8.11E-28	8.11E-28	8.11E-28	8.11E-28
pu244	6.41E-21	6.41E-21	6.41E-21	6.41E-21	6.41E-21	6.41E-21	6.41E-21	6.41E-21	6.41E-21
pu245	3.30E-32	3.30E-32	3.30E-32	6.77E-33	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	1.38E-42	2.21E-41	.00E+00	.00E+00	.00E+00	.00E+00
am239	2.97E-18	2.97E-18	2.97E-18	7.34E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	1.37E-15	1.37E-15	1.37E-15	9.85E-16	2.28E-28	.00E+00	.00E+00	.00E+00	.00E+00
am241	8.84E-02	8.84E-02	8.84E-02	8.84E-02	8.84E-02	8.84E-02	8.83E-02	8.83E-02	8.81E-02
am242m	5.15E-06	5.15E-06	5.15E-06	5.15E-06	5.14E-06	5.13E-06	5.10E-06	5.03E-06	4.90E-06
am242	4.10E-10	4.10E-10	4.10E-10	1.88E-10	6.64E-11	6.61E-11	6.58E-11	6.48E-11	6.33E-11
am243	4.16E-05	4.16E-05	4.16E-05	4.16E-05	4.16E-05	4.16E-05	4.16E-05	4.16E-05	4.16E-05
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	3.89E-14	3.89E-14	3.89E-14	7.48E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	6.47E-33	6.47E-33	6.47E-33	1.66E-33	1.31E-35	7.20E-36	3.26E-36	3.03E-37	7.31E-39
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	2.94E-21	2.94E-21	2.94E-21	2.87E-21	4.38E-22	1.30E-24	5.80E-28	5.10E-38	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 3

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cm242	8.27E-08	8.27E-08	8.27E-08	8.26E-08	6.08E-08	2.81E-08	1.64E-08	1.32E-08	1.28E-08
cm243	2.36E-13	2.36E-13	2.36E-13	2.36E-13	2.34E-13	2.30E-13	2.24E-13	2.09E-13	1.85E-13
cm244	6.10E-10	6.10E-10	6.10E-10	6.10E-10	6.05E-10	5.88E-10	5.65E-10	5.04E-10	4.16E-10
cm245	1.37E-12	1.37E-12	1.37E-12	1.37E-12	1.37E-12	1.37E-12	1.37E-12	1.37E-12	1.37E-12
cm246	9.24E-15	9.24E-15	9.24E-15	9.24E-15	9.24E-15	9.24E-15	9.24E-15	9.23E-15	9.23E-15
cm247	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17
cm248	1.49E-19	1.49E-19	1.49E-19	1.49E-19	1.49E-19	1.49E-19	1.49E-19	1.49E-19	1.49E-19
cm249	5.80E-31	5.80E-31	5.80E-31	1.01E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	5.29E-35	5.29E-35	5.29E-35	5.29E-35	5.29E-35	5.29E-35	5.29E-35	5.29E-35	5.29E-35
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	4.17E-27	4.17E-27	4.17E-27	4.16E-27	3.43E-27	1.89E-27	8.57E-28	7.98E-29	1.53E-30
bk250	6.22E-36	6.22E-36	6.22E-36	3.53E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	1.64E-24	1.64E-24	1.64E-24	1.64E-24	1.64E-24	1.64E-24	1.64E-24	1.63E-24	1.62E-24
cf250	2.65E-29	2.65E-29	2.65E-29	2.65E-29	2.62E-29	2.52E-29	2.39E-29	2.04E-29	1.56E-29
cf251	1.49E-31	1.49E-31	1.49E-31	1.49E-31	1.49E-31	1.49E-31	1.49E-31	1.48E-31	1.48E-31
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 4

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	9.32E-06	9.32E-06	9.32E-06	9.32E-06	9.32E-06	9.32E-06	9.32E-06	9.32E-06	9.32E-06

tl207	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01
tl208	2.40E-03	2.40E-03	2.40E-03	2.46E-03	2.42E-03	2.41E-03	2.40E-03	2.35E-03	2.24E-03
tl209	3.29E-02	3.29E-02	3.29E-02	3.29E-02	3.29E-02	3.29E-02	3.29E-02	3.29E-02	3.29E-02
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	1.56E+00	1.56E+00	1.56E+00	1.49E+00	1.56E+00	1.56E+00	1.56E+00	1.56E+00	1.57E+00
pb210	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00
pb211	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.41E-01	3.41E-01	3.41E-01	3.41E-01
pb212	6.69E-03	6.69E-03	6.69E-03	6.69E-03	6.72E-03	6.71E-03	6.68E-03	6.53E-03	6.23E-03
pb214	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00
bi211	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.41E-01	3.41E-01	3.41E-01	3.41E-01
bi212	6.69E-03	6.69E-03	6.69E-03	6.83E-03	6.72E-03	6.71E-03	6.68E-03	6.53E-03	6.23E-03
bi213	1.56E+00	1.56E+00	1.56E+00	1.57E+00	1.56E+00	1.56E+00	1.56E+00	1.56E+00	1.57E+00
bi214	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00
po210	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.02E+00	6.98E+00	6.98E+00	7.02E+00	7.06E+00
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.35E-04	9.35E-04	9.35E-04	9.35E-04	9.35E-04	9.37E-04	9.37E-04	9.37E-04	9.37E-04
po212	4.29E-03	4.29E-03	4.29E-03	4.38E-03	4.31E-03	4.30E-03	4.28E-03	4.18E-03	3.99E-03
po213	1.53E+00	1.53E+00	1.53E+00	1.53E+00	1.53E+00	1.53E+00	1.53E+00	1.53E+00	1.53E+00
po214	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00
po215	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.41E-01	3.41E-01	3.41E-01	3.41E-01
po216	6.69E-03	6.69E-03	6.69E-03	6.69E-03	6.72E-03	6.71E-03	6.68E-03	6.53E-03	6.23E-03
po218	7.06E+00	7.06E+00	7.06E+00	7.07E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00
at217	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00
rn218	1.30E-14	1.30E-14	1.30E-14	1.26E-14	6.48E-16	6.73E-20	3.48E-25	.00E+00	.00E+00
rn219	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.41E-01	3.41E-01	3.41E-01	3.41E-01
rn220	6.69E-03	6.69E-03	6.69E-03	6.69E-03	6.72E-03	6.71E-03	6.68E-03	6.53E-03	6.23E-03
rn222	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00
fr221	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00
fr223	4.69E-03	4.69E-03	4.69E-03	4.69E-03	4.69E-03	4.69E-03	4.69E-03	4.69E-03	4.69E-03
ra222	1.30E-14	1.30E-14	1.30E-14	1.26E-14	6.48E-16	6.73E-20	3.48E-25	.00E+00	.00E+00
ra223	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.41E-01	3.41E-01	3.41E-01	3.41E-01
ra224	6.69E-03	6.69E-03	6.69E-03	6.69E-03	6.72E-03	6.71E-03	6.68E-03	6.53E-03	6.23E-03
ra225	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00
ra226	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00
ra228	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05
ac225	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00
ac227	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01
ac228	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05
th226	1.30E-14	1.30E-14	1.30E-14	1.26E-14	6.48E-16	6.73E-20	3.48E-25	.00E+00	.00E+00
th227	3.35E-01	3.35E-01	3.35E-01	3.35E-01	3.35E-01	3.36E-01	3.36E-01	3.36E-01	3.36E-01
th228	6.69E-03	6.69E-03	6.69E-03	6.69E-03	6.69E-03	6.68E-03	6.65E-03	6.52E-03	6.22E-03
th229	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00
th230	7.23E+00	7.23E+00	7.23E+00	7.23E+00	7.23E+00	7.23E+00	7.23E+00	7.23E+00	7.23E+00
th231	4.37E-01	4.37E-01	4.37E-01	3.87E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 5

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
th232	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05
th233	4.00E-03	4.00E-03	4.00E-03	1.46E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
pa231	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01
pa232	6.66E-03	6.66E-03	6.66E-03	3.93E-03	1.40E-23	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00
pa234m	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
pa234	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.78E-03	3.78E-03	3.77E-03	3.77E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.30E-14	1.30E-14	1.30E-14	1.26E-14	6.47E-16	6.72E-20	3.47E-25	.00E+00	.00E+00
u231	2.31E-09	2.31E-09	2.31E-09	1.96E-09	8.22E-16	.00E+00	.00E+00	.00E+00	.00E+00
u232	6.68E-03	6.68E-03	6.68E-03	6.68E-03	6.66E-03	6.61E-03	6.55E-03	6.36E-03	6.05E-03
u233	1.80E+00	1.80E+00	1.80E+00	1.80E+00	1.80E+00	1.80E+00	1.80E+00	1.80E+00	1.80E+00
u234	1.48E+01	1.48E+01	1.48E+01	1.48E+01	1.48E+01	1.48E+01	1.48E+01	1.48E+01	1.48E+01
u235	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01
u236	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00
u237	8.11E+00	8.11E+00	8.11E+00	7.32E+00	7.93E-04	6.96E-06	6.63E-06	5.73E-06	4.50E-06
u238	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
u239	3.03E+02	3.03E+02	3.03E+02	1.02E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.17E-25	1.17E-25	1.17E-25	1.17E-25	1.17E-25	1.17E-25	1.17E-25	1.17E-25	1.17E-25
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	3.37E-07	3.37E-07	3.37E-07	3.36E-07	2.88E-07	1.78E-07	9.38E-08	1.38E-08	5.65E-10
np236m	3.38E-05	3.38E-05	3.38E-05	1.61E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	8.34E-06	8.34E-06	8.34E-06	8.34E-06	8.34E-06	8.34E-06	8.34E-06	8.34E-06	8.34E-06
np237	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00
np238	1.12E+01	1.12E+01	1.12E+01	8.10E+00	2.43E-07	2.42E-07	2.41E-07	2.37E-07	2.31E-07
np239	3.03E+02	3.03E+02	3.03E+02	2.27E+02	8.31E-06	8.30E-06	8.30E-06	8.30E-06	8.30E-06
np240m	1.17E-25	1.17E-25	1.17E-25	1.18E-25	1.17E-25	1.17E-25	1.17E-25	1.17E-25	1.17E-25
np240	4.20E-07	4.20E-07	4.20E-07	4.17E-14	1.41E-28	1.41E-28	1.41E-28	1.41E-28	1.41E-28
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.70E-05	1.70E-05	1.70E-05	1.70E-05	1.60E-05	1.35E-05	1.08E-05	5.66E-06	2.23E-06
pu237	8.43E-08	8.43E-08	8.43E-08	8.30E-08	2.12E-08	3.10E-10	1.14E-12	5.70E-20	4.56E-32
pu238	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.11E+01	1.08E+01	1.04E+01
pu239	3.60E+02	3.60E+02	3.60E+02	3.60E+02	3.60E+02	3.60E+02	3.60E+02	3.60E+02	3.60E+02
pu240	1.33E+01	1.33E+01	1.33E+01	1.33E+01	1.33E+01	1.33E+01	1.33E+01	1.33E+01	1.33E+01
pu241	3.05E-01	3.05E-01	3.05E-01	3.05E-01	3.01E-01	2.91E-01	2.77E-01	2.40E-01	1.88E-01
pu242	4.65E-05	4.65E-05	4.65E-05	4.65E-05	4.65E-05	4.65E-05	4.65E-05	4.65E-05	4.65E-05
pu243	7.96E-06	7.96E-06	7.96E-06	2.77E-07	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21
pu244	1.17E-25	1.17E-25	1.17E-25	1.17E-25	1.17E-25	1.17E-25	1.17E-25	1.17E-25	1.17E-25
pu245	4.03E-26	4.03E-26	4.03E-26	8.26E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	3.28E-12	3.28E-12	3.28E-12	8.10E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	3.51E-10	3.51E-10	3.51E-10	2.53E-10	5.85E-23	.00E+00	.00E+00	.00E+00	.00E+00
am241	3.03E-01	3.03E-01	3.03E-01	3.03E-01	3.03E-01	3.03E-01	3.03E-01	3.03E-01	3.02E-01
am242m	5.40E-05	5.40E-05	5.40E-05	5.40E-05	5.39E-05	5.37E-05	5.35E-05	5.27E-05	5.14E-05
am242	3.31E-04	3.31E-04	3.31E-04	1.52E-04	5.37E-05	5.35E-05	5.32E-05	5.24E-05	5.12E-05
am243	8.31E-06	8.31E-06	8.31E-06	8.31E-06	8.31E-06	8.30E-06	8.30E-06	8.30E-06	8.30E-06
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	4.94E-08	4.94E-08	4.94E-08	9.52E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	4.04E-26	4.04E-26	4.04E-26	1.04E-26	8.16E-29	4.50E-29	2.04E-29	1.89E-30	4.56E-32
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	4.85E-17	4.85E-17	4.85E-17	4.75E-17	7.24E-18	2.16E-20	9.59E-24	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 6

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cm242	2.74E-04	2.74E-04	2.74E-04	2.74E-04	2.02E-04	9.30E-05	5.44E-05	4.36E-05	4.23E-05
cm243	1.22E-11	1.22E-11	1.22E-11	1.22E-11	1.21E-11	1.19E-11	1.16E-11	1.08E-11	9.54E-12
cm244	4.94E-08	4.94E-08	4.94E-08	4.94E-08	4.90E-08	4.76E-08	4.58E-08	4.08E-08	3.37E-08
cm245	2.35E-13	2.35E-13	2.35E-13	2.35E-13	2.35E-13	2.35E-13	2.35E-13	2.35E-13	2.35E-13
cm246	2.84E-15	2.84E-15	2.84E-15	2.84E-15	2.84E-15	2.84E-15	2.84E-15	2.84E-15	2.84E-15
cm247	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21
cm248	6.34E-22	6.34E-22	6.34E-22	6.34E-22	6.34E-22	6.34E-22	6.34E-22	6.34E-22	6.34E-22
cm249	6.83E-24	6.83E-24	6.83E-24	1.19E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	6.83E-24	6.83E-24	6.83E-24	6.82E-24	5.63E-24	3.10E-24	1.40E-24	1.31E-25	2.51E-27
bk250	2.42E-29	2.42E-29	2.42E-29	1.37E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	6.73E-24	6.73E-24	6.73E-24	6.73E-24	6.73E-24	6.73E-24	6.72E-24	6.68E-24	6.62E-24
cf250	2.90E-27	2.90E-27	2.90E-27	2.90E-27	2.86E-27	2.75E-27	2.61E-27	2.23E-27	1.71E-27
cf251	2.28E-31	2.28E-31	2.28E-31	2.28E-31	2.28E-31	2.28E-31	2.28E-31	2.28E-31	2.28E-31
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	1.14E+03	1.14E+03	1.14E+03	7.57E+02	5.14E+02	5.14E+02	5.14E+02	5.14E+02	5.13E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 7

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
h 3	4.76E-06	4.76E-06	4.76E-06	4.76E-06	4.70E-06	4.50E-06	4.26E-06	3.60E-06	2.71E-06
li 6	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04
li 7	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06
be 9	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05
be 10	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04
c 14	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06
ni 66	1.84E-14	1.84E-14	1.84E-14	1.36E-14	2.28E-26	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	2.87E-17	2.87E-17	2.87E-17	2.11E-17	3.55E-29	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07
cu 67	3.42E-15	3.42E-15	3.42E-15	2.62E-15	1.04E-25	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08
zn 68	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09
zn 69	1.03E-16	1.03E-16	1.03E-16	2.66E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	1.22E-15	1.22E-15	1.22E-15	3.64E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08
zn 70	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06
ga 70	1.05E-18	1.05E-18	1.05E-18	3.23E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09
zn 71	2.57E-16	2.57E-16	2.57E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	1.07E-13	1.07E-13	1.07E-13	1.60E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05
ge 71	9.61E-18	9.61E-18	9.61E-18	9.04E-18	4.11E-20	2.33E-27	5.65E-37	.00E+00	.00E+00
ge 71m	9.92E-26	9.92E-26	9.92E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	6.88E-19	6.88E-19	6.88E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	1.11E-15	1.11E-15	1.11E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	4.39E-15	4.39E-15	4.39E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	1.38E-10	1.38E-10	1.38E-10	9.64E-11	1.43E-24	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	4.19E-11	4.19E-11	4.19E-11	3.64E-11	6.23E-25	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03
co 73	4.54E-19	4.54E-19	4.54E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	2.03E-16	2.03E-16	2.03E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	1.05E-14	1.05E-14	1.05E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	7.65E-14	7.65E-14	7.65E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	5.76E-11	5.76E-11	5.76E-11	1.88E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02
ge 73m	1.62E-15	1.62E-15	1.62E-15	5.30E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	6.80E-20	6.80E-20	6.80E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	2.84E-16	2.84E-16	2.84E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	2.04E-15	2.04E-15	2.04E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	9.27E-13	9.27E-13	9.27E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	1.37E-12	1.37E-12	1.37E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03
co 75	1.16E-20	1.16E-20	1.16E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	3.48E-17	3.48E-17	3.48E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	4.45E-15	4.45E-15	4.45E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	2.77E-13	2.77E-13	2.77E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	3.99E-12	3.99E-12	3.99E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	1.58E-10	1.58E-10	1.58E-10	9.42E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	7.80E-14	7.80E-14	7.80E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01
ni 76	1.76E-17	1.76E-17	1.76E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	1.14E-15	1.14E-15	1.14E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 8

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
zn 76	4.01E-13	4.01E-13	4.01E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	3.27E-12	3.27E-12	3.27E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01
as 76	5.91E-12	5.91E-12	5.91E-12	3.14E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04
ni 77	9.70E-19	9.70E-19	9.70E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	7.03E-16	7.03E-16	7.03E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	1.77E-13	1.77E-13	1.77E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	2.61E-12	2.61E-12	2.61E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	2.91E-09	2.91E-09	2.91E-09	6.69E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	1.07E-11	1.07E-11	1.07E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	3.23E-08	3.23E-08	3.23E-08	2.28E-08	6.57E-25	.00E+00	.00E+00	.00E+00	.00E+00
se 77	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01
se 77m	1.29E-14	1.29E-14	1.29E-14	9.11E-15	2.63E-31	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	1.88E-19	1.88E-19	1.88E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	8.88E-17	8.88E-17	8.88E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	1.46E-13	1.46E-13	1.46E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	2.05E-12	2.05E-12	2.05E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	3.27E-09	3.27E-09	3.27E-09	3.88E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	3.40E-09	3.40E-09	3.40E-09	5.80E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00
cu 79	2.08E-17	2.08E-17	2.08E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	5.01E-14	5.01E-14	5.01E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	1.57E-12	1.57E-12	1.57E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	2.28E-11	2.28E-11	2.28E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	6.90E-10	6.90E-10	6.90E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	3.80E+00	3.80E+00	3.80E+00	3.80E+00	3.80E+00	3.80E+00	3.80E+00	3.80E+00	3.80E+00
se 79m	2.96E-10	2.96E-10	2.96E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	3.81E-01	3.81E-01	3.81E-01	3.81E-01	3.81E-01	3.81E-01	3.81E-01	3.81E-01	3.81E-01
br 79m	7.16E-19	7.16E-19	7.16E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	6.83E-19	6.83E-19	6.83E-19	4.25E-19	1.87E-37	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	1.17E-18	1.17E-18	1.17E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	7.25E-15	7.25E-15	7.25E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	5.43E-13	5.43E-13	5.43E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	1.00E-10	1.00E-10	1.00E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	5.68E-11	5.68E-11	5.68E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01
br 80	5.51E-13	5.51E-13	5.51E-13	3.46E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	2.09E-12	2.09E-12	2.09E-12	4.84E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04

cu 81	8.43E-20	8.43E-20	8.43E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	3.28E-16	3.28E-16	3.28E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	2.68E-13	2.68E-13	2.68E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	2.80E-11	2.80E-11	2.80E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	1.79E-10	1.79E-10	1.79E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	6.20E-09	6.20E-09	6.20E-09	1.60E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	1.25E-09	1.25E-09	1.25E-09	3.38E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01
kr 81	8.03E-07	8.03E-07	8.03E-07	8.03E-07	8.03E-07	8.03E-07	8.03E-07	8.03E-07	8.03E-07
kr 81m	3.86E-18	3.86E-18	3.86E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	1.03E-16	1.03E-16	1.03E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	1.19E-13	1.19E-13	1.19E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 9

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
ge 82	1.79E-11	1.79E-11	1.79E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	1.19E-10	1.19E-10	1.19E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	3.15E-11	3.15E-11	3.15E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01
br 82	1.85E-09	1.85E-09	1.85E-09	1.16E-09	7.09E-28	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	3.26E-12	3.26E-12	3.26E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02
zn 83	1.84E-18	1.84E-18	1.84E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	4.21E-15	4.21E-15	4.21E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	3.04E-12	3.04E-12	3.04E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	1.38E-10	1.38E-10	1.38E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	9.49E-09	9.49E-09	9.49E-09	3.47E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	5.70E-10	5.70E-10	5.70E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	1.36E-07	1.36E-07	1.36E-07	1.45E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01
kr 83m	1.04E-07	1.04E-07	1.04E-07	4.76E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	2.53E-14	2.53E-14	2.53E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	1.15E-12	1.15E-12	1.15E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	4.08E-11	4.08E-11	4.08E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	5.79E-09	5.79E-09	5.79E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	5.89E-08	5.89E-08	5.89E-08	1.53E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	2.64E-10	2.64E-10	2.64E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02
ga 85	1.37E-17	1.37E-17	1.37E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	3.88E-14	3.88E-14	3.88E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	9.56E-12	9.56E-12	9.56E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	4.85E-10	4.85E-10	4.85E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	2.58E-10	2.58E-10	2.58E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	6.26E-09	6.26E-09	6.26E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.62E-03	2.50E-03	2.34E-03	1.93E-03	1.40E-03
kr 85m	5.86E-07	5.86E-07	5.86E-07	1.45E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02
ge 86	7.76E-15	7.76E-15	7.76E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	2.54E-12	2.54E-12	2.54E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	5.91E-10	5.91E-10	5.91E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	2.56E-09	2.56E-09	2.56E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	3.55E-11	3.55E-11	3.55E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02
rb 86	1.21E-08	1.21E-08	1.21E-08	1.17E-08	4.26E-10	1.52E-14	1.91E-20	3.81E-38	.00E+00
rb 86m	3.50E-14	3.50E-14	3.50E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02
ge 87	7.63E-14	7.63E-14	7.63E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	5.91E-13	5.91E-13	5.91E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	1.29E-10	1.29E-10	1.29E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	3.40E-09	3.40E-09	3.40E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	3.48E-07	3.48E-07	3.48E-07	7.35E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02
sr 87	6.56E-04	6.56E-04	6.56E-04	6.56E-04	6.56E-04	6.56E-04	6.56E-04	6.56E-04	6.56E-04
sr 87m	3.20E-13	3.20E-13	3.20E-13	8.62E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	9.80E-17	9.80E-17	9.80E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	1.29E-13	1.29E-13	1.29E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	1.72E-11	1.72E-11	1.72E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 10

0

nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
br 88	1.03E-09	1.03E-09	1.03E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	1.11E-06	1.11E-06	1.11E-06	3.18E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	1.19E-07	1.19E-07	1.19E-07	3.70E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02
as 89	8.43E-16	8.43E-16	8.43E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	1.63E-12	1.63E-12	1.63E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	1.82E-10	1.82E-10	1.82E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	2.70E-08	2.70E-08	2.70E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	1.36E-07	1.36E-07	1.36E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	6.58E-04	6.58E-04	6.58E-04	6.49E-04	1.92E-04	4.40E-06	2.94E-08	8.79E-15	1.17E-25
y 89	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02
y 89m	2.93E-13	2.93E-13	2.93E-13	2.22E-13	6.55E-14	1.50E-15	1.01E-17	3.01E-24	4.01E-35
as 90	4.50E-18	4.50E-18	4.50E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	3.50E-13	3.50E-13	3.50E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	4.18E-11	4.18E-11	4.18E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	5.06E-09	5.06E-09	5.06E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	2.19E-08	2.19E-08	2.19E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	1.05E-08	1.05E-08	1.05E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	1.63E-01	1.63E-01	1.63E-01	1.63E-01	1.62E-01	1.59E-01	1.55E-01	1.44E-01	1.28E-01
y 90	4.24E-05	4.24E-05	4.24E-05	4.24E-05	4.22E-05	4.14E-05	4.04E-05	3.75E-05	3.32E-05
y 90m	7.03E-13	7.03E-13	7.03E-13	3.82E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	1.74E-14	1.74E-14	1.74E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	4.77E-12	4.77E-12	4.77E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	9.26E-10	9.26E-10	9.26E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	1.05E-08	1.05E-08	1.05E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	6.47E-06	6.47E-06	6.47E-06	1.13E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	9.54E-04	9.54E-04	9.54E-04	9.48E-04	3.31E-04	1.27E-05	1.68E-07	3.86E-13	1.55E-22
y 91m	3.26E-07	3.26E-07	3.26E-07	6.24E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02
nb 91	7.35E-12	7.35E-12	7.35E-12	7.35E-12	7.35E-12	7.34E-12	7.33E-12	7.31E-12	7.28E-12
se 92	7.16E-16	7.16E-16	7.16E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	4.47E-13	4.47E-13	4.47E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	1.03E-10	1.03E-10	1.03E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	7.06E-10	7.06E-10	7.06E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	1.87E-06	1.87E-06	1.87E-06	4.03E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	2.46E-06	2.46E-06	2.46E-06	7.76E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02
nb 92	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07
se 93	1.84E-18	1.84E-18	1.84E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	2.47E-14	2.47E-14	2.47E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	2.31E-11	2.31E-11	2.31E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	6.81E-10	6.81E-10	6.81E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	9.18E-08	9.18E-08	9.18E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	5.06E-06	5.06E-06	5.06E-06	9.87E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	4.49E+02	4.49E+02	4.49E+02	4.49E+02	4.49E+02	4.49E+02	4.49E+02	4.49E+02	4.49E+02
nb 93	9.44E+00	9.44E+00	9.44E+00	9.44E+00	9.44E+00	9.44E+00	9.44E+00	9.44E+00	9.44E+00
nb 93m	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03
br 94	9.87E-16	9.87E-16	9.87E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	1.63E-12	1.63E-12	1.63E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	1.63E-10	1.63E-10	1.63E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 11

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sr 94	1.51E-08	1.51E-08	1.51E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	2.41E-07	2.41E-07	2.41E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02
nb 94	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.48E-04	5.48E-04	5.48E-04
nb 94m	4.73E-13	4.73E-13	4.73E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	7.88E-18	7.88E-18	7.88E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	2.95E-13	2.95E-13	2.95E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	1.09E-11	1.09E-11	1.09E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	4.57E-09	4.57E-09	4.57E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	1.37E-07	1.37E-07	1.37E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	1.22E-03	1.22E-03	1.22E-03	1.21E-03	4.61E-04	2.34E-05	4.48E-07	3.15E-12	8.15E-21
nb 95	6.66E-04	6.66E-04	6.66E-04	6.66E-04	4.19E-04	2.76E-05	5.56E-07	3.80E-12	9.81E-21
nb 95m	7.64E-07	7.64E-07	7.64E-07	7.64E-07	3.06E-07	1.55E-08	2.97E-10	2.09E-15	5.40E-24
mo 95	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02
br 96	1.56E-18	1.56E-18	1.56E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	2.25E-14	2.25E-14	2.25E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	1.46E-12	1.46E-12	1.46E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	1.42E-10	1.42E-10	1.42E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	1.22E-09	1.22E-09	1.22E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02
nb 96	2.15E-09	2.15E-09	2.15E-09	1.06E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00
kr 97	7.06E-17	7.06E-17	7.06E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	4.51E-13	4.51E-13	4.51E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	2.97E-11	2.97E-11	2.97E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	5.99E-10	5.99E-10	5.99E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	1.21E-05	1.21E-05	1.21E-05	4.50E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	8.59E-07	8.59E-07	8.59E-07	3.22E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	1.13E-08	1.13E-08	1.13E-08	4.21E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02
kr 98	3.65E-17	3.65E-17	3.65E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	1.38E-14	1.38E-14	1.38E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	1.66E-11	1.66E-11	1.66E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	8.17E-11	8.17E-11	8.17E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	6.31E-09	6.31E-09	6.31E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	5.90E-10	5.90E-10	5.90E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	2.68E-09	2.68E-09	2.68E-09	9.49E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02
tc 98	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04
rb 99	1.67E-16	1.67E-16	1.67E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	3.43E-12	3.43E-12	3.43E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	1.25E-10	1.25E-10	1.25E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	4.26E-10	4.26E-10	4.26E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	1.96E-09	1.96E-09	1.96E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	1.36E-08	1.36E-08	1.36E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	5.24E-05	5.24E-05	5.24E-05	4.07E-05	7.23E-15	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	6.21E+02	6.21E+02	6.21E+02	6.21E+02	6.21E+02	6.21E+02	6.21E+02	6.21E+02	6.21E+02
tc 99m	4.21E-06	4.21E-06	4.21E-06	3.57E-06	6.38E-16	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	9.96E+01	9.96E+01	9.96E+01	9.96E+01	9.96E+01	9.96E+01	9.96E+01	9.96E+01	9.96E+01

rb100	7.44E-17	7.44E-17	7.44E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	1.63E-13	1.63E-13	1.63E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	1.54E-11	1.54E-11	1.54E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 12

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
zr100	1.49E-09	1.49E-09	1.49E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	3.28E-10	3.28E-10	3.28E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	2.58E-11	2.58E-11	2.58E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02
tc100	4.90E-11	4.90E-11	4.90E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00
rb101	5.12E-19	5.12E-19	5.12E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	3.01E-14	3.01E-14	3.01E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	7.42E-12	7.42E-12	7.42E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	2.29E-10	2.29E-10	2.29E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	1.31E-09	1.31E-09	1.31E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	1.67E-07	1.67E-07	1.67E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	1.62E-07	1.62E-07	1.62E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02
sr102	1.02E-14	1.02E-14	1.02E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	8.23E-12	8.23E-12	8.23E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	2.54E-10	2.54E-10	2.54E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	1.94E-10	1.94E-10	1.94E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	1.11E-07	1.11E-07	1.11E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	8.65E-10	8.65E-10	8.65E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	2.40E-11	2.40E-11	2.40E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02
rh102	2.37E-09	2.37E-09	2.37E-09	2.37E-09	2.23E-09	1.86E-09	1.47E-09	7.17E-10	2.17E-10
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	1.23E-17	1.23E-17	1.23E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	7.40E-13	7.40E-13	7.40E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	3.31E-11	3.31E-11	3.31E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	1.37E-10	1.37E-10	1.37E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	8.36E-09	8.36E-09	8.36E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	6.87E-09	6.87E-09	6.87E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	4.30E-04	4.30E-04	4.30E-04	4.23E-04	8.78E-05	6.81E-07	1.08E-09	4.27E-18	4.24E-32
rh103	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02
rh103m	4.26E-07	4.26E-07	4.26E-07	4.19E-07	8.70E-08	6.74E-10	1.07E-12	4.23E-21	4.20E-35
sr104	5.28E-18	5.28E-18	5.28E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	2.92E-15	2.92E-15	2.92E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	1.46E-11	1.46E-11	1.46E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	1.60E-10	1.60E-10	1.60E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	4.79E-09	4.79E-09	4.79E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	9.07E-08	9.07E-08	9.07E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02
rh104	4.14E-10	4.14E-10	4.14E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	1.86E-10	1.86E-10	1.86E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01
y105	3.18E-17	3.18E-17	3.18E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	1.67E-12	1.67E-12	1.67E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	3.61E-11	3.61E-11	3.61E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	1.67E-09	1.67E-09	1.67E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	2.31E-08	2.31E-08	2.31E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	8.13E-07	8.13E-07	8.13E-07	1.98E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	6.47E-06	6.47E-06	6.47E-06	4.62E-06	3.04E-24	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	6.50E-10	6.50E-10	6.50E-10	1.58E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 13

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
y106	3.27E-19	3.27E-19	3.27E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	3.54E-14	3.54E-14	3.54E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	1.19E-12	1.19E-12	1.19E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	1.72E-10	1.72E-10	1.72E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	9.17E-10	9.17E-10	9.17E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	8.70E-04	8.70E-04	8.70E-04	8.68E-04	7.35E-04	4.40E-04	2.23E-04	2.88E-05	9.57E-07
rh106	8.07E-10	8.07E-10	8.07E-10	8.06E-10	6.82E-10	4.08E-10	2.07E-10	2.68E-11	8.88E-13
rh106m	6.69E-12	6.69E-12	6.69E-12	3.10E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01
ag106	1.37E-17	1.37E-17	1.37E-17	1.19E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	3.07E-21	3.07E-21	3.07E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	9.08E-17	9.08E-17	9.08E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	1.45E-13	1.45E-13	1.45E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	2.30E-11	2.30E-11	2.30E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	2.54E-10	2.54E-10	2.54E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	3.23E-09	3.23E-09	3.23E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	1.88E-08	1.88E-08	1.88E-08	2.43E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01
pd107m	8.34E-14	8.34E-14	8.34E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	2.09E-01	2.09E-01	2.09E-01	2.09E-01	2.09E-01	2.09E-01	2.09E-01	2.09E-01	2.09E-01
zr108	5.56E-18	5.56E-18	5.56E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	1.17E-15	1.17E-15	1.17E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	9.35E-13	9.35E-13	9.35E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	1.81E-11	1.81E-11	1.81E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	2.18E-09	2.18E-09	2.18E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	1.37E-10	1.37E-10	1.37E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	4.59E-11	4.59E-11	4.59E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01
ag108	1.04E-13	1.04E-13	1.04E-13	8.52E-18	8.51E-18	8.47E-18	8.43E-18	8.29E-18	8.07E-18
ag108m	2.76E-09	2.76E-09	2.76E-09	2.76E-09	2.76E-09	2.74E-09	2.73E-09	2.69E-09	2.61E-09
cd108	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04
zr109	1.54E-21	1.54E-21	1.54E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	6.57E-17	6.57E-17	6.57E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	8.92E-14	8.92E-14	8.92E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	1.53E-12	1.53E-12	1.53E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	1.80E-10	1.80E-10	1.80E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	4.81E-10	4.81E-10	4.81E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	1.50E-10	1.50E-10	1.50E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	3.02E-07	3.02E-07	3.02E-07	9.00E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	4.96E-12	4.96E-12	4.96E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01
ag109m	2.43E-10	2.43E-10	2.43E-10	7.23E-11	2.04E-18	1.35E-18	7.82E-19	1.51E-19	9.81E-21
cd109	2.36E-12	2.36E-12	2.36E-12	2.35E-12	2.06E-12	1.36E-12	7.89E-13	1.53E-13	9.90E-15
nb110	1.30E-18	1.30E-18	1.30E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	2.39E-14	2.39E-14	2.39E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	1.72E-13	1.72E-13	1.72E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	3.03E-11	3.03E-11	3.03E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	1.02E-12	1.02E-12	1.02E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	6.68E-11	6.68E-11	6.68E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00
ag110	9.39E-12	9.39E-12	9.39E-12	5.05E-15	3.94E-15	1.84E-15	6.67E-16	3.19E-17	2.01E-19
ag110m	3.27E-07	3.27E-07	3.27E-07	3.26E-07	2.54E-07	1.19E-07	4.30E-08	2.06E-09	1.29E-11

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 14

nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cd110	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01
nb111	1.52E-20	1.52E-20	1.52E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	4.40E-16	4.40E-16	4.40E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	1.01E-13	1.01E-13	1.01E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	1.29E-12	1.29E-12	1.29E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	1.63E-11	1.63E-11	1.63E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	2.19E-09	2.19E-09	2.19E-09	3.26E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	1.20E-09	1.20E-09	1.20E-09	5.85E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	1.01E-06	1.01E-06	1.01E-06	9.20E-07	2.33E-10	1.76E-21	3.08E-36	.00E+00	.00E+00
ag111m	1.01E-10	1.01E-10	1.01E-10	1.87E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00
cd111m	5.58E-14	5.58E-14	5.58E-14	6.71E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	2.88E-22	2.88E-22	2.88E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	1.47E-16	1.47E-16	1.47E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	4.95E-15	4.95E-15	4.95E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	1.41E-12	1.41E-12	1.41E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	1.27E-12	1.27E-12	1.27E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	7.60E-08	7.60E-08	7.60E-08	3.45E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	1.14E-08	1.14E-08	1.14E-08	6.04E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00
mo113	6.85E-19	6.85E-19	6.85E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	2.07E-15	2.07E-15	2.07E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	5.10E-13	5.10E-13	5.10E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	5.37E-13	5.37E-13	5.37E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	7.77E-11	7.77E-11	7.77E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	1.56E-08	1.56E-08	1.56E-08	7.10E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	1.10E-11	1.10E-11	1.10E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01
cd113m	6.24E-06	6.24E-06	6.24E-06	6.24E-06	6.16E-06	5.94E-06	5.65E-06	4.88E-06	3.81E-06
in113	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02
in113m	1.80E-18	1.80E-18	1.80E-18	7.91E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	5.84E-19	5.84E-19	5.84E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	1.02E-16	1.02E-16	1.02E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	5.49E-13	5.49E-13	5.49E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	5.82E-13	5.82E-13	5.82E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	1.05E-10	1.05E-10	1.05E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	3.38E-12	3.38E-12	3.38E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00
in114	5.07E-15	5.07E-15	5.07E-15	3.60E-15	1.04E-15	2.20E-17	1.32E-19	2.88E-26	2.27E-37
in114m	2.27E-10	2.27E-10	2.27E-10	2.24E-10	6.45E-11	1.37E-12	8.23E-15	1.79E-21	1.41E-32
sn114	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
mo115	8.47E-22	8.47E-22	8.47E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	4.33E-18	4.33E-18	4.33E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	1.30E-14	1.30E-14	1.30E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	1.35E-12	1.35E-12	1.35E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	1.98E-11	1.98E-11	1.98E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	4.81E-10	4.81E-10	4.81E-10	1.05E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	2.91E-12	2.91E-12	2.91E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	1.04E-07	1.04E-07	1.04E-07	7.66E-08	7.23E-20	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	9.03E-08	9.03E-08	9.03E-08	8.89E-08	2.23E-08	3.09E-10	1.06E-12	4.24E-20	2.00E-32
in115	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00
in115m	8.73E-09	8.73E-09	8.73E-09	6.99E-09	1.03E-14	1.43E-16	4.90E-19	1.97E-26	7.54E-39

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 15

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sn115	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02

tc116	8.14E-19	8.14E-19	8.14E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	8.47E-15	8.47E-15	8.47E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	9.09E-14	9.09E-14	9.09E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	8.83E-12	8.83E-12	8.83E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	1.22E-10	1.22E-10	1.22E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	6.82E-13	6.82E-13	6.82E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00
in116	1.39E-13	1.39E-13	1.39E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	1.20E-10	1.20E-10	1.20E-10	1.19E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02
tc117	1.21E-20	1.21E-20	1.21E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	2.35E-16	2.35E-16	2.35E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	3.90E-14	3.90E-14	3.90E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	2.04E-12	2.04E-12	2.04E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	2.13E-11	2.13E-11	2.13E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	1.56E-12	1.56E-12	1.56E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	4.55E-09	4.55E-09	4.55E-09	5.73E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	1.28E-09	1.28E-09	1.28E-09	9.06E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	9.67E-10	9.67E-10	9.67E-10	6.17E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	3.24E-09	3.24E-09	3.24E-09	1.93E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00
sn117m	1.39E-09	1.39E-09	1.39E-09	1.34E-09	1.43E-11	1.16E-17	9.52E-26	.00E+00	.00E+00
tc118	1.94E-22	1.94E-22	1.94E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	6.56E-17	6.56E-17	6.56E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	2.04E-15	2.04E-15	2.04E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	5.97E-13	5.97E-13	5.97E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	1.31E-12	1.31E-12	1.31E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	4.95E-13	4.95E-13	4.95E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	1.74E-09	1.74E-09	1.74E-09	4.19E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	2.88E-12	2.88E-12	2.88E-12	6.95E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	9.20E-14	9.20E-14	9.20E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00
ru119	2.58E-18	2.58E-18	2.58E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	1.21E-15	1.21E-15	1.21E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	2.37E-13	2.37E-13	2.37E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	9.61E-13	9.61E-13	9.61E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	7.13E-11	7.13E-11	7.13E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	2.44E-11	2.44E-11	2.44E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	3.49E-11	3.49E-11	3.49E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	4.30E-10	4.30E-10	4.30E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00
sn119m	5.86E-08	5.86E-08	5.86E-08	5.85E-08	4.74E-08	2.47E-08	1.04E-08	7.80E-10	1.04E-11
ru120	5.60E-19	5.60E-19	5.60E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	8.62E-17	8.62E-17	8.62E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	2.48E-13	2.48E-13	2.48E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	3.57E-13	3.57E-13	3.57E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	3.12E-11	3.12E-11	3.12E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	1.91E-12	1.91E-12	1.91E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	2.88E-13	2.88E-13	2.88E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00
rh121	3.13E-17	3.13E-17	3.13E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 16

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
pd121	1.52E-14	1.52E-14	1.52E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	1.78E-13	1.78E-13	1.78E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	8.64E-12	8.64E-12	8.64E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	9.56E-13	9.56E-13	9.56E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	1.51E-10	1.51E-10	1.51E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	6.63E-08	6.63E-08	6.63E-08	3.61E-08	3.87E-10	3.83E-10	3.78E-10	3.64E-10	3.42E-10
sn121m	8.91E-06	8.91E-06	8.91E-06	8.91E-06	8.88E-06	8.80E-06	8.69E-06	8.36E-06	7.85E-06
sb121	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00
rh122	1.47E-18	1.47E-18	1.47E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	1.06E-14	1.06E-14	1.06E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	5.68E-14	5.68E-14	5.68E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	3.67E-12	3.67E-12	3.67E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	1.13E-12	1.13E-12	1.13E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	5.28E-13	5.28E-13	5.28E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00
sb122	5.35E-10	5.35E-10	5.35E-10	4.14E-10	4.95E-20	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	5.84E-14	5.84E-14	5.84E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03
rh123	1.47E-19	1.47E-19	1.47E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	3.40E-16	3.40E-16	3.40E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	1.68E-14	1.68E-14	1.68E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	4.06E-12	4.06E-12	4.06E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	3.08E-12	3.08E-12	3.08E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	6.85E-12	6.85E-12	6.85E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	9.04E-07	9.04E-07	9.04E-07	9.00E-07	5.58E-07	1.27E-07	1.79E-08	5.01E-11	2.78E-15
sn123m	1.78E-09	1.78E-09	1.78E-09	2.75E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00
te123	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06
te123m	5.66E-12	5.66E-12	5.66E-12	5.62E-12	3.36E-12	6.82E-13	8.23E-14	1.44E-16	3.67E-21
pd124	3.53E-16	3.53E-16	3.53E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	1.00E-14	1.00E-14	1.00E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	7.31E-13	7.31E-13	7.31E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	4.09E-12	4.09E-12	4.09E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00
sb124	1.33E-08	1.33E-08	1.33E-08	1.31E-08	4.70E-09	1.98E-10	2.95E-12	9.76E-18	7.19E-27
sb124m	2.39E-14	2.39E-14	2.39E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03
pd125	2.42E-17	2.42E-17	2.42E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	5.36E-15	5.36E-15	5.36E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	7.55E-13	7.55E-13	7.55E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	1.58E-12	1.58E-12	1.58E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	5.87E-12	5.87E-12	5.87E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	3.84E-07	3.84E-07	3.84E-07	3.58E-07	5.95E-10	1.51E-18	5.93E-30	.00E+00	.00E+00
sn125m	6.50E-10	6.50E-10	6.50E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	1.38E-04	1.38E-04	1.38E-04	1.38E-04	1.30E-04	1.07E-04	8.33E-05	3.89E-05	1.09E-05
te125	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00
te125m	1.85E-06	1.85E-06	1.85E-06	1.85E-06	1.80E-06	1.52E-06	1.18E-06	5.52E-07	1.55E-07
pd126	8.23E-18	8.23E-18	8.23E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	9.88E-16	9.88E-16	9.88E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	3.05E-13	3.05E-13	3.05E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	2.15E-12	2.15E-12	2.15E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	6.08E+00	6.08E+00	6.08E+00	6.08E+00	6.08E+00	6.08E+00	6.08E+00	6.08E+00	6.08E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 17

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sb126	3.00E-07	3.00E-07	3.00E-07	2.99E-07	2.89E-07	2.89E-07	2.89E-07	2.89E-07	2.89E-07
sb126m	2.21E-09	2.21E-09	2.21E-09	2.20E-09	2.20E-09	2.20E-09	2.20E-09	2.20E-09	2.20E-09
te126	2.20E+00	2.20E+00	2.20E+00	2.20E+00	2.20E+00	2.20E+00	2.20E+00	2.20E+00	2.20E+00
xe126	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10
ag127	5.83E-16	5.83E-16	5.83E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	2.64E-13	2.64E-13	2.64E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	1.85E-12	1.85E-12	1.85E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	6.06E-12	6.06E-12	6.06E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	1.92E-08	1.92E-08	1.92E-08	6.97E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	9.72E-10	9.72E-10	9.72E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	2.26E-06	2.26E-06	2.26E-06	1.91E-06	2.09E-13	6.26E-35	.00E+00	.00E+00	.00E+00
te127	2.28E-07	2.28E-07	2.28E-07	2.12E-07	2.30E-08	3.99E-09	3.91E-10	3.69E-13	3.33E-18
te127m	1.12E-05	1.12E-05	1.12E-05	1.12E-05	6.57E-06	1.14E-06	1.12E-07	1.05E-10	9.53E-16
i127	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01
xe127	4.57E-15	4.57E-15	4.57E-15	4.49E-15	8.24E-16	4.36E-18	4.16E-21	3.61E-30	.00E+00
ag128	1.30E-16	1.30E-16	1.30E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	4.47E-13	4.47E-13	4.47E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	3.96E-12	3.96E-12	3.96E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	5.90E-08	5.90E-08	5.90E-08	2.73E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	4.11E-08	4.11E-08	4.11E-08	6.93E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	1.07E-08	1.07E-08	1.07E-08	5.83E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01
i128	3.20E-11	3.20E-11	3.20E-11	1.43E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02
cd129	5.39E-14	5.39E-14	5.39E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	2.87E-12	2.87E-12	2.87E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	1.82E-09	1.82E-09	1.82E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	7.33E-09	7.33E-09	7.33E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	5.95E-07	5.95E-07	5.95E-07	1.38E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	1.48E-07	1.48E-07	1.48E-07	2.25E-08	2.94E-09	1.01E-11	5.37E-15	8.18E-25	.00E+00
te129m	2.03E-05	2.03E-05	2.03E-05	2.00E-05	3.19E-06	1.09E-08	5.82E-12	8.87E-22	3.85E-38
i129	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02
xe129	2.49E-01	2.49E-01	2.49E-01	2.49E-01	2.49E-01	2.49E-01	2.49E-01	2.49E-01	2.49E-01
xe129m	4.03E-12	4.03E-12	4.03E-12	3.73E-12	3.61E-15	1.73E-24	7.41E-37	.00E+00	.00E+00
cd130	3.46E-14	3.46E-14	3.46E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	1.48E-12	1.48E-12	1.48E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	1.20E-08	1.20E-08	1.20E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	2.86E-08	2.86E-08	2.86E-08	3.03E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	2.64E-08	2.64E-08	2.64E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02
i130	1.30E-08	1.30E-08	1.30E-08	3.41E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	8.18E-11	8.18E-11	8.18E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01
cd131	9.42E-16	9.42E-16	9.42E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	4.35E-13	4.35E-13	4.35E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	1.71E-09	1.71E-09	1.71E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	1.71E-07	1.71E-07	1.71E-07	2.46E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	1.88E-07	1.88E-07	1.88E-07	3.91E-09	1.44E-30	.00E+00	.00E+00	.00E+00	.00E+00
te131m	2.17E-06	2.17E-06	2.17E-06	1.25E-06	4.61E-28	.00E+00	.00E+00	.00E+00	.00E+00
i131	9.82E-05	9.82E-05	9.82E-05	9.13E-05	4.32E-08	2.14E-18	4.52E-32	.00E+00	.00E+00
xe131	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02
xe131m	1.60E-06	1.60E-06	1.60E-06	1.59E-06	2.49E-08	2.86E-15	1.64E-24	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 18

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cd132	1.36E-16	1.36E-16	1.36E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	7.49E-14	7.49E-14	7.49E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	1.24E-09	1.24E-09	1.24E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	1.65E-08	1.65E-08	1.65E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	1.22E-08	1.22E-08	1.22E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	5.93E-05	5.93E-05	5.93E-05	4.79E-05	2.87E-13	.00E+00	.00E+00	.00E+00	.00E+00
i132	1.74E-06	1.74E-06	1.74E-06	1.44E-06	8.63E-15	.00E+00	.00E+00	.00E+00	.00E+00
xe132	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02
cs132	8.68E-11	8.68E-11	8.68E-11	7.80E-11	5.71E-15	9.30E-28	.00E+00	.00E+00	.00E+00
ba132	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06

in133	7.68E-16	7.68E-16	7.68E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	1.23E-11	1.23E-11	1.23E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	1.73E-08	1.73E-08	1.73E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	1.39E-07	1.39E-07	1.39E-07	3.97E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	5.17E-07	5.17E-07	5.17E-07	7.79E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	2.44E-05	2.44E-05	2.44E-05	1.13E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	1.81E-10	1.81E-10	1.81E-10	2.16E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	1.48E-04	1.48E-04	1.48E-04	1.43E-04	1.24E-09	1.94E-25	.00E+00	.00E+00	.00E+00
xe133m	1.82E-06	1.82E-06	1.82E-06	1.66E-06	1.28E-18	.00E+00	.00E+00	.00E+00	.00E+00
cs133	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03
ba133	2.55E-12	2.55E-12	2.55E-12	2.55E-12	2.51E-12	2.39E-12	2.24E-12	1.84E-12	1.32E-12
in134	8.63E-17	8.63E-17	8.63E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	1.04E-12	1.04E-12	1.04E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	1.88E-11	1.88E-11	1.88E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	1.42E-10	1.42E-10	1.42E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	8.34E-07	8.34E-07	8.34E-07	3.55E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	1.19E-06	1.19E-06	1.19E-06	3.00E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	4.22E-09	4.22E-09	4.22E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03
xe134m	1.07E-12	1.07E-12	1.07E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	4.28E-04	4.28E-04	4.28E-04	4.27E-04	3.94E-04	3.06E-04	2.18E-04	7.97E-05	1.48E-05
cs134m	5.23E-09	5.23E-09	5.23E-09	1.73E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01
sn135	3.14E-14	3.14E-14	3.14E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	1.38E-11	1.38E-11	1.38E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	3.07E-09	3.07E-09	3.07E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	7.36E-06	7.36E-06	7.36E-06	5.86E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	1.07E-05	1.07E-05	1.07E-05	3.91E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	5.40E-08	5.40E-08	5.40E-08	3.71E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03
cs135m	1.08E-10	1.08E-10	1.08E-10	7.17E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	1.46E+01	1.46E+01	1.46E+01	1.46E+01	1.46E+01	1.46E+01	1.46E+01	1.46E+01	1.47E+01
ba135m	4.48E-11	4.48E-11	4.48E-11	2.51E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	4.11E-15	4.11E-15	4.11E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	8.53E-13	8.53E-13	8.53E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	1.37E-09	1.37E-09	1.37E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	1.33E-08	1.33E-08	1.33E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	3.48E-09	3.48E-09	3.48E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03
cs136	2.28E-06	2.28E-06	2.28E-06	2.16E-06	1.99E-08	1.01E-14	4.44E-23	.00E+00	.00E+00
ba136	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00
ba136m	6.92E-14	6.92E-14	6.92E-14	6.56E-14	6.04E-16	3.05E-22	1.35E-30	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 19

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sb137	1.17E-12	1.17E-12	1.17E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	8.21E-11	8.21E-11	8.21E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	3.98E-09	3.98E-09	3.98E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	7.02E-08	7.02E-08	7.02E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.99E-01	2.99E-01	2.99E-01	2.99E-01	2.97E-01	2.92E-01	2.85E-01	2.66E-01	2.37E-01
ba137	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03
ba137m	4.56E-08	4.56E-08	4.56E-08	4.56E-08	4.54E-08	4.46E-08	4.36E-08	4.07E-08	3.62E-08
sb138	1.62E-15	1.62E-15	1.62E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	6.25E-12	6.25E-12	6.25E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	5.28E-10	5.28E-10	5.28E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	2.67E-07	2.67E-07	2.67E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	6.41E-07	6.41E-07	6.41E-07	3.86E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	1.52E-09	1.52E-09	1.52E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03
la138	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03
sb139	1.38E-16	1.38E-16	1.38E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	3.39E-13	3.39E-13	3.39E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	1.13E-10	1.13E-10	1.13E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	1.01E-08	1.01E-08	1.01E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	1.76E-07	1.76E-07	1.76E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	1.62E-06	1.62E-06	1.62E-06	1.38E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03
ce139	4.73E-11	4.73E-11	4.73E-11	4.71E-11	3.01E-11	7.52E-12	1.19E-12	4.79E-15	4.85E-19
pr139	5.68E-16	5.68E-16	5.68E-16	1.31E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	8.42E-14	8.42E-14	8.42E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	9.66E-12	9.66E-12	9.66E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	2.56E-09	2.56E-09	2.56E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	1.85E-08	1.85E-08	1.85E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	3.52E-04	3.52E-04	3.52E-04	3.33E-04	2.65E-06	8.44E-13	2.02E-21	.00E+00	.00E+00
la140	4.65E-05	4.65E-05	4.65E-05	4.60E-05	4.01E-07	1.28E-13	3.06E-22	.00E+00	.00E+00
ce140	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03
pr140	2.29E-14	2.29E-14	2.29E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	1.93E-16	1.93E-16	1.93E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	4.56E-13	4.56E-13	4.56E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	1.18E-10	1.18E-10	1.18E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	5.62E-09	5.62E-09	5.62E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	3.24E-07	3.24E-07	3.24E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	4.18E-06	4.18E-06	4.18E-06	6.51E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	8.33E-04	8.33E-04	8.33E-04	8.19E-04	1.23E-04	3.46E-07	1.43E-10	1.02E-20	1.23E-37
pr141	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02
nd141	1.22E-15	1.22E-15	1.22E-15	1.53E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	1.96E-16	1.96E-16	1.96E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	6.66E-14	6.66E-14	6.66E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	2.99E-11	2.99E-11	2.99E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	2.33E-10	2.33E-10	2.33E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	1.87E-07	1.87E-07	1.87E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	1.64E-06	1.64E-06	1.64E-06	3.24E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02
pr142	8.15E-08	8.15E-08	8.15E-08	3.42E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00
i143	8.36E-16	8.36E-16	8.36E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 20

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
xe143	3.08E-12	3.08E-12	3.08E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	1.35E-10	1.35E-10	1.35E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	3.90E-09	3.90E-09	3.90E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	2.56E-07	2.56E-07	2.56E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	3.61E-05	3.61E-05	3.61E-05	2.19E-05	7.18E-25	.00E+00	.00E+00	.00E+00	.00E+00
pr143	3.56E-04	3.56E-04	3.56E-04	3.52E-04	3.99E-06	3.11E-12	2.43E-20	.00E+00	.00E+00
nd143	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02
i144	1.05E-17	1.05E-17	1.05E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	5.61E-13	5.61E-13	5.61E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	1.97E-11	1.97E-11	1.97E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	2.58E-09	2.58E-09	2.58E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	1.13E-08	1.13E-08	1.13E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	6.92E-03	6.92E-03	6.92E-03	6.90E-03	5.56E-03	2.85E-03	1.17E-03	8.14E-05	9.58E-07
pr144	2.91E-07	2.91E-07	2.91E-07	2.91E-07	2.34E-07	1.20E-07	4.93E-08	3.43E-09	4.04E-11
pr144m	1.70E-09	1.70E-09	1.70E-09	1.70E-09	1.37E-09	6.99E-10	2.88E-10	2.00E-11	2.35E-13
nd144	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02

i145	4.18E-19	4.18E-19	4.18E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	2.77E-14	2.77E-14	2.77E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	2.18E-12	2.18E-12	2.18E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	4.15E-10	4.15E-10	4.15E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	4.66E-09	4.66E-09	4.66E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	3.69E-08	3.69E-08	3.69E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	4.40E-06	4.40E-06	4.40E-06	2.76E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02
pm145	1.39E-10	1.39E-10	1.39E-10	1.39E-10	1.39E-10	1.37E-10	1.34E-10	1.20E-10	9.89E-11
sm145	6.62E-12	6.62E-12	6.62E-12	6.61E-12	5.51E-12	3.15E-12	1.49E-12	1.60E-13	3.87E-15
xe146	1.67E-15	1.67E-15	1.67E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	3.45E-13	3.45E-13	3.45E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	1.17E-10	1.17E-10	1.17E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	8.01E-10	8.01E-10	8.01E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	1.27E-07	1.27E-07	1.27E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	2.29E-07	2.29E-07	2.29E-07	5.84E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02
pm146	2.42E-11	2.42E-11	2.42E-11	2.42E-11	2.34E-11	2.13E-11	1.88E-11	1.29E-11	6.90E-12
sm146	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04
xe147	1.69E-18	1.69E-18	1.69E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	5.53E-15	5.53E-15	5.53E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	4.15E-12	4.15E-12	4.15E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	2.20E-10	2.20E-10	2.20E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	6.58E-09	6.58E-09	6.58E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	9.86E-08	9.86E-08	9.86E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	1.15E-04	1.15E-04	1.15E-04	1.08E-04	3.91E-07	1.11E-14	1.08E-24	.00E+00	.00E+00
pm147	1.00E-02	1.00E-02	1.00E-02	1.00E-02	9.49E-03	7.77E-03	5.97E-03	2.70E-03	7.21E-04
sm147	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02
cs148	3.65E-16	3.65E-16	3.65E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	5.44E-13	5.44E-13	5.44E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	1.53E-11	1.53E-11	1.53E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	4.61E-09	4.61E-09	4.61E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	1.23E-08	1.23E-08	1.23E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02
pm148	1.10E-10	1.10E-10	1.10E-10	9.72E-11	1.35E-12	1.33E-14	2.88E-17	2.97E-25	.00E+00
pm148m	8.87E-10	8.87E-10	8.87E-10	8.72E-10	1.96E-10	1.93E-12	4.19E-15	4.32E-23	2.10E-36

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 21

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sm148	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00
cs149	3.14E-18	3.14E-18	3.14E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	5.61E-14	5.61E-14	5.61E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	8.77E-12	8.77E-12	8.77E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	2.18E-10	2.18E-10	2.18E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	7.87E-09	7.87E-09	7.87E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	3.70E-07	3.70E-07	3.70E-07	2.45E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	1.14E-05	1.14E-05	1.14E-05	8.62E-06	6.64E-18	.00E+00	.00E+00	.00E+00	.00E+00
sm149	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00
eu149	2.67E-14	2.67E-14	2.67E-14	2.65E-14	1.37E-14	1.76E-15	1.16E-16	3.31E-20	4.09E-26
cs150	2.05E-19	2.05E-19	2.05E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	5.92E-15	5.92E-15	5.92E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	2.87E-13	2.87E-13	2.87E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	6.50E-11	6.50E-11	6.50E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	2.03E-10	2.03E-10	2.03E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02
pm150	5.23E-11	5.23E-11	5.23E-11	1.05E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02
eu150	4.64E-09	4.64E-09	4.64E-09	4.64E-09	4.61E-09	4.55E-09	4.46E-09	4.21E-09	3.82E-09

ba151	1.87E-17	1.87E-17	1.87E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	4.46E-14	4.46E-14	4.46E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	3.96E-12	3.96E-12	3.96E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	3.03E-10	3.03E-10	3.03E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	1.85E-08	1.85E-08	1.85E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	2.55E-06	2.55E-06	2.55E-06	1.43E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	7.69E-02	7.69E-02	7.69E-02	7.69E-02	7.67E-02	7.63E-02	7.57E-02	7.40E-02	7.12E-02
eu151	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01
ba152	1.87E-19	1.87E-19	1.87E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	3.59E-16	3.59E-16	3.59E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	4.16E-12	4.16E-12	4.16E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	3.57E-11	3.57E-11	3.57E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	1.07E-08	1.07E-08	1.07E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	3.94E-09	3.94E-09	3.94E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	1.54E-10	1.54E-10	1.54E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01
eu152	6.36E-03	6.36E-03	6.36E-03	6.36E-03	6.28E-03	6.04E-03	5.73E-03	4.91E-03	3.78E-03
eu152m	2.76E-07	2.76E-07	2.76E-07	4.62E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01
la153	1.26E-16	1.26E-16	1.26E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	1.75E-13	1.75E-13	1.75E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	8.37E-12	8.37E-12	8.37E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	5.93E-10	5.93E-10	5.93E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	3.27E-09	3.27E-09	3.27E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	2.26E-06	2.26E-06	2.26E-06	1.58E-06	2.01E-20	.00E+00	.00E+00	.00E+00	.00E+00
eu153	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01
gd153	6.47E-06	6.47E-06	6.47E-06	6.45E-06	5.00E-06	2.27E-06	7.95E-07	3.43E-08	1.81E-10
la154	1.46E-18	1.46E-18	1.46E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	2.11E-14	2.11E-14	2.11E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	2.99E-13	2.99E-13	2.99E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	1.41E-10	1.41E-10	1.41E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	4.34E-10	4.34E-10	4.34E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	1.10E-10	1.10E-10	1.10E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 22

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sm154	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01
eu154	3.83E-04	3.83E-04	3.83E-04	3.83E-04	3.76E-04	3.54E-04	3.26E-04	2.56E-04	1.71E-04
gd154	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00
la155	7.38E-21	7.38E-21	7.38E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	4.42E-16	4.42E-16	4.42E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	5.75E-14	5.75E-14	5.75E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	1.92E-11	1.92E-11	1.92E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	1.04E-10	1.04E-10	1.04E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	3.28E-09	3.28E-09	3.28E-09	1.24E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	3.62E-04	3.62E-04	3.62E-04	3.62E-04	3.49E-04	3.12E-04	2.69E-04	1.73E-04	8.24E-05
gd155m	1.64E-18	1.64E-18	1.64E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01
ce156	3.75E-17	3.75E-17	3.75E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	2.27E-15	2.27E-15	2.27E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	5.67E-12	5.67E-12	5.67E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	1.10E-11	1.10E-11	1.10E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	4.05E-08	4.05E-08	4.05E-08	6.91E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	1.58E-06	1.58E-06	1.58E-06	1.54E-06	2.67E-08	9.33E-14	5.36E-21	.00E+00	.00E+00
gd156	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01
ce157	6.40E-19	6.40E-19	6.40E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	3.21E-16	3.21E-16	3.21E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	1.46E-13	1.46E-13	1.46E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	1.90E-11	1.90E-11	1.90E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	3.02E-10	3.02E-10	3.02E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	3.52E-08	3.52E-08	3.52E-08	1.19E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02
pr158	7.36E-18	7.36E-18	7.36E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	2.49E-14	2.49E-14	2.49E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	2.76E-13	2.76E-13	2.76E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	9.66E-11	9.66E-11	9.66E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	8.91E-10	8.91E-10	8.91E-10	3.60E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00
pr159	3.32E-19	3.32E-19	3.32E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	5.04E-16	5.04E-16	5.04E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	4.12E-14	4.12E-14	4.12E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	1.61E-11	1.61E-11	1.61E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	1.48E-10	1.48E-10	1.48E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	9.36E-09	9.36E-09	9.36E-09	3.89E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01
nd160	3.95E-17	3.95E-17	3.95E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	1.06E-15	1.06E-15	1.06E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	1.98E-12	1.98E-12	1.98E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	2.23E-12	2.23E-12	2.23E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01
tb160	9.55E-09	9.55E-09	9.55E-09	9.45E-09	4.03E-09	2.88E-10	8.68E-12	2.38E-16	5.93E-24
dy160	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03
nd161	6.36E-19	6.36E-19	6.36E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	1.34E-16	1.34E-16	1.34E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	2.39E-14	2.39E-14	2.39E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	7.12E-13	7.12E-13	7.12E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	5.22E-12	5.22E-12	5.22E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	1.43E-08	1.43E-08	1.43E-08	1.29E-08	1.69E-12	1.66E-24	1.93E-40	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 23

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
dy161	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02
pm162	3.66E-18	3.66E-18	3.66E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	4.35E-15	4.35E-15	4.35E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	6.86E-13	6.86E-13	6.86E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	5.05E-12	5.05E-12	5.05E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	4.75E-12	4.75E-12	4.75E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	1.52E-12	1.52E-12	1.52E-12	8.78E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02
sm163	8.65E-17	8.65E-17	8.65E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	6.19E-15	6.19E-15	6.19E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	3.27E-13	3.27E-13	3.27E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	4.76E-12	4.76E-12	4.76E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02
sm164	7.45E-18	7.45E-18	7.45E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	1.49E-16	1.49E-16	1.49E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	1.36E-12	1.36E-12	1.36E-12	1.39E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	2.66E-13	2.66E-13	2.66E-13	2.23E-33	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03
sm165	1.35E-19	1.35E-19	1.35E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	1.67E-17	1.67E-17	1.67E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	1.03E-14	1.03E-14	1.03E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	6.72E-14	6.72E-14	6.72E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	1.13E-11	1.13E-11	1.13E-11	9.23E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	7.88E-14	7.88E-14	7.88E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03
dy166	2.63E-11	2.63E-11	2.63E-11	2.14E-11	2.83E-19	.00E+00	.00E+00	.00E+00	.00E+00
ho166	1.08E-11	1.08E-11	1.08E-11	9.36E-12	1.38E-19	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	6.21E-08	6.21E-08	6.21E-08	6.21E-08	6.21E-08	6.21E-08	6.21E-08	6.20E-08	6.18E-08
er166	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04
er167	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06
er167m	6.56E-21	6.56E-21	6.56E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	1.26E-13	1.26E-13	1.26E-13	1.17E-13	1.66E-16	2.54E-25	5.11E-37	.00E+00	.00E+00
tm169	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07
tm170	1.05E-14	1.05E-14	1.05E-14	1.04E-14	6.44E-15	1.46E-15	2.04E-16	5.55E-19	2.94E-23
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09
er171	6.03E-15	6.03E-15	6.03E-15	6.59E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	1.38E-11	1.38E-11	1.38E-11	1.38E-11	1.26E-11	9.60E-12	6.69E-12	2.27E-12	3.73E-13
yb171	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07
er172	2.49E-14	2.49E-14	2.49E-14	1.78E-14	1.62E-27	.00E+00	.00E+00	.00E+00	.00E+00
tm172	3.37E-14	3.37E-14	3.37E-14	3.22E-14	8.67E-24	.00E+00	.00E+00	.00E+00	.00E+00
yb172	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07
total	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 24

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
h 3	4.60E-02	4.60E-02	4.60E-02	4.60E-02	4.54E-02	4.35E-02	4.11E-02	3.48E-02	2.62E-02
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	2.37E-06	2.37E-06	2.37E-06	2.37E-06	2.37E-06	2.37E-06	2.37E-06	2.37E-06	2.37E-06
c 14	5.62E-06	5.62E-06	5.62E-06	5.62E-06	5.62E-06	5.62E-06	5.62E-06	5.62E-06	5.61E-06
ni 66	1.60E-08	1.60E-08	1.60E-08	1.18E-08	1.98E-20	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	1.60E-08	1.60E-08	1.60E-08	1.18E-08	1.99E-20	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	2.59E-09	2.59E-09	2.59E-09	1.98E-09	7.90E-20	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	4.96E-09	4.96E-09	4.96E-09	1.29E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	4.02E-09	4.02E-09	4.02E-09	1.20E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	1.33E-10	1.33E-10	1.33E-10	4.11E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	2.78E-07	2.78E-07	2.78E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	1.19E-06	1.19E-06	1.19E-06	1.78E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	1.55E-12	1.55E-12	1.55E-12	1.46E-12	6.61E-15	3.75E-22	9.13E-32	.00E+00	.00E+00
ge 71m	7.73E-13	7.73E-13	7.73E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	8.74E-07	8.74E-07	8.74E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	4.55E-05	4.55E-05	4.55E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	1.06E-04	1.06E-04	1.06E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	1.29E-04	1.29E-04	1.29E-04	9.02E-05	1.34E-18	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	1.29E-04	1.29E-04	1.29E-04	1.12E-04	1.92E-18	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	5.45E-07	5.45E-07	5.45E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	6.40E-05	6.40E-05	6.40E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	3.19E-04	3.19E-04	3.19E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	5.03E-04	5.03E-04	5.03E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	5.09E-04	5.09E-04	5.09E-04	1.66E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	5.02E-04	5.02E-04	5.02E-04	1.64E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	1.13E-07	1.13E-07	1.13E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	4.82E-05	4.82E-05	4.82E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	4.80E-04	4.80E-04	4.80E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	1.47E-03	1.47E-03	1.47E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	4.30E-04	4.30E-04	4.30E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	2.13E-08	2.13E-08	2.13E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	2.26E-05	2.26E-05	2.26E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	7.22E-04	7.22E-04	7.22E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	4.09E-03	4.09E-03	4.09E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	4.76E-03	4.76E-03	4.76E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	4.78E-03	4.78E-03	4.78E-03	2.85E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	2.46E-04	2.46E-04	2.46E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	8.60E-06	8.60E-06	8.60E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	6.52E-04	6.52E-04	6.52E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 25

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
zn 76	1.06E-02	1.06E-02	1.06E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	1.49E-02	1.49E-02	1.49E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	9.27E-06	9.27E-06	9.27E-06	4.93E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	1.38E-06	1.38E-06	1.38E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	3.38E-04	3.38E-04	3.38E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	1.25E-02	1.25E-02	1.25E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	2.89E-02	2.89E-02	2.89E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	1.05E-02	1.05E-02	1.05E-02	2.41E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	2.96E-02	2.96E-02	2.96E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	3.39E-02	3.39E-02	3.39E-02	2.39E-02	6.89E-19	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	1.09E-04	1.09E-04	1.09E-04	7.65E-05	2.21E-21	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	2.07E-07	2.07E-07	2.07E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	1.09E-04	1.09E-04	1.09E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	1.43E-02	1.43E-02	1.43E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	5.83E-02	5.83E-02	5.83E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	8.96E-02	8.96E-02	8.96E-02	1.06E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	9.04E-02	9.04E-02	9.04E-02	1.54E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	2.20E-05	2.20E-05	2.20E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	7.15E-03	7.15E-03	7.15E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	7.49E-02	7.49E-02	7.49E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	1.71E-01	1.71E-01	1.71E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	1.82E-01	1.82E-01	1.82E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	5.22E-02	5.22E-02	5.22E-02	5.22E-02	5.22E-02	5.22E-02	5.22E-02	5.22E-02	5.22E-02
se 79m	1.80E-01	1.80E-01	1.80E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	2.10E-08	2.10E-08	2.10E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	7.73E-13	7.73E-13	7.73E-13	4.81E-13	2.05E-31	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	1.84E-06	1.84E-06	1.84E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	1.90E-03	1.90E-03	1.90E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	4.61E-02	4.61E-02	4.61E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	4.79E-01	4.79E-01	4.79E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	5.27E-01	5.27E-01	5.27E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	7.32E-05	7.32E-05	7.32E-05	4.60E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	1.85E-05	1.85E-05	1.85E-05	4.29E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	1.58E-07	1.58E-07	1.58E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	3.72E-04	3.72E-04	3.72E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	3.04E-02	3.04E-02	3.04E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	5.14E-01	5.14E-01	5.14E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	7.47E-01	7.47E-01	7.47E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	7.80E-01	7.80E-01	7.80E-01	2.02E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	5.08E-02	5.08E-02	5.08E-02	1.37E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08
kr 81m	4.14E-08	4.14E-08	4.14E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	1.12E-04	1.12E-04	1.12E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	2.73E-02	2.73E-02	2.73E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 26

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
ge 82	5.35E-01	5.35E-01	5.35E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	8.54E-01	8.54E-01	8.54E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	3.18E-01	3.18E-01	3.18E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	2.00E-03	2.00E-03	2.00E-03	1.25E-03	7.67E-22	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	1.22E-03	1.22E-03	1.22E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	3.00E-06	3.00E-06	3.00E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	1.85E-03	1.85E-03	1.85E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	2.18E-01	2.18E-01	2.18E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	1.40E+00	1.40E+00	1.40E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	9.65E-01	9.65E-01	9.65E-01	3.53E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	1.11E+00	1.11E+00	1.11E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	2.15E+00	2.15E+00	2.15E+00	2.28E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	2.15E+00	2.15E+00	2.15E+00	9.83E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	3.46E-02	3.46E-02	3.46E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	1.29E-01	1.29E-01	1.29E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	9.97E-01	9.97E-01	9.97E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	4.05E+00	4.05E+00	4.05E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	4.15E+00	4.15E+00	4.15E+00	1.08E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	9.86E-02	9.86E-02	9.86E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	2.10E-05	2.10E-05	2.10E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	2.06E-02	2.06E-02	2.06E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	6.26E-01	6.26E-01	6.26E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	2.03E+00	2.03E+00	2.03E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	1.80E+00	1.80E+00	1.80E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	4.83E+00	4.83E+00	4.83E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	1.05E+00	1.05E+00	1.05E+00	1.05E+00	1.03E+00	9.80E-01	9.19E-01	7.57E-01	5.48E-01
kr 85m	4.83E+00	4.83E+00	4.83E+00	1.19E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	4.12E-03	4.12E-03	4.12E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	3.70E-01	3.70E-01	3.70E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	5.07E+00	5.07E+00	5.07E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	6.11E+00	6.11E+00	6.11E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	1.04E+00	1.04E+00	1.04E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	9.87E-04	9.87E-04	9.87E-04	9.51E-04	3.47E-05	1.24E-09	1.56E-15	.00E+00	.00E+00
rb 86m	7.52E-05	7.52E-05	7.52E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	7.40E-02	7.40E-02	7.40E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	2.55E-01	2.55E-01	2.55E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	2.99E+00	2.99E+00	2.99E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	7.91E+00	7.91E+00	7.91E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	9.87E+00	9.87E+00	9.87E+00	2.08E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	4.10E-06	4.10E-06	4.10E-06	1.10E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	9.75E-05	9.75E-05	9.75E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	1.23E-01	1.23E-01	1.23E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	1.47E+00	1.47E+00	1.47E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 27

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
br 88	7.98E+00	7.98E+00	7.98E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	1.40E+01	1.40E+01	1.40E+01	3.99E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	1.43E+01	1.43E+01	1.43E+01	4.45E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	8.82E-04	8.82E-04	8.82E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	5.03E-01	5.03E-01	5.03E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	5.27E+00	5.27E+00	5.27E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	1.80E+01	1.80E+01	1.80E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	1.90E+01	1.90E+01	1.90E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	1.91E+01	1.91E+01	1.91E+01	1.88E+01	5.56E+00	1.28E-01	8.54E-04	2.55E-10	3.41E-21
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	2.32E-03	2.32E-03	2.32E-03	1.75E-03	5.17E-04	1.19E-05	7.94E-08	2.37E-14	3.17E-25
as 90	6.19E-06	6.19E-06	6.19E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	1.03E-01	1.03E-01	1.03E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	2.73E+00	2.73E+00	2.73E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	1.96E+01	1.96E+01	1.96E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	1.79E+01	1.79E+01	1.79E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	5.11E+00	5.11E+00	5.11E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	2.31E+01	2.31E+01	2.31E+01	2.31E+01	2.29E+01	2.25E+01	2.19E+01	2.04E+01	1.80E+01
y 90	2.31E+01	2.31E+01	2.31E+01	2.31E+01	2.29E+01	2.25E+01	2.20E+01	2.04E+01	1.80E+01
y 90m	7.68E-06	7.68E-06	7.68E-06	4.17E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	8.01E-03	8.01E-03	8.01E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	9.86E-01	9.86E-01	9.86E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	1.34E+01	1.34E+01	1.34E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	2.23E+01	2.23E+01	2.23E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	2.34E+01	2.34E+01	2.34E+01	4.08E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	2.34E+01	2.34E+01	2.34E+01	2.33E+01	8.12E+00	3.11E-01	4.11E-03	9.46E-09	3.80E-18
y 91m	1.36E+01	1.36E+01	1.36E+01	2.59E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	4.25E-11	4.25E-11	4.25E-11	4.25E-11	4.25E-11	4.24E-11	4.24E-11	4.23E-11	4.20E-11
se 92	5.22E-04	5.22E-04	5.22E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	1.50E-01	1.50E-01	1.50E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	6.86E+00	6.86E+00	6.86E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	1.92E+01	1.92E+01	1.92E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	2.35E+01	2.35E+01	2.35E+01	5.07E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	2.37E+01	2.37E+01	2.37E+01	7.47E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11
se 93	2.31E-06	2.31E-06	2.31E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	1.70E-02	1.70E-02	1.70E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	2.17E+00	2.17E+00	2.17E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	1.45E+01	1.45E+01	1.45E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	2.50E+01	2.50E+01	2.50E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	1.69E+01	1.69E+01	1.69E+01	3.30E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
br 94	1.07E-03	1.07E-03	1.07E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	9.34E-01	9.34E-01	9.34E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	7.24E+00	7.24E+00	7.24E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 28

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sr 94	2.42E+01	2.42E+01	2.42E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	2.57E+01	2.57E+01	2.57E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04
nb 94m	1.51E-04	1.51E-04	1.51E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	8.76E-06	8.76E-06	8.76E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	4.49E-02	4.49E-02	4.49E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	3.37E+00	3.37E+00	3.37E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	2.16E+01	2.16E+01	2.16E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	2.59E+01	2.59E+01	2.59E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	2.62E+01	2.62E+01	2.62E+01	2.59E+01	9.90E+00	5.02E-01	9.63E-03	6.77E-08	1.75E-16
nb 95	2.62E+01	2.62E+01	2.62E+01	2.62E+01	1.65E+01	1.08E+00	2.19E-02	1.49E-07	3.86E-16
nb 95m	2.91E-01	2.91E-01	2.91E-01	2.91E-01	1.16E-01	5.91E-03	1.13E-04	7.97E-10	2.06E-18
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	2.07E-06	2.07E-06	2.07E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	9.02E-03	9.02E-03	9.02E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	8.60E-01	8.60E-01	8.60E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	1.58E+01	1.58E+01	1.58E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	2.44E+01	2.44E+01	2.44E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	3.01E-03	3.01E-03	3.01E-03	1.48E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	8.22E-05	8.22E-05	8.22E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	3.05E-01	3.05E-01	3.05E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	8.23E+00	8.23E+00	8.23E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	1.99E+01	1.99E+01	1.99E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	2.30E+01	2.30E+01	2.30E+01	8.61E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	2.31E+01	2.31E+01	2.31E+01	8.65E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	2.19E+01	2.19E+01	2.19E+01	8.17E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	2.62E-05	2.62E-05	2.62E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	1.39E-02	1.39E-02	1.39E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	2.94E+00	2.94E+00	2.94E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	1.47E+01	1.47E+01	1.47E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	2.37E+01	2.37E+01	2.37E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	2.38E+01	2.38E+01	2.38E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	1.00E-01	1.00E-01	1.00E-01	3.55E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07
rb 99	3.22E-04	3.22E-04	3.22E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	1.44E+00	1.44E+00	1.44E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	9.66E+00	9.66E+00	9.66E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	2.31E+01	2.31E+01	2.31E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	1.49E+01	1.49E+01	1.49E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	9.94E+00	9.94E+00	9.94E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	2.52E+01	2.52E+01	2.52E+01	1.96E+01	3.47E-09	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	1.06E+01	1.06E+01	1.06E+01	1.06E+01	1.06E+01	1.06E+01	1.06E+01	1.06E+01	1.06E+01
tc 99m	2.22E+01	2.22E+01	2.22E+01	1.88E+01	3.36E-09	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	8.53E-05	8.53E-05	8.53E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	9.13E-02	9.13E-02	9.13E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	2.36E+00	2.36E+00	2.36E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 29

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
zr100	2.37E+01	2.37E+01	2.37E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	2.47E+01	2.47E+01	2.47E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	9.76E-01	9.76E-01	9.76E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	3.50E-01	3.50E-01	3.50E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	6.09E-07	6.09E-07	6.09E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	1.73E-02	1.73E-02	1.73E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	1.66E+00	1.66E+00	1.66E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	1.28E+01	1.28E+01	1.28E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	2.06E+01	2.06E+01	2.06E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	2.13E+01	2.13E+01	2.13E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	2.13E+01	2.13E+01	2.13E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	3.92E-03	3.92E-03	3.92E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	1.01E+00	1.01E+00	1.01E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	9.70E+00	9.70E+00	9.70E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	1.65E+01	1.65E+01	1.65E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	1.81E+01	1.81E+01	1.81E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	1.81E+01	1.81E+01	1.81E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	1.02E-02	1.02E-02	1.02E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	2.86E-06	2.86E-06	2.86E-06	2.86E-06	2.70E-06	2.25E-06	1.78E-06	8.67E-07	2.62E-07
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	1.13E-05	1.13E-05	1.13E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	3.12E-01	3.12E-01	3.12E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	2.79E+00	2.79E+00	2.79E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	9.98E+00	9.98E+00	9.98E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	1.36E+01	1.36E+01	1.36E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	1.39E+01	1.39E+01	1.39E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	1.39E+01	1.39E+01	1.39E+01	1.37E+01	2.84E+00	2.20E-02	3.48E-05	1.38E-13	1.37E-27
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	1.39E+01	1.39E+01	1.39E+01	1.36E+01	2.83E+00	2.19E-02	3.47E-05	1.38E-13	1.37E-27
sr104	3.52E-06	3.52E-06	3.52E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	2.47E-03	2.47E-03	2.47E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	6.15E-01	6.15E-01	6.15E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	3.61E+00	3.61E+00	3.61E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	8.66E+00	8.66E+00	8.66E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	8.96E+00	8.96E+00	8.96E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	1.06E+00	1.06E+00	1.06E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	7.76E-02	7.76E-02	7.76E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	2.33E-05	2.33E-05	2.33E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	3.65E-01	3.65E-01	3.65E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	1.32E+00	1.32E+00	1.32E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	5.04E+00	5.04E+00	5.04E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	5.44E+00	5.44E+00	5.44E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	5.47E+00	5.47E+00	5.47E+00	1.33E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	5.47E+00	5.47E+00	5.47E+00	3.90E+00	2.57E-18	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	1.55E+00	1.55E+00	1.55E+00	3.79E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 30

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
y106	3.89E-07	3.89E-07	3.89E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	4.15E-03	4.15E-03	4.15E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	1.26E-01	1.26E-01	1.26E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	2.19E+00	2.19E+00	2.19E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	2.71E+00	2.71E+00	2.71E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	2.88E+00	2.88E+00	2.88E+00	2.88E+00	2.44E+00	1.46E+00	7.38E-01	9.57E-02	3.17E-03
rh106	2.88E+00	2.88E+00	2.88E+00	2.88E+00	2.44E+00	1.46E+00	7.38E-01	9.57E-02	3.17E-03
rh106m	9.14E-05	9.14E-05	9.14E-05	4.23E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	1.01E-09	1.01E-09	1.01E-09	8.78E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	3.51E-09	3.51E-09	3.51E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	3.94E-05	3.94E-05	3.94E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	2.00E-02	2.00E-02	2.00E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	6.92E-01	6.92E-01	6.92E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	1.26E+00	1.26E+00	1.26E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	1.52E+00	1.52E+00	1.52E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	1.52E+00	1.52E+00	1.52E+00	1.97E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02
pd107m	4.13E-04	4.13E-04	4.13E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	1.54E-06	1.54E-06	1.54E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	5.06E-04	5.06E-04	5.06E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	6.51E-02	6.51E-02	6.51E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	3.65E-01	3.65E-01	3.65E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	8.36E-01	8.36E-01	8.36E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	8.50E-01	8.50E-01	8.50E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	1.33E-02	1.33E-02	1.33E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	7.62E-05	7.62E-05	7.62E-05	6.26E-09	6.25E-09	6.23E-09	6.19E-09	6.09E-09	5.93E-09
ag108m	7.20E-08	7.20E-08	7.20E-08	7.20E-08	7.19E-08	7.16E-08	7.12E-08	7.00E-08	6.81E-08
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	1.23E-09	1.23E-09	1.23E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	2.16E-05	2.16E-05	2.16E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	6.56E-03	6.56E-03	6.56E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	1.13E-01	1.13E-01	1.13E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	5.34E-01	5.34E-01	5.34E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	6.22E-01	6.22E-01	6.22E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	3.11E-01	3.11E-01	3.11E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	6.35E-01	6.35E-01	6.35E-01	1.89E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	1.82E-03	1.82E-03	1.82E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	6.34E-01	6.34E-01	6.34E-01	1.89E-01	5.34E-09	3.53E-09	2.04E-09	3.96E-10	2.56E-11
cd109	6.11E-09	6.11E-09	6.11E-09	6.10E-09	5.34E-09	3.53E-09	2.04E-09	3.96E-10	2.56E-11
nb110	1.02E-06	1.02E-06	1.02E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	8.84E-04	8.84E-04	8.84E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	2.12E-02	2.12E-02	2.12E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	2.08E-01	2.08E-01	2.08E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	3.30E-02	3.30E-02	3.30E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	2.41E-01	2.41E-01	2.41E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	3.92E-02	3.92E-02	3.92E-02	2.11E-05	1.65E-05	7.66E-06	2.78E-06	1.33E-07	8.37E-10
ag110m	1.55E-03	1.55E-03	1.55E-03	1.55E-03	1.21E-03	5.64E-04	2.05E-04	9.77E-06	6.15E-08

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 31

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	8.98E-09	8.98E-09	8.98E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	9.60E-05	9.60E-05	9.60E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	5.19E-03	5.19E-03	5.19E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	8.18E-02	8.18E-02	8.18E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	1.50E-01	1.50E-01	1.50E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	1.58E-01	1.58E-01	1.58E-01	2.36E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	6.18E-03	6.18E-03	6.18E-03	3.00E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	1.59E-01	1.59E-01	1.59E-01	1.45E-01	3.68E-05	2.78E-16	4.79E-31	.00E+00	.00E+00
ag111m	1.58E-01	1.58E-01	1.58E-01	2.93E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	1.94E-06	1.94E-06	1.94E-06	2.34E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	3.34E-10	3.34E-10	3.34E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	1.52E-05	1.52E-05	1.52E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	1.16E-03	1.16E-03	1.16E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	3.95E-02	3.95E-02	3.95E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	8.52E-02	8.52E-02	8.52E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	1.01E-01	1.01E-01	1.01E-01	4.59E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	1.01E-01	1.01E-01	1.01E-01	5.38E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	2.99E-07	2.99E-07	2.99E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	3.17E-04	3.17E-04	3.17E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	1.70E-02	1.70E-02	1.70E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	5.96E-02	5.96E-02	5.96E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	8.35E-02	8.35E-02	8.35E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	8.09E-02	8.09E-02	8.09E-02	3.67E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	1.59E-02	1.59E-02	1.59E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14
cd113m	1.40E-03	1.40E-03	1.40E-03	1.40E-03	1.38E-03	1.33E-03	1.27E-03	1.09E-03	8.56E-04
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	3.01E-11	3.01E-11	3.01E-11	1.32E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	1.54E-07	1.54E-07	1.54E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	5.01E-05	5.01E-05	5.01E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	6.67E-03	6.67E-03	6.67E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	3.39E-02	3.39E-02	3.39E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	7.10E-02	7.10E-02	7.10E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	7.27E-02	7.27E-02	7.27E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	6.98E-06	6.98E-06	6.98E-06	4.96E-06	1.43E-06	3.03E-08	1.82E-10	3.97E-17	3.13E-28
in114m	5.26E-06	5.26E-06	5.26E-06	5.18E-06	1.49E-06	3.16E-08	1.90E-10	4.15E-17	3.27E-28
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	6.60E-10	6.60E-10	6.60E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	1.57E-06	1.57E-06	1.57E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	1.46E-03	1.46E-03	1.46E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	1.59E-02	1.59E-02	1.59E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	5.10E-02	5.10E-02	5.10E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	3.94E-02	3.94E-02	3.94E-02	8.61E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	1.59E-02	1.59E-02	1.59E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	5.30E-02	5.30E-02	5.30E-02	3.90E-02	3.69E-14	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	2.30E-03	2.30E-03	2.30E-03	2.26E-03	5.68E-04	7.87E-06	2.70E-08	1.08E-15	5.08E-28
in115	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11
in115m	5.30E-02	5.30E-02	5.30E-02	4.25E-02	6.27E-08	8.70E-10	2.98E-12	1.19E-19	4.56E-32

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 32

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	6.86E-07	6.86E-07	6.86E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	4.85E-04	4.85E-04	4.85E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	9.32E-03	9.32E-03	9.32E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	6.76E-02	6.76E-02	6.76E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	7.41E-02	7.41E-02	7.41E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	6.38E-03	6.38E-03	6.38E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	9.59E-04	9.59E-04	9.59E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	3.61E-03	3.61E-03	3.61E-03	3.56E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	7.68E-09	7.68E-09	7.68E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	6.62E-05	6.62E-05	6.62E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	3.09E-03	3.09E-03	3.09E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	3.94E-02	3.94E-02	3.94E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	2.82E-02	2.82E-02	2.82E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	2.82E-02	2.82E-02	2.82E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	4.90E-02	4.90E-02	4.90E-02	6.17E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	1.02E-02	1.02E-02	1.02E-02	7.23E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	3.55E-02	3.55E-02	3.55E-02	2.27E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	4.47E-02	4.47E-02	4.47E-02	2.66E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	1.14E-04	1.14E-04	1.14E-04	1.10E-04	1.18E-06	9.50E-13	7.81E-21	.00E+00	.00E+00
tc118	2.27E-10	2.27E-10	2.27E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	9.48E-06	9.48E-06	9.48E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	6.18E-04	6.18E-04	6.18E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	1.84E-02	1.84E-02	1.84E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	3.34E-02	3.34E-02	3.34E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	2.37E-02	2.37E-02	2.37E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	5.50E-02	5.50E-02	5.50E-02	1.33E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	5.50E-02	5.50E-02	5.50E-02	1.33E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	3.30E-05	3.30E-05	3.30E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	1.26E-06	1.26E-06	1.26E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	2.46E-04	2.46E-04	2.46E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	1.28E-02	1.28E-02	1.28E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	4.34E-02	4.34E-02	4.34E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	4.19E-02	4.19E-02	4.19E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	1.76E-02	1.76E-02	1.76E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	2.30E-02	2.30E-02	2.30E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	3.78E-02	3.78E-02	3.78E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	2.20E-04	2.20E-04	2.20E-04	2.19E-04	1.77E-04	9.26E-05	3.90E-05	2.92E-06	3.89E-08
ru120	1.50E-07	1.50E-07	1.50E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	4.70E-05	4.70E-05	4.70E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	5.96E-03	5.96E-03	5.96E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	2.87E-02	2.87E-02	2.87E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	5.78E-02	5.78E-02	5.78E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	5.84E-02	5.84E-02	5.84E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	5.85E-04	5.85E-04	5.85E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	1.17E-05	1.17E-05	1.17E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 33

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
pd121	2.20E-03	2.20E-03	2.20E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	2.08E-02	2.08E-02	2.08E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	5.97E-02	5.97E-02	5.97E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	3.86E-03	3.86E-03	3.86E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	6.04E-02	6.04E-02	6.04E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	6.35E-02	6.35E-02	6.35E-02	3.46E-02	3.70E-04	3.67E-04	3.62E-04	3.49E-04	3.27E-04
sn121m	4.79E-04	4.79E-04	4.79E-04	4.79E-04	4.77E-04	4.73E-04	4.67E-04	4.49E-04	4.22E-04
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	1.27E-06	1.27E-06	1.27E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	6.98E-04	6.98E-04	6.98E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	1.09E-02	1.09E-02	1.09E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	6.48E-02	6.48E-02	6.48E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	6.96E-02	6.96E-02	6.96E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	4.74E-03	4.74E-03	4.74E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	2.12E-04	2.12E-04	2.12E-04	1.64E-04	1.96E-14	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	2.14E-05	2.14E-05	2.14E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	1.01E-07	1.01E-07	1.01E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	1.04E-04	1.04E-04	1.04E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	3.96E-03	3.96E-03	3.96E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	4.18E-02	4.18E-02	4.18E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	4.73E-02	4.73E-02	4.73E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	1.32E-02	1.32E-02	1.32E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	7.44E-03	7.44E-03	7.44E-03	7.40E-03	4.59E-03	1.05E-03	1.48E-04	4.12E-07	2.29E-11
sn123m	6.80E-02	6.80E-02	6.80E-02	1.05E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16
te123m	5.02E-08	5.02E-08	5.02E-08	4.99E-08	2.98E-08	6.05E-09	7.30E-10	1.28E-12	3.26E-17
pd124	6.26E-05	6.26E-05	6.26E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	3.65E-03	3.65E-03	3.65E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	7.40E-02	7.40E-02	7.40E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	1.17E-01	1.17E-01	1.17E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	2.32E-04	2.32E-04	2.32E-04	2.29E-04	8.23E-05	3.46E-06	5.16E-08	1.71E-13	1.26E-22
sb124m	2.34E-05	2.34E-05	2.34E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	1.31E-05	1.31E-05	1.31E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	1.45E-03	1.45E-03	1.45E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	4.40E-02	4.40E-02	4.40E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	6.11E-02	6.11E-02	6.11E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	4.35E-02	4.35E-02	4.35E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	4.17E-02	4.17E-02	4.17E-02	3.88E-02	6.45E-05	1.64E-13	6.43E-25	.00E+00	.00E+00
sn125m	1.03E-01	1.03E-01	1.03E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.36E-01	1.12E-01	8.73E-02	4.07E-02	1.14E-02
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	3.33E-02	3.33E-02	3.33E-02	3.33E-02	3.25E-02	2.74E-02	2.13E-02	9.95E-03	2.80E-03
pd126	2.93E-06	2.93E-06	2.93E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	6.33E-04	6.33E-04	6.33E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	5.40E-02	5.40E-02	5.40E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	1.33E-01	1.33E-01	1.33E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	1.73E-01	1.73E-01	1.73E-01	1.73E-01	1.73E-01	1.73E-01	1.73E-01	1.73E-01	1.73E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 34

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sb126	2.51E-02	2.51E-02	2.51E-02	2.50E-02	2.42E-02	2.42E-02	2.42E-02	2.42E-02	2.42E-02
sb126m	1.74E-01	1.74E-01	1.74E-01	1.73E-01	1.73E-01	1.73E-01	1.73E-01	1.73E-01	1.73E-01

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	2.96E-04	2.96E-04	2.96E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	4.10E-02	4.10E-02	4.10E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	1.43E-01	1.43E-01	1.43E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	1.43E-01	1.43E-01	1.43E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	2.26E-01	2.26E-01	2.26E-01	8.20E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	3.49E-01	3.49E-01	3.49E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	6.05E-01	6.05E-01	6.05E-01	5.10E-01	5.59E-08	1.67E-29	.00E+00	.00E+00	.00E+00
te127	6.02E-01	6.02E-01	6.02E-01	5.61E-01	6.07E-02	1.05E-02	1.03E-03	9.73E-07	8.81E-12
te127m	1.06E-01	1.06E-01	1.06E-01	1.06E-01	6.20E-02	1.08E-02	1.06E-03	9.93E-07	8.99E-12
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	1.29E-10	1.29E-10	1.29E-10	1.27E-10	2.33E-11	1.23E-13	1.18E-16	1.02E-25	.00E+00
ag128	1.21E-04	1.21E-04	1.21E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	3.74E-02	3.74E-02	3.74E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	3.88E-01	3.88E-01	3.88E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	1.47E+00	1.47E+00	1.47E+00	6.79E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	1.12E-01	1.12E-01	1.12E-01	1.88E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	1.51E+00	1.51E+00	1.51E+00	8.24E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	1.89E-03	1.89E-03	1.89E-03	8.40E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	1.58E-02	1.58E-02	1.58E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	4.26E-01	4.26E-01	4.26E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	1.23E+00	1.23E+00	1.23E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	1.59E+00	1.59E+00	1.59E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	3.29E+00	3.29E+00	3.29E+00	7.62E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	3.10E+00	3.10E+00	3.10E+00	4.71E-01	6.16E-02	2.11E-04	1.12E-07	1.71E-17	.00E+00
te129m	6.12E-01	6.12E-01	6.12E-01	6.03E-01	9.61E-02	3.29E-04	1.76E-07	2.67E-17	.00E+00
i129	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	4.59E-07	4.59E-07	4.59E-07	4.25E-07	4.12E-10	1.97E-19	9.13E-32	.00E+00	.00E+00
cd130	6.30E-03	6.30E-03	6.30E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	4.02E-01	4.02E-01	4.02E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	4.65E+00	4.65E+00	4.65E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	1.05E+00	1.05E+00	1.05E+00	1.11E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	6.06E+00	6.06E+00	6.06E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	2.54E-02	2.54E-02	2.54E-02	6.66E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	1.32E-02	1.32E-02	1.32E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	7.64E-04	7.64E-04	7.64E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	1.39E-01	1.39E-01	1.39E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	3.78E+00	3.78E+00	3.78E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	1.07E+01	1.07E+01	1.07E+01	1.54E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	1.08E+01	1.08E+01	1.08E+01	2.25E-01	8.28E-23	.00E+00	.00E+00	.00E+00	.00E+00
te131m	1.73E+00	1.73E+00	1.73E+00	9.98E-01	3.68E-22	.00E+00	.00E+00	.00E+00	.00E+00
i131	1.22E+01	1.22E+01	1.22E+01	1.13E+01	5.35E-03	2.65E-13	5.61E-27	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	1.34E-01	1.34E-01	1.34E-01	1.33E-01	2.08E-03	2.39E-10	1.37E-19	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 35

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
cd132	8.55E-05	8.55E-05	8.55E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	3.44E-02	3.44E-02	3.44E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	2.66E+00	2.66E+00	2.66E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	5.60E+00	5.60E+00	5.60E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	6.19E+00	6.19E+00	6.19E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	1.80E+01	1.80E+01	1.80E+01	1.46E+01	8.71E-08	.00E+00	.00E+00	.00E+00	.00E+00
i132	1.81E+01	1.81E+01	1.81E+01	1.50E+01	8.97E-08	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	1.33E-05	1.33E-05	1.33E-05	1.19E-05	8.73E-10	1.42E-22	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	5.84E-04	5.84E-04	5.84E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	7.25E-01	7.25E-01	7.25E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	9.79E+00	9.79E+00	9.79E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	1.58E+01	1.58E+01	1.58E+01	4.49E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	1.32E+01	1.32E+01	1.32E+01	1.99E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	2.77E+01	2.77E+01	2.77E+01	1.28E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	1.71E+00	1.71E+00	1.71E+00	2.03E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	2.77E+01	2.77E+01	2.77E+01	2.67E+01	2.32E-04	3.64E-20	.00E+00	.00E+00	.00E+00
xe133m	8.15E-01	8.15E-01	8.15E-01	7.44E-01	5.74E-13	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	6.53E-10	6.53E-10	6.53E-10	6.53E-10	6.42E-10	6.11E-10	5.72E-10	4.70E-10	3.38E-10
in134	9.02E-05	9.02E-05	9.02E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	8.40E-02	8.40E-02	8.40E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	1.86E+00	1.86E+00	1.86E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	1.15E+00	1.15E+00	1.15E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	2.80E+01	2.80E+01	2.80E+01	1.19E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	3.18E+01	3.18E+01	3.18E+01	8.00E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	1.61E+00	1.61E+00	1.61E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	3.11E-01	3.11E-01	3.11E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	5.54E-01	5.54E-01	5.54E-01	5.53E-01	5.10E-01	3.96E-01	2.83E-01	1.03E-01	1.92E-02
cs134m	4.21E-02	4.21E-02	4.21E-02	1.39E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	6.29E-03	6.29E-03	6.29E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	6.73E-01	6.73E-01	6.73E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	1.35E+01	1.35E+01	1.35E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	2.60E+01	2.60E+01	2.60E+01	2.07E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	2.72E+01	2.72E+01	2.72E+01	9.93E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	4.92E+00	4.92E+00	4.92E+00	3.38E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00
cs135m	2.85E-03	2.85E-03	2.85E-03	1.88E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	3.63E-05	3.63E-05	3.63E-05	2.03E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	4.76E-04	4.76E-04	4.76E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	8.63E-02	8.63E-02	8.63E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	6.48E+00	6.48E+00	6.48E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	1.32E+01	1.32E+01	1.32E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	6.16E+00	6.16E+00	6.16E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	1.66E-01	1.66E-01	1.66E-01	1.58E-01	1.45E-03	7.34E-10	3.24E-18	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	1.86E-02	1.86E-02	1.86E-02	1.77E-02	1.63E-04	8.22E-11	3.63E-19	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 36

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sb137	2.02E-01	2.02E-01	2.02E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	1.93E+00	1.93E+00	1.93E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	1.34E+01	1.34E+01	1.34E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	2.52E+01	2.52E+01	2.52E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.59E+01	2.54E+01	2.48E+01	2.32E+01	2.06E+01
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	2.46E+01	2.46E+01	2.46E+01	2.46E+01	2.44E+01	2.40E+01	2.34E+01	2.19E+01	1.95E+01
sb138	7.66E-04	7.66E-04	7.66E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	3.65E-01	3.65E-01	3.65E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	6.65E+00	6.65E+00	6.65E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	2.59E+01	2.59E+01	2.59E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	2.71E+01	2.71E+01	2.71E+01	1.63E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	7.13E-01	7.13E-01	7.13E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10
sb139	5.16E-05	5.16E-05	5.16E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	4.75E-02	4.75E-02	4.75E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	3.99E+00	3.99E+00	3.99E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	2.07E+01	2.07E+01	2.07E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	2.56E+01	2.56E+01	2.56E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	2.60E+01	2.60E+01	2.60E+01	2.21E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	3.23E-07	3.23E-07	3.23E-07	3.22E-07	2.05E-07	5.14E-08	8.16E-09	3.27E-11	3.31E-15
pr139	2.90E-09	2.90E-09	2.90E-09	6.68E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	7.60E-03	7.60E-03	7.60E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	9.05E-01	9.05E-01	9.05E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	1.52E+01	1.52E+01	1.52E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	2.34E+01	2.34E+01	2.34E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	2.58E+01	2.58E+01	2.58E+01	2.44E+01	1.94E-01	6.17E-08	1.48E-16	.00E+00	.00E+00
la140	2.59E+01	2.59E+01	2.59E+01	2.56E+01	2.23E-01	7.11E-08	1.70E-16	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	9.07E-06	9.07E-06	9.07E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	5.66E-05	5.66E-05	5.66E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	7.94E-02	7.94E-02	7.94E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	5.47E+00	5.47E+00	5.47E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	1.80E+01	1.80E+01	1.80E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	2.36E+01	2.36E+01	2.36E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	2.37E+01	2.37E+01	2.37E+01	3.69E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	2.37E+01	2.37E+01	2.37E+01	2.34E+01	3.50E+00	9.88E-03	4.09E-06	2.90E-16	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	1.09E-08	1.09E-08	1.09E-08	1.37E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	2.64E-05	2.64E-05	2.64E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	2.65E-02	2.65E-02	2.65E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	1.95E+00	1.95E+00	1.95E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	1.09E+01	1.09E+01	1.09E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	2.34E+01	2.34E+01	2.34E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	2.39E+01	2.39E+01	2.39E+01	4.71E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05
pr142	9.42E-02	9.42E-02	9.42E-02	3.94E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	1.65E-04	1.65E-04	1.65E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 37

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
xe143	2.54E-01	2.54E-01	2.54E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	5.99E+00	5.99E+00	5.99E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	2.12E+01	2.12E+01	2.12E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	2.38E+01	2.38E+01	2.38E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	2.40E+01	2.40E+01	2.40E+01	1.46E+01	4.77E-19	.00E+00	.00E+00	.00E+00	.00E+00
pr143	2.40E+01	2.40E+01	2.40E+01	2.37E+01	2.68E-01	2.09E-07	1.64E-15	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	5.64E-06	5.64E-06	5.64E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	3.99E-02	3.99E-02	3.99E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	1.51E+00	1.51E+00	1.51E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	1.78E+01	1.78E+01	1.78E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	2.17E+01	2.17E+01	2.17E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	2.20E+01	2.20E+01	2.20E+01	2.20E+01	1.77E+01	9.06E+00	3.73E+00	2.59E-01	3.05E-03
pr144	2.20E+01	2.20E+01	2.20E+01	2.20E+01	1.77E+01	9.06E+00	3.73E+00	2.59E-01	3.05E-03
pr144m	3.09E-01	3.09E-01	3.09E-01	3.08E-01	2.48E-01	1.27E-01	5.22E-02	3.63E-03	4.27E-05
nd144	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09
i145	1.68E-07	1.68E-07	1.68E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	2.40E-03	2.40E-03	2.40E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	2.86E-01	2.86E-01	2.86E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	7.50E+00	7.50E+00	7.50E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	1.46E+01	1.46E+01	1.46E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	1.59E+01	1.59E+01	1.59E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	1.59E+01	1.59E+01	1.59E+01	9.96E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	1.94E-08	1.94E-08	1.94E-08	1.94E-08	1.94E-08	1.91E-08	1.86E-08	1.67E-08	1.38E-08
sm145	1.75E-08	1.75E-08	1.75E-08	1.75E-08	1.46E-08	8.33E-09	3.96E-09	4.24E-10	1.02E-11
xe146	2.30E-04	2.30E-04	2.30E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	7.78E-02	7.78E-02	7.78E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	4.10E+00	4.10E+00	4.10E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	9.88E+00	9.88E+00	9.88E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	1.21E+01	1.21E+01	1.21E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	1.22E+01	1.22E+01	1.22E+01	3.12E-17	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.04E-08	9.44E-09	8.33E-09	5.72E-09	3.06E-09
sm146	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08
xe147	6.52E-07	6.52E-07	6.52E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	7.79E-04	7.79E-04	7.79E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	4.55E-01	4.55E-01	4.55E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	3.84E+00	3.84E+00	3.84E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	8.96E+00	8.96E+00	8.96E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	9.28E+00	9.28E+00	9.28E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	9.28E+00	9.28E+00	9.28E+00	8.72E+00	3.17E-02	9.01E-10	8.73E-20	.00E+00	.00E+00
pm147	9.28E+00	9.28E+00	9.28E+00	9.28E+00	8.80E+00	7.21E+00	5.54E+00	2.51E+00	6.69E-01
sm147	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06
cs148	1.35E-04	1.35E-04	1.35E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	6.84E-02	6.84E-02	6.84E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	1.11E+00	1.11E+00	1.11E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	6.28E+00	6.28E+00	6.28E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	6.90E+00	6.90E+00	6.90E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	1.80E-05	1.80E-05	1.80E-05	1.60E-05	2.21E-07	2.18E-09	4.74E-12	4.88E-20	.00E+00
pm148m	1.90E-05	1.90E-05	1.90E-05	1.86E-05	4.18E-06	4.12E-08	8.97E-11	9.23E-19	4.56E-32

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 38

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sm148	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12
cs149	9.75E-07	9.75E-07	9.75E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	6.12E-03	6.12E-03	6.12E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	2.76E-01	2.76E-01	2.76E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	3.17E+00	3.17E+00	3.17E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	4.39E+00	4.39E+00	4.39E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	4.52E+00	4.52E+00	4.52E+00	2.99E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	4.52E+00	4.52E+00	4.52E+00	3.42E+00	2.63E-12	.00E+00	.00E+00	.00E+00	.00E+00
sm149	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12
eu149	2.52E-10	2.52E-10	2.52E-10	2.50E-10	1.29E-10	1.66E-11	1.09E-12	3.12E-16	3.85E-22
cs150	1.25E-07	1.25E-07	1.25E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	4.63E-04	4.63E-04	4.63E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	3.56E-02	3.56E-02	3.56E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	1.22E+00	1.22E+00	1.22E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	2.47E+00	2.47E+00	2.47E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	4.08E-04	4.08E-04	4.08E-04	8.22E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	3.09E-07	3.09E-07	3.09E-07	3.09E-07	3.07E-07	3.03E-07	2.97E-07	2.80E-07	2.54E-07
ba151	4.19E-06	4.19E-06	4.19E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	4.64E-03	4.64E-03	4.64E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	2.90E-01	2.90E-01	2.90E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	1.20E+00	1.20E+00	1.20E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	1.85E+00	1.85E+00	1.85E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	1.86E+00	1.86E+00	1.86E+00	1.04E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	2.02E+00	2.02E+00	2.02E+00	2.02E+00	2.02E+00	2.01E+00	1.99E+00	1.95E+00	1.87E+00
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	3.30E-08	3.30E-08	3.30E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	9.35E-05	9.35E-05	9.35E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	4.03E-02	4.03E-02	4.03E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	3.91E-01	3.91E-01	3.91E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	1.16E+00	1.16E+00	1.16E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	1.19E+00	1.19E+00	1.19E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	2.54E-02	2.54E-02	2.54E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.11E+00	1.07E+00	1.01E+00	8.66E-01	6.68E-01
eu152m	6.10E-01	6.10E-01	6.10E-01	1.02E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10
la153	2.85E-05	2.85E-05	2.85E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	8.79E-03	8.79E-03	8.79E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	1.37E-01	1.37E-01	1.37E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	6.48E-01	6.48E-01	6.48E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	7.44E-01	7.44E-01	7.44E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	1.00E+00	1.00E+00	1.00E+00	6.99E-01	8.91E-15	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	2.29E-02	2.29E-02	2.29E-02	2.28E-02	1.77E-02	8.02E-03	2.81E-03	1.21E-04	6.41E-07
la154	7.15E-07	7.15E-07	7.15E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	7.67E-04	7.67E-04	7.67E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	2.07E-02	2.07E-02	2.07E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	2.59E-01	2.59E-01	2.59E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	3.08E-01	3.08E-01	3.08E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	4.99E-02	4.99E-02	4.99E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 39

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.02E-01	9.56E-02	8.82E-02	6.92E-02	4.63E-02
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	3.49E-09	3.49E-09	3.49E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	6.10E-05	6.10E-05	6.10E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	3.73E-03	3.73E-03	3.73E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	7.67E-02	7.67E-02	7.67E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	1.58E-01	1.58E-01	1.58E-01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	1.78E-01	1.78E-01	1.78E-01	6.75E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	1.79E-01	1.79E-01	1.79E-01	1.78E-01	1.72E-01	1.54E-01	1.33E-01	8.51E-02	4.06E-02
gd155m	3.85E-06	3.85E-06	3.85E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	4.55E-06	4.55E-06	4.55E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	4.32E-04	4.32E-04	4.32E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	2.09E-02	2.09E-02	2.09E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	6.06E-02	6.06E-02	6.06E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	8.67E-02	8.67E-02	8.67E-02	1.48E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	8.72E-02	8.72E-02	8.72E-02	8.52E-02	1.47E-03	5.14E-09	2.96E-16	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	2.14E-07	2.14E-07	2.14E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	6.07E-05	6.07E-05	6.07E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	4.24E-03	4.24E-03	4.24E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	2.23E-02	2.23E-02	2.23E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	4.48E-02	4.48E-02	4.48E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	4.63E-02	4.63E-02	4.63E-02	1.56E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	3.12E-06	3.12E-06	3.12E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	6.61E-04	6.61E-04	6.61E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	5.19E-03	5.19E-03	5.19E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	2.09E-02	2.09E-02	2.09E-02	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	2.31E-02	2.31E-02	2.31E-02	9.34E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	1.30E-07	1.30E-07	1.30E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	5.57E-05	5.57E-05	5.57E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	9.74E-04	9.74E-04	9.74E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	7.05E-03	7.05E-03	7.05E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	9.67E-03	9.67E-03	9.67E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	9.95E-03	9.95E-03	9.95E-03	4.13E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	3.53E-06	3.53E-06	3.53E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	1.03E-04	1.03E-04	1.03E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	1.92E-03	1.92E-03	1.92E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	3.58E-03	3.58E-03	3.58E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	1.08E-04	1.08E-04	1.08E-04	1.07E-04	4.55E-05	3.25E-06	9.80E-08	2.69E-12	6.69E-20
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	1.43E-07	1.43E-07	1.43E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	1.19E-05	1.19E-05	1.19E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	3.50E-04	3.50E-04	3.50E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	1.19E-03	1.19E-03	1.19E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	1.66E-03	1.66E-03	1.66E-03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	1.68E-03	1.68E-03	1.68E-03	1.52E-03	1.99E-07	1.95E-19	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 40

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	charge	discharge	.0 d	1.0 d	90.0 d	365.3 d	730.5 d	1826.3 d	3652.5 d
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	7.87E-07	7.87E-07	7.87E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	5.77E-05	5.77E-05	5.77E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	2.94E-04	2.94E-04	2.94E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	6.97E-04	6.97E-04	6.97E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	7.11E-04	7.11E-04	7.11E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	1.32E-05	1.32E-05	1.32E-05	7.62E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	4.72E-06	4.72E-06	4.72E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	5.64E-05	5.64E-05	5.64E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	2.44E-04	2.44E-04	2.44E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	2.82E-04	2.82E-04	2.82E-04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	3.70E-07	3.70E-07	3.70E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	6.67E-06	6.67E-06	6.67E-06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	7.20E-05	7.20E-05	7.20E-05	7.34E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	1.02E-04	1.02E-04	1.02E-04	8.52E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	2.03E-08	2.03E-08	2.03E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	8.45E-07	8.45E-07	8.45E-07	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	1.66E-05	1.66E-05	1.66E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	3.63E-05	3.63E-05	3.63E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	9.24E-05	9.24E-05	9.24E-05	7.51E-08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	7.14E-05	7.14E-05	7.14E-05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	6.08E-06	6.08E-06	6.08E-06	4.96E-06	6.55E-14	.00E+00	.00E+00	.00E+00	.00E+00
ho166	7.59E-06	7.59E-06	7.59E-06	6.59E-06	9.76E-14	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	1.12E-07	1.12E-07	1.12E-07	1.12E-07	1.12E-07	1.12E-07	1.11E-07	1.11E-07	1.11E-07
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	1.94E-10	1.94E-10	1.94E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	1.04E-08	1.04E-08	1.04E-08	9.64E-09	1.36E-11	2.09E-20	4.56E-32	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	6.25E-11	6.25E-11	6.25E-11	6.21E-11	3.85E-11	8.72E-12	1.22E-12	3.31E-15	1.76E-19
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	1.47E-08	1.47E-08	1.47E-08	1.61E-09	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	1.50E-08	1.50E-08	1.50E-08	1.50E-08	1.37E-08	1.05E-08	7.29E-09	2.47E-09	4.06E-10
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	9.22E-09	9.22E-09	9.22E-09	6.58E-09	5.98E-22	.00E+00	.00E+00	.00E+00	.00E+00
tm172	9.66E-09	9.66E-09	9.66E-09	9.23E-09	2.48E-18	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	2.54E+03	2.54E+03	2.54E+03	6.02E+02	2.16E+02	1.44E+02	1.26E+02	1.08E+02	9.47E+01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 41

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
he 4	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.71E+02	2.71E+02	2.71E+02	2.71E+02	2.71E+02	2.71E+02	2.72E+02
tl206	4.29E-14	4.29E-14	4.29E-14	4.29E-14	4.29E-14	4.29E-14	4.29E-14	4.29E-14	4.30E-14	4.30E-14	4.30E-14
tl207	1.78E-09	1.78E-09	1.78E-09	1.78E-09	1.78E-09	1.78E-09	1.78E-09	1.78E-09	1.78E-09	1.78E-09	1.78E-09
tl208	7.56E-12	7.20E-12	6.85E-12	6.20E-12	5.09E-12	3.10E-12	1.89E-12	1.16E-12	7.10E-13	4.37E-13	1.71E-13
tl209	8.03E-11	8.03E-11	8.03E-11	8.04E-11	8.04E-11	8.04E-11	8.05E-11	8.05E-11	8.06E-11	8.06E-11	8.08E-11
pb206	1.12E+02	1.12E+02	1.12E+02	1.12E+02	1.12E+02	1.13E+02	1.13E+02	1.13E+02	1.13E+02	1.13E+02	1.13E+02
pb207	6.37E+00	6.37E+00	6.37E+00	6.37E+00	6.37E+00	6.38E+00	6.39E+00	6.39E+00	6.40E+00	6.41E+00	6.42E+00
pb208	2.03E-01	2.03E-01	2.03E-01	2.03E-01	2.03E-01	2.03E-01	2.03E-01	2.03E-01	2.04E-01	2.04E-01	2.04E-01
pb209	3.39E-07	3.39E-07	3.39E-07	3.39E-07	3.40E-07	3.40E-07	3.40E-07	3.40E-07	3.40E-07	3.41E-07	3.41E-07
pb210	9.24E-02	9.24E-02	9.24E-02	9.24E-02	9.24E-02	9.25E-02	9.25E-02	9.26E-02	9.26E-02	9.27E-02	9.28E-02
pb211	1.38E-08	1.38E-08	1.38E-08	1.38E-08	1.38E-08	1.38E-08	1.38E-08	1.38E-08	1.38E-08	1.38E-08	1.38E-08
pb212	4.48E-09	4.27E-09	4.06E-09	3.68E-09	3.02E-09	1.84E-09	1.12E-09	6.86E-10	4.21E-10	2.59E-10	1.01E-10
pb214	2.15E-07	2.15E-07	2.15E-07	2.15E-07	2.15E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.21E+01	2.21E+01	2.21E+01	2.22E+01	2.22E+01	2.22E+01	2.22E+01	2.23E+01	2.23E+01	2.23E+01	2.24E+01
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	5.69E-05	5.69E-05	5.69E-05	5.69E-05	5.69E-05	5.69E-05	5.70E-05	5.70E-05	5.70E-05	5.70E-05	5.71E-05
bi211	8.18E-10	8.18E-10	8.18E-10	8.17E-10	8.17E-10	8.16E-10	8.16E-10	8.16E-10	8.16E-10	8.16E-10	8.16E-10
bi212	4.25E-10	4.05E-10	3.85E-10	3.49E-10	2.86E-10	1.74E-10	1.06E-10	6.51E-11	3.99E-11	2.46E-11	9.60E-12
bi213	8.08E-08	8.08E-08	8.08E-08	8.08E-08	8.08E-08	8.09E-08	8.09E-08	8.10E-08	8.10E-08	8.11E-08	8.12E-08
bi214	1.60E-07	1.60E-07	1.60E-07	1.60E-07	1.60E-07	1.60E-07	1.60E-07	1.60E-07	1.60E-07	1.60E-07	1.60E-07
po210	1.57E-03	1.57E-03	1.57E-03	1.57E-03	1.57E-03	1.57E-03	1.57E-03	1.57E-03	1.57E-03	1.58E-03	1.58E-03
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.04E-15	9.04E-15	9.04E-15	9.03E-15	9.03E-15	9.02E-15	9.02E-15	9.02E-15	9.02E-15	9.02E-15	9.01E-15
po212	2.23E-20	2.13E-20	2.02E-20	1.83E-20	1.50E-20	9.16E-21	5.59E-21	3.42E-21	2.10E-21	1.29E-21	5.05E-22
po213	1.21E-16	1.21E-16	1.21E-16	1.21E-16	1.22E-16	1.22E-16	1.22E-16	1.22E-16	1.22E-16	1.22E-16	1.22E-16
po214	2.20E-14	2.20E-14	2.20E-14	2.20E-14	2.20E-14	2.20E-14	2.20E-14	2.20E-14	2.20E-14	2.21E-14	2.21E-14

po215	1.16E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14
po216	1.73E-14	1.65E-14	1.57E-14	1.42E-14	1.16E-14	7.09E-15	4.33E-15	2.65E-15	1.62E-15	1.00E-15	3.91E-16
po218	2.54E-08	2.54E-08	2.54E-08	2.54E-08	2.54E-08	2.54E-08	2.54E-08	2.54E-08	2.54E-08	2.54E-08	2.55E-08
at217	9.72E-13	9.72E-13	9.72E-13	9.72E-13	9.73E-13	9.73E-13	9.74E-13	9.74E-13	9.75E-13	9.76E-13	9.77E-13
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	2.62E-11	2.62E-11	2.62E-11	2.62E-11	2.61E-11	2.61E-11	2.61E-11	2.61E-11	2.61E-11	2.61E-11	2.61E-11
rn220	6.75E-12	6.43E-12	6.12E-12	5.54E-12	4.55E-12	2.77E-12	1.69E-12	1.03E-12	6.34E-13	3.91E-13	1.53E-13
rn222	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.60E-05	4.60E-05	4.60E-05	4.60E-05	4.61E-05
fr221	9.01E-09	9.01E-09	9.01E-09	9.01E-09	9.02E-09	9.02E-09	9.03E-09	9.03E-09	9.04E-09	9.05E-09	9.06E-09
fr223	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	6.65E-06	6.65E-06	6.65E-06	6.65E-06	6.64E-06	6.64E-06	6.64E-06	6.64E-06	6.63E-06	6.63E-06	6.63E-06
ra224	3.91E-08	3.72E-08	3.54E-08	3.21E-08	2.63E-08	1.60E-08	9.79E-09	5.99E-09	3.67E-09	2.26E-09	8.83E-10
ra225	3.99E-05	3.99E-05	3.99E-05	3.99E-05	3.99E-05	4.00E-05	4.00E-05	4.00E-05	4.00E-05	4.01E-05	4.01E-05
ra226	7.14E+00	7.14E+00	7.14E+00	7.14E+00	7.14E+00	7.15E+00	7.15E+00	7.15E+00	7.16E+00	7.16E+00	7.17E+00
ra228	3.88E-08	3.88E-08	3.88E-08	3.88E-08	3.88E-08	3.88E-08	3.89E-08	3.89E-08	3.89E-08	3.89E-08	3.90E-08
ac225	2.70E-05	2.70E-05	2.70E-05	2.70E-05	2.70E-05	2.70E-05	2.70E-05	2.70E-05	2.70E-05	2.71E-05	2.71E-05
ac227	4.70E-03	4.70E-03	4.70E-03	4.70E-03	4.70E-03	4.70E-03	4.69E-03	4.69E-03	4.69E-03	4.69E-03	4.69E-03
ac228	4.73E-12	4.73E-12	4.73E-12	4.73E-12	4.74E-12	4.74E-12	4.74E-12	4.75E-12	4.75E-12	4.75E-12	4.76E-12
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05
th228	7.59E-06	7.23E-06	6.88E-06	6.23E-06	5.12E-06	3.12E-06	1.90E-06	1.16E-06	7.13E-07	4.40E-07	1.72E-07
th229	7.90E+00	7.90E+00	7.90E+00	7.90E+00	7.90E+00	7.91E+00	7.91E+00	7.92E+00	7.92E+00	7.93E+00	7.94E+00
th230	3.50E+02	3.50E+02	3.50E+02	3.50E+02	3.50E+02	3.51E+02	3.51E+02	3.51E+02	3.51E+02	3.51E+02	3.52E+02
th231	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.25E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 42

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
th232	9.65E+01	9.65E+01	9.65E+01	9.65E+01	9.65E+01	9.66E+01	9.66E+01	9.67E+01	9.68E+01	9.68E+01	9.70E+01
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04
pa231	7.19E+00	7.19E+00	7.19E+00	7.19E+00	7.19E+00	7.19E+00	7.19E+00	7.19E+00	7.19E+00	7.19E+00	7.19E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.24E-04	3.24E-04	3.24E-04	3.24E-04	3.24E-04	3.24E-04	3.24E-04	3.24E-04	3.24E-04	3.24E-04	3.24E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	2.74E-04	2.61E-04	2.48E-04	2.25E-04	1.84E-04	1.12E-04	6.82E-05	4.15E-05	2.53E-05	1.54E-05	5.73E-06
u233	1.87E+02	1.87E+02	1.87E+02	1.87E+02	1.87E+02	1.87E+02	1.87E+02	1.87E+02	1.87E+02	1.87E+02	1.88E+02
u234	2.38E+03	2.38E+03	2.38E+03	2.38E+03	2.38E+03	2.38E+03	2.38E+03	2.38E+03	2.38E+03	2.38E+03	2.38E+03
u235	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05
u236	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04
u237	5.51E-11	4.33E-11	3.40E-11	2.10E-11	7.98E-12	7.13E-13	6.37E-14	5.69E-15	5.08E-16	4.54E-17	3.62E-19
u238	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.27E-31	1.27E-31	1.27E-31	1.27E-31	1.27E-31	1.27E-31	1.27E-31	1.28E-31	1.28E-31	1.28E-31	1.29E-31
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	4.03E-13	1.65E-14	6.75E-16	1.13E-18	3.18E-24	4.22E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	6.33E-04	6.33E-04	6.33E-04	6.33E-04	6.33E-04	6.33E-04	6.33E-04	6.32E-04	6.32E-04	6.32E-04	6.32E-04
np237	9.53E+03	9.53E+03	9.53E+03	9.53E+03	9.53E+03	9.53E+03	9.53E+03	9.53E+03	9.53E+03	9.53E+03	9.53E+03
np238	8.92E-13	8.70E-13	8.49E-13	8.08E-13	7.33E-13	5.73E-13	4.48E-13	3.51E-13	2.74E-13	2.14E-13	1.31E-13
np239	3.58E-11	3.57E-11	3.57E-11	3.57E-11	3.56E-11	3.55E-11	3.53E-11	3.51E-11	3.50E-11	3.48E-11	3.45E-11
np240m	1.08E-33	1.08E-33	1.08E-33	1.08E-33	1.08E-33	1.08E-33	1.09E-33	1.09E-33	1.09E-33	1.09E-33	1.10E-33
np240	1.11E-35	1.11E-35	1.11E-35	1.11E-35	1.11E-35	1.12E-35	1.12E-35	1.12E-35	1.12E-35	1.12E-35	1.13E-35
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	4.27E-09	2.28E-09	1.68E-09	1.44E-09	1.42E-09	1.42E-09	1.42E-09	1.42E-09	1.42E-09	1.42E-09	1.42E-09
pu237	3.16E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	6.06E-01	5.83E-01	5.60E-01	5.18E-01	4.42E-01	2.98E-01	2.00E-01	1.35E-01	9.10E-02	6.13E-02	2.78E-02
pu239	5.81E+03	5.81E+03	5.80E+03	5.80E+03	5.80E+03	5.79E+03	5.78E+03	5.77E+03	5.77E+03	5.76E+03	5.74E+03
pu240	5.87E+01	5.86E+01	5.86E+01	5.86E+01	5.84E+01	5.81E+01	5.78E+01	5.75E+01	5.72E+01	5.69E+01	5.63E+01
pu241	1.82E-03	1.43E-03	1.12E-03	6.92E-04	2.63E-04	2.35E-05	2.10E-06	1.88E-07	1.68E-08	1.50E-09	1.19E-11
pu242	1.18E-02	1.18E-02	1.18E-02	1.18E-02	1.18E-02	1.18E-02	1.18E-02	1.18E-02	1.17E-02	1.17E-02	1.17E-02
pu243	8.11E-28	8.11E-28	8.11E-28	8.11E-28	8.11E-28	8.11E-28	8.11E-28	8.11E-28	8.11E-28	8.11E-28	8.11E-28
pu244	6.41E-21	6.41E-21	6.41E-21	6.41E-21	6.42E-21	6.43E-21	6.45E-21	6.46E-21	6.47E-21	6.49E-21	6.52E-21
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	8.81E-02	8.78E-02	8.74E-02	8.64E-02	8.41E-02	7.78E-02	7.19E-02	6.63E-02	6.12E-02	5.65E-02	4.81E-02
am242m	4.90E-06	4.78E-06	4.67E-06	4.44E-06	4.03E-06	3.15E-06	2.46E-06	1.93E-06	1.51E-06	1.18E-06	7.21E-07
am242	6.33E-11	6.17E-11	6.02E-11	5.73E-11	5.20E-11	4.06E-11	3.18E-11	2.49E-11	1.94E-11	1.52E-11	9.30E-12
am243	4.16E-05	4.15E-05	4.15E-05	4.15E-05	4.14E-05	4.12E-05	4.10E-05	4.08E-05	4.06E-05	4.04E-05	4.01E-05
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	7.31E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 43

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cm242	1.28E-08	1.25E-08	1.22E-08	1.16E-08	1.05E-08	8.21E-09	6.42E-09	5.02E-09	3.93E-09	3.07E-09	1.88E-09
cm243	1.85E-13	1.64E-13	1.45E-13	1.14E-13	6.98E-14	2.07E-14	6.13E-15	1.82E-15	5.39E-16	1.60E-16	1.40E-17
cm244	4.16E-10	3.44E-10	2.84E-10	1.94E-10	9.00E-11	1.33E-11	1.95E-12	2.88E-13	4.24E-14	6.25E-15	1.36E-16
cm245	1.37E-12	1.37E-12	1.37E-12	1.36E-12	1.36E-12	1.36E-12	1.35E-12	1.35E-12	1.34E-12	1.33E-12	1.32E-12
cm246	9.23E-15	9.22E-15	9.21E-15	9.20E-15	9.17E-15	9.11E-15	9.04E-15	8.97E-15	8.91E-15	8.84E-15	8.71E-15
cm247	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17
cm248	1.49E-19	1.49E-19	1.49E-19	1.49E-19	1.49E-19	1.49E-19	1.49E-19	1.49E-19	1.49E-19	1.49E-19	1.49E-19
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	5.29E-35	5.28E-35	5.28E-35	5.28E-35	5.28E-35	5.27E-35	5.26E-35	5.25E-35	5.23E-35	5.22E-35	5.20E-35
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	1.53E-30	2.93E-32	5.60E-34	2.05E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	1.62E-24	1.60E-24	1.58E-24	1.55E-24	1.49E-24	1.35E-24	1.22E-24	1.11E-24	1.00E-24	9.10E-25	7.47E-25
cf250	1.56E-29	1.20E-29	9.20E-30	5.41E-30	1.88E-30	1.33E-31	9.37E-33	6.62E-34	4.68E-35	3.31E-36	2.20E-38
cf251	1.48E-31	1.47E-31	1.47E-31	1.45E-31	1.43E-31	1.38E-31	1.33E-31	1.28E-31	1.23E-31	1.18E-31	1.09E-31
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 44

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	9.32E-06	9.32E-06	9.32E-06	9.32E-06	9.32E-06	9.33E-06	9.33E-06	9.33E-06	9.34E-06	9.34E-06	9.35E-06

tl207	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01
tl208	2.24E-03	2.13E-03	2.03E-03	1.84E-03	1.51E-03	9.18E-04	5.61E-04	3.43E-04	2.10E-04	1.30E-04	5.06E-05
tl209	3.29E-02	3.29E-02	3.29E-02	3.29E-02	3.29E-02	3.29E-02	3.29E-02	3.29E-02	3.30E-02	3.30E-02	3.30E-02
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00
pb210	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.07E+00	7.07E+00	7.07E+00	7.08E+00	7.08E+00
pb211	3.41E-01	3.41E-01	3.41E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01
pb212	6.23E-03	5.93E-03	5.65E-03	5.11E-03	4.20E-03	2.56E-03	1.56E-03	9.54E-04	5.85E-04	3.61E-04	1.41E-04
pb214	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.07E+00	7.07E+00	7.08E+00	7.08E+00	7.08E+00	7.09E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.07E+00	7.07E+00	7.07E+00	7.08E+00	7.09E+00
bi211	3.41E-01	3.41E-01	3.41E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01
bi212	6.23E-03	5.93E-03	5.65E-03	5.11E-03	4.20E-03	2.56E-03	1.56E-03	9.54E-04	5.85E-04	3.61E-04	1.41E-04
bi213	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00
bi214	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.07E+00	7.07E+00	7.08E+00	7.08E+00	7.08E+00	7.09E+00
po210	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.07E+00	7.07E+00	7.07E+00	7.08E+00	7.09E+00
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.37E-04	9.37E-04	9.36E-04	9.36E-04	9.36E-04	9.35E-04	9.35E-04	9.35E-04	9.35E-04	9.35E-04	9.34E-04
po212	3.99E-03	3.80E-03	3.62E-03	3.27E-03	2.69E-03	1.64E-03	9.99E-04	6.11E-04	3.75E-04	2.31E-04	9.02E-05
po213	1.53E+00	1.53E+00	1.53E+00	1.53E+00	1.53E+00	1.53E+00	1.54E+00	1.54E+00	1.54E+00	1.54E+00	1.54E+00
po214	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.07E+00	7.07E+00	7.07E+00	7.08E+00	7.08E+00	7.09E+00
po215	3.41E-01	3.41E-01	3.41E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01
po216	6.23E-03	5.93E-03	5.65E-03	5.11E-03	4.20E-03	2.56E-03	1.56E-03	9.54E-04	5.85E-04	3.61E-04	1.41E-04
po218	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.07E+00	7.07E+00	7.07E+00	7.08E+00	7.08E+00	7.08E+00	7.09E+00
at217	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	3.41E-01	3.41E-01	3.41E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01
rn220	6.23E-03	5.93E-03	5.65E-03	5.11E-03	4.20E-03	2.56E-03	1.56E-03	9.54E-04	5.85E-04	3.61E-04	1.41E-04
rn222	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.07E+00	7.07E+00	7.07E+00	7.08E+00	7.08E+00	7.08E+00	7.09E+00
fr221	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00
fr223	4.69E-03	4.69E-03	4.69E-03	4.69E-03	4.69E-03	4.69E-03	4.69E-03	4.69E-03	4.69E-03	4.69E-03	4.69E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	3.41E-01	3.41E-01	3.41E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01
ra224	6.23E-03	5.93E-03	5.65E-03	5.11E-03	4.20E-03	2.56E-03	1.56E-03	9.54E-04	5.85E-04	3.61E-04	1.41E-04
ra225	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00
ra226	7.06E+00	7.06E+00	7.06E+00	7.06E+00	7.07E+00	7.07E+00	7.07E+00	7.08E+00	7.08E+00	7.08E+00	7.09E+00
ra228	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05
ac225	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00
ac227	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01
ac228	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	3.36E-01	3.36E-01	3.36E-01	3.36E-01	3.36E-01	3.35E-01	3.35E-01	3.35E-01	3.35E-01	3.35E-01	3.35E-01
th228	6.22E-03	5.93E-03	5.64E-03	5.11E-03	4.20E-03	2.56E-03	1.56E-03	9.54E-04	5.85E-04	3.61E-04	1.41E-04
th229	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00	1.57E+00
th230	7.23E+00	7.23E+00	7.23E+00	7.23E+00	7.23E+00	7.23E+00	7.24E+00	7.24E+00	7.24E+00	7.25E+00	7.25E+00
th231	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 45

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
th232	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.06E-05
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
pa231	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.40E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00
pa234m	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
pa234	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	6.05E-03	5.76E-03	5.48E-03	4.96E-03	4.07E-03	2.48E-03	1.51E-03	9.17E-04	5.59E-04	3.40E-04	1.27E-04
u233	1.80E+00	1.80E+00	1.80E+00	1.80E+00	1.80E+00	1.80E+00	1.80E+00	1.81E+00	1.81E+00	1.81E+00	1.81E+00
u234	1.48E+01	1.48E+01	1.48E+01	1.48E+01	1.48E+01	1.48E+01	1.48E+01	1.48E+01	1.48E+01	1.48E+01	1.48E+01
u235	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01	3.32E-01
u236	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00
u237	4.50E-06	3.54E-06	2.78E-06	1.71E-06	6.52E-07	5.82E-08	5.20E-09	4.64E-10	4.15E-11	3.71E-12	2.96E-14
u238	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.17E-25	1.17E-25	1.17E-25	1.17E-25	1.17E-25	1.18E-25	1.18E-25	1.18E-25	1.18E-25	1.19E-25	1.19E-25
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	5.65E-10	2.31E-11	9.47E-13	1.59E-15	4.47E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	8.34E-06	8.34E-06	8.34E-06	8.34E-06	8.34E-06	8.34E-06	8.34E-06	8.33E-06	8.33E-06	8.33E-06	8.32E-06
np237	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00	6.72E+00
np238	2.31E-07	2.26E-07	2.20E-07	2.10E-07	1.90E-07	1.49E-07	1.16E-07	9.09E-08	7.11E-08	5.56E-08	3.40E-08
np239	8.30E-06	8.29E-06	8.29E-06	8.28E-06	8.27E-06	8.23E-06	8.19E-06	8.15E-06	8.11E-06	8.07E-06	8.00E-06
np240m	1.17E-25	1.17E-25	1.17E-25	1.17E-25	1.17E-25	1.18E-25	1.18E-25	1.18E-25	1.18E-25	1.19E-25	1.19E-25
np240	1.41E-28	1.41E-28	1.41E-28	1.41E-28	1.41E-28	1.41E-28	1.42E-28	1.42E-28	1.42E-28	1.42E-28	1.43E-28
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	2.23E-06	1.19E-06	8.79E-07	7.55E-07	7.43E-07	7.42E-07	7.42E-07	7.42E-07	7.42E-07	7.41E-07	7.41E-07
pu237	4.56E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	1.04E+01	9.98E+00	9.60E+00	8.87E+00	7.57E+00	5.10E+00	3.43E+00	2.31E+00	1.56E+00	1.05E+00	4.76E-01
pu239	3.60E+02	3.60E+02	3.60E+02	3.60E+02	3.60E+02	3.59E+02	3.59E+02	3.58E+02	3.58E+02	3.57E+02	3.56E+02
pu240	1.33E+01	1.33E+01	1.33E+01	1.33E+01	1.33E+01	1.32E+01	1.31E+01	1.31E+01	1.30E+01	1.29E+01	1.28E+01
pu241	1.88E-01	1.48E-01	1.16E-01	7.16E-02	2.72E-02	2.43E-03	2.17E-04	1.94E-05	1.73E-06	1.55E-07	1.24E-09
pu242	4.65E-05	4.65E-05	4.65E-05	4.65E-05	4.65E-05	4.65E-05	4.65E-05	4.65E-05	4.65E-05	4.65E-05	4.65E-05
pu243	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21
pu244	1.17E-25	1.17E-25	1.17E-25	1.17E-25	1.18E-25	1.18E-25	1.18E-25	1.18E-25	1.19E-25	1.19E-25	1.19E-25
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	3.02E-01	3.01E-01	3.00E-01	2.96E-01	2.89E-01	2.67E-01	2.47E-01	2.28E-01	2.10E-01	1.94E-01	1.65E-01
am242m	5.14E-05	5.01E-05	4.89E-05	4.66E-05	4.22E-05	3.30E-05	2.58E-05	2.02E-05	1.58E-05	1.24E-05	7.56E-06
am242	5.12E-05	4.99E-05	4.87E-05	4.64E-05	4.20E-05	3.29E-05	2.57E-05	2.01E-05	1.57E-05	1.23E-05	7.52E-06
am243	8.30E-06	8.29E-06	8.29E-06	8.28E-06	8.27E-06	8.23E-06	8.19E-06	8.15E-06	8.11E-06	8.07E-06	8.00E-06
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	4.56E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 46

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cm242	4.23E-05	4.13E-05	4.03E-05	3.83E-05	3.48E-05	2.72E-05	2.13E-05	1.66E-05	1.30E-05	1.02E-05	6.22E-06
cm243	9.54E-12	8.45E-12	7.48E-12	5.86E-12	3.61E-12	1.07E-12	3.17E-13	9.39E-14	2.78E-14	8.24E-15	7.24E-16
cm244	3.37E-08	2.78E-08	2.30E-08	1.57E-08	7.28E-09	1.07E-09	1.58E-10	2.33E-11	3.43E-12	5.06E-13	1.10E-14
cm245	2.35E-13	2.35E-13	2.35E-13	2.34E-13	2.34E-13	2.33E-13	2.32E-13	2.31E-13	2.30E-13	2.29E-13	2.27E-13
cm246	2.84E-15	2.83E-15	2.83E-15	2.83E-15	2.82E-15	2.80E-15	2.78E-15	2.76E-15	2.74E-15	2.72E-15	2.68E-15
cm247	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21
cm248	6.34E-22	6.34E-22	6.34E-22	6.34E-22	6.34E-22	6.34E-22	6.33E-22	6.33E-22	6.33E-22	6.33E-22	6.33E-22
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	2.51E-27	4.80E-29	9.13E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	6.62E-24	6.55E-24	6.49E-24	6.36E-24	6.12E-24	5.54E-24	5.02E-24	4.55E-24	4.12E-24	3.73E-24	3.06E-24
cf250	1.71E-27	1.31E-27	1.01E-27	5.92E-28	2.05E-28	1.45E-29	1.03E-30	6.85E-32	.00E+00	.00E+00	.00E+00
cf251	2.28E-31	2.28E-31	2.28E-31	2.28E-31	2.28E-31	2.28E-31	2.05E-31	2.05E-31	2.05E-31	1.83E-31	1.83E-31
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	5.13E+02	5.13E+02	5.12E+02	5.12E+02	5.10E+02	5.07E+02	5.05E+02	5.03E+02	5.02E+02	5.01E+02	4.99E+02

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 47

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
h 3	2.71E-06	2.05E-06	1.55E-06	8.82E-07	2.86E-07	1.72E-08	1.04E-09	6.23E-11	3.75E-12	2.25E-13	8.15E-16
li 6	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04
li 7	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06
be 9	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05
be 10	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04
c 14	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.25E-06	1.25E-06	1.24E-06	1.23E-06	1.22E-06	1.22E-06	1.20E-06
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08
zn 68	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08
zn 70	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 48

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	3.80E+00	3.80E+00	3.80E+00	3.80E+00	3.80E+00	3.80E+00	3.80E+00	3.80E+00	3.80E+00	3.80E+00	3.80E+00
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	3.81E-01	3.81E-01	3.81E-01	3.81E-01	3.82E-01	3.82E-01	3.82E-01	3.83E-01	3.83E-01	3.84E-01	3.84E-01
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04

cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01
kr 81	8.03E-07	8.03E-07	8.03E-07	8.03E-07	8.03E-07	8.03E-07	8.03E-07	8.02E-07	8.02E-07	8.02E-07	8.02E-07
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 49

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	1.40E-03	1.01E-03	7.31E-04	3.83E-04	1.05E-04	4.14E-06	1.63E-07	6.44E-09	2.54E-10	1.00E-11	1.56E-14
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02
rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02
sr 87	6.56E-04	6.56E-04	6.56E-04	6.56E-04	6.56E-04	6.56E-04	6.56E-04	6.57E-04	6.57E-04	6.57E-04	6.57E-04
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 50

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	1.17E-25	1.56E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02
y 89m	4.01E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	1.28E-01	1.13E-01	9.98E-02	7.80E-02	4.77E-02	1.39E-02	4.06E-03	1.19E-03	3.46E-04	1.01E-04	8.61E-06
y 90	3.32E-05	2.93E-05	2.59E-05	2.03E-05	1.24E-05	3.62E-06	1.06E-06	3.08E-07	8.99E-08	2.63E-08	2.24E-09
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	1.55E-22	6.20E-32	2.49E-41	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02
nb 91	7.28E-12	7.24E-12	7.20E-12	7.13E-12	6.98E-12	6.64E-12	6.31E-12	5.99E-12	5.70E-12	5.41E-12	4.89E-12
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02
nb 92	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	4.49E+02	4.49E+02	4.49E+02	4.49E+02	4.49E+02	4.49E+02	4.49E+02	4.49E+02	4.49E+02	4.49E+02	4.49E+02
nb 93	9.44E+00	9.44E+00	9.44E+00	9.45E+00	9.45E+00	9.46E+00	9.47E+00	9.48E+00	9.49E+00	9.50E+00	9.52E+00
nb 93m	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 51

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02
nb 94	5.48E-04	5.48E-04	5.48E-04	5.48E-04	5.48E-04	5.47E-04	5.46E-04	5.45E-04	5.44E-04	5.43E-04	5.41E-04
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	8.15E-21	2.10E-29	5.42E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	9.81E-21	2.53E-29	7.25E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	5.40E-24	1.39E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02
tc 98	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	6.21E+02	6.21E+02	6.21E+02	6.20E+02	6.20E+02	6.20E+02	6.20E+02	6.20E+02	6.20E+02	6.20E+02	6.20E+02
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	9.96E+01	9.96E+01	9.96E+01	9.97E+01	9.97E+01	9.98E+01	9.99E+01	1.00E+02	1.00E+02	1.00E+02	1.00E+02

rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 52

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02
rh102	2.17E-10	6.57E-11	1.99E-11	1.82E-12	1.53E-14	9.85E-20	6.36E-25	4.10E-30	2.64E-35	1.71E-40	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	4.24E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02
rh103m	4.20E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 53

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	9.57E-07	3.17E-08	1.05E-09	1.16E-12	1.40E-18	2.25E-33	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	8.88E-13	2.94E-14	9.77E-16	1.07E-18	1.30E-24	2.09E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	2.09E-01	2.09E-01	2.09E-01	2.09E-01	2.09E-01	2.09E-01	2.10E-01	2.10E-01	2.10E-01	2.10E-01	2.11E-01
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01
ag108	8.07E-18	7.85E-18	7.64E-18	7.23E-18	6.48E-18	4.94E-18	3.76E-18	2.86E-18	2.18E-18	1.66E-18	9.60E-19
ag108m	2.61E-09	2.54E-09	2.47E-09	2.34E-09	2.10E-09	1.60E-09	1.22E-09	9.26E-10	7.05E-10	5.37E-10	3.11E-10
cd108	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01
ag109m	9.81E-21	6.36E-22	4.12E-23	1.73E-25	3.05E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	9.90E-15	6.41E-16	4.16E-17	1.75E-19	3.08E-24	4.01E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00
ag110	2.01E-19	1.26E-21	7.94E-24	3.14E-28	4.92E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	1.29E-11	8.14E-14	5.12E-16	2.03E-20	3.18E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 54

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cd110	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01
cd113m	3.81E-06	2.98E-06	2.33E-06	1.43E-06	5.34E-07	4.57E-08	3.91E-09	3.35E-10	2.87E-11	2.46E-12	1.80E-14
in113	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00
in114	2.27E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	1.41E-32	1.60E-43	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	2.00E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00
in115m	7.54E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 55

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sn115	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02

tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00
sn119m	1.04E-11	1.38E-13	1.84E-15	3.25E-19	1.02E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 56

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	3.42E-10	3.21E-10	3.01E-10	2.66E-10	2.07E-10	1.10E-10	5.86E-11	3.12E-11	1.66E-11	8.85E-12	2.51E-12
sn121m	7.85E-06	7.37E-06	6.92E-06	6.10E-06	4.74E-06	2.53E-06	1.35E-06	7.16E-07	3.82E-07	2.03E-07	5.76E-08
sb121	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	2.78E-15	1.54E-19	8.53E-24	2.62E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00
te123	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06
te123m	3.67E-21	9.36E-26	2.38E-30	1.54E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00
sb124	7.19E-27	5.29E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	1.09E-05	3.07E-06	8.62E-07	6.80E-08	4.24E-10	1.30E-15	3.97E-21	1.22E-26	3.73E-32	1.14E-37	.00E+00
te125	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00
te125m	1.55E-07	4.36E-08	1.22E-08	9.66E-10	6.02E-12	1.84E-17	5.64E-23	1.73E-28	5.30E-34	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	6.08E+00	6.08E+00	6.08E+00	6.08E+00	6.08E+00	6.08E+00	6.07E+00	6.07E+00	6.07E+00	6.07E+00	6.06E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 57

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sb126	2.89E-07	2.89E-07	2.89E-07	2.89E-07	2.89E-07	2.89E-07	2.89E-07	2.88E-07	2.88E-07	2.88E-07	2.88E-07
sb126m	2.20E-09	2.20E-09	2.20E-09	2.20E-09	2.20E-09	2.19E-09	2.19E-09	2.19E-09	2.19E-09	2.19E-09	2.19E-09
te126	2.20E+00	2.20E+00	2.20E+00	2.21E+00	2.21E+00	2.21E+00	2.21E+00	2.21E+00	2.21E+00	2.22E+00	2.22E+00
xe126	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	3.33E-18	3.01E-23	2.73E-28	2.60E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	9.53E-16	8.61E-21	7.79E-26	6.36E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	3.85E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02
xe129	2.49E-01	2.49E-01	2.49E-01	2.49E-01	2.49E-01	2.49E-01	2.49E-01	2.50E-01	2.50E-01	2.50E-01	2.51E-01
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 58

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06

in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03
ba133	1.32E-12	9.51E-13	6.84E-13	3.54E-13	9.47E-14	3.51E-15	1.30E-16	4.83E-18	1.79E-19	6.65E-21	9.14E-24
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	1.48E-05	2.76E-06	5.14E-07	1.78E-08	2.14E-11	1.07E-18	5.38E-26	2.69E-33	1.35E-40	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	1.47E+01	1.47E+01	1.47E+01	1.47E+01	1.47E+01	1.47E+01	1.47E+01	1.47E+01	1.47E+01	1.47E+01	1.48E+01
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
0

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 59

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.37E-01	2.11E-01	1.88E-01	1.49E-01	9.41E-02	2.96E-02	9.34E-03	2.94E-03	9.26E-04	2.92E-04	2.89E-05
ba137	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03
ba137m	3.62E-08	3.23E-08	2.87E-08	2.28E-08	1.44E-08	4.53E-09	1.43E-09	4.49E-10	1.41E-10	4.45E-11	4.42E-12
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03
la138	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03
ce139	4.85E-19	4.90E-23	4.96E-27	5.07E-35	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	1.23E-37	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 60

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	9.58E-07	1.13E-08	1.33E-10	1.84E-14	3.52E-22	1.78E-41	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	4.04E-11	4.75E-13	5.59E-15	7.73E-19	1.48E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	2.35E-13	2.77E-15	3.26E-17	4.51E-21	8.64E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02

i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02
pm145	9.89E-11	8.13E-11	6.69E-11	4.52E-11	2.07E-11	2.91E-12	4.11E-13	5.80E-14	8.19E-15	1.16E-15	2.30E-17
sm145	3.87E-15	9.35E-17	2.26E-18	1.32E-21	4.50E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02
pm146	6.90E-12	3.69E-12	1.97E-12	5.62E-13	4.58E-14	8.68E-17	1.65E-19	3.12E-22	5.92E-25	1.12E-27	4.03E-33
sm146	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	7.21E-04	1.92E-04	5.13E-05	3.65E-06	1.85E-08	3.39E-14	6.20E-20	1.13E-25	2.07E-31	3.79E-37	.00E+00
sm147	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	2.10E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 61

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sm148	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00
eu149	4.09E-26	5.05E-32	6.24E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02
eu150	3.82E-09	3.47E-09	3.15E-09	2.59E-09	1.76E-09	6.69E-10	2.54E-10	9.65E-11	3.67E-11	1.39E-11	2.01E-12

ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	7.12E-02	6.85E-02	6.59E-02	6.10E-02	5.23E-02	3.56E-02	2.42E-02	1.65E-02	1.12E-02	7.63E-03	3.53E-03
eu151	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01
eu152	3.78E-03	2.92E-03	2.25E-03	1.34E-03	4.72E-04	3.51E-05	2.60E-06	1.93E-07	1.43E-08	1.06E-09	5.87E-12
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01
gd153	1.81E-10	9.61E-13	5.09E-15	1.43E-19	1.12E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 62

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sm154	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01
eu154	1.71E-04	1.14E-04	7.64E-05	3.41E-05	6.78E-06	1.20E-07	2.12E-09	3.76E-11	6.65E-13	1.18E-14	3.68E-18
gd154	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	8.24E-05	3.93E-05	1.87E-05	4.26E-06	2.20E-07	1.34E-10	8.14E-14	4.95E-17	3.01E-20	1.83E-23	6.75E-30
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01
tb160	5.93E-24	1.47E-31	3.67E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 63

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
dy161	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	6.18E-08	6.16E-08	6.14E-08	6.11E-08	6.04E-08	5.87E-08	5.70E-08	5.54E-08	5.38E-08	5.23E-08	4.93E-08
er166	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04
er167	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07
tm170	2.94E-23	1.56E-27	8.27E-32	2.32E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	3.73E-13	6.13E-14	1.01E-14	2.73E-16	2.00E-19	2.90E-27	4.20E-35	7.19E-43	.00E+00	.00E+00	.00E+00
yb171	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07
total	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 64

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
h 3	2.62E-02	1.98E-02	1.50E-02	8.53E-03	2.77E-03	1.67E-04	1.00E-05	6.02E-07	3.62E-08	2.18E-09	7.88E-12
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	2.37E-06	2.37E-06	2.37E-06	2.37E-06	2.37E-06	2.37E-06	2.37E-06	2.37E-06	2.37E-06	2.37E-06	2.37E-06
c 14	5.61E-06	5.61E-06	5.61E-06	5.60E-06	5.59E-06	5.55E-06	5.52E-06	5.49E-06	5.45E-06	5.42E-06	5.36E-06
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 65

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	5.22E-02	5.22E-02	5.22E-02	5.22E-02	5.22E-02	5.22E-02	5.22E-02	5.22E-02	5.22E-02	5.22E-02	5.22E-02
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 66

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	5.48E-01	3.96E-01	2.87E-01	1.50E-01	4.12E-02	1.63E-03	6.41E-05	2.53E-06	9.97E-08	3.93E-09	6.11E-12
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 67

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	3.41E-21	4.56E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	3.17E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	1.80E+01	1.59E+01	1.41E+01	1.10E+01	6.73E+00	1.96E+00	5.73E-01	1.67E-01	4.89E-02	1.43E-02	1.22E-03
y 90	1.80E+01	1.59E+01	1.41E+01	1.10E+01	6.73E+00	1.96E+00	5.74E-01	1.67E-01	4.89E-02	1.43E-02	1.22E-03
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	3.80E-18	1.52E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	4.20E-11	4.18E-11	4.16E-11	4.12E-11	4.04E-11	3.84E-11	3.65E-11	3.46E-11	3.29E-11	3.13E-11	2.83E-11
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 68

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.02E-04	1.02E-04	1.02E-04	1.02E-04	1.02E-04	1.01E-04
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	1.75E-16	4.51E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	3.86E-16	9.95E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	2.06E-18	5.31E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	1.06E+01	1.06E+01	1.06E+01	1.06E+01	1.06E+01	1.06E+01	1.06E+01	1.06E+01	1.06E+01	1.06E+01	1.06E+01
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 69

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	Initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	2.62E-07	7.94E-08	2.40E-08	2.20E-09	1.85E-11	1.19E-16	7.69E-22	4.96E-27	2.28E-32	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	1.37E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	1.37E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 70

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	3.17E-03	1.05E-04	3.49E-06	3.84E-09	4.64E-15	7.46E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	3.17E-03	1.05E-04	3.49E-06	3.84E-09	4.64E-15	7.46E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	5.93E-09	5.77E-09	5.61E-09	5.31E-09	4.77E-09	3.63E-09	2.76E-09	2.10E-09	1.60E-09	1.22E-09	7.05E-10
ag108m	6.81E-08	6.63E-08	6.45E-08	6.11E-08	5.48E-08	4.17E-08	3.17E-08	2.42E-08	1.84E-08	1.40E-08	8.11E-09
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	2.56E-11	1.66E-12	1.08E-13	4.52E-16	7.97E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	2.56E-11	1.66E-12	1.08E-13	4.52E-16	7.97E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	8.37E-10	5.26E-12	3.31E-14	1.31E-18	2.05E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	6.15E-08	3.87E-10	2.43E-12	9.64E-17	1.51E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 71

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14
cd113m	8.56E-04	6.70E-04	5.24E-04	3.20E-04	1.20E-04	1.03E-05	8.78E-07	7.52E-08	6.44E-09	5.51E-10	4.04E-12
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	3.13E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	3.27E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	5.08E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11
in115m	4.56E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 72

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	3.89E-08	5.17E-10	6.88E-12	1.22E-15	3.81E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 73

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	3.27E-04	3.07E-04	2.89E-04	2.54E-04	1.98E-04	1.05E-04	5.61E-05	2.99E-05	1.59E-05	8.47E-06	2.40E-06
sn121m	4.22E-04	3.96E-04	3.72E-04	3.28E-04	2.55E-04	1.36E-04	7.23E-05	3.85E-05	2.05E-05	1.09E-05	3.10E-06
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	2.29E-11	1.27E-15	7.01E-20	2.15E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16
te123m	3.26E-17	8.30E-22	2.11E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	1.26E-22	9.13E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	1.14E-02	3.22E-03	9.03E-04	7.13E-05	4.44E-07	1.36E-12	4.16E-18	1.28E-23	3.91E-29	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	2.80E-03	7.85E-04	2.21E-04	1.74E-05	1.08E-07	3.32E-13	1.02E-18	3.11E-24	9.54E-30	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	1.73E-01	1.73E-01	1.73E-01	1.73E-01	1.72E-01	1.72E-01	1.72E-01	1.72E-01	1.72E-01	1.72E-01	1.72E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 74

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sb126	2.42E-02	2.42E-02	2.42E-02	2.42E-02	2.41E-02	2.41E-02	2.41E-02	2.41E-02	2.41E-02	2.41E-02	2.41E-02
sb126m	1.73E-01	1.73E-01	1.73E-01	1.73E-01	1.72E-01	1.72E-01	1.72E-01	1.72E-01	1.72E-01	1.72E-01	1.72E-01

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	8.81E-12	7.96E-17	7.20E-22	6.85E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	8.99E-12	8.13E-17	7.35E-22	6.85E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 75

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	3.38E-10	2.43E-10	1.75E-10	9.05E-11	2.42E-11	8.98E-13	3.33E-14	1.24E-15	4.58E-17	1.70E-18	2.34E-21
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	1.92E-02	3.58E-03	6.66E-04	2.31E-05	2.77E-08	1.39E-15	6.96E-23	3.49E-30	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 76

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.06E+01	1.84E+01	1.64E+01	1.30E+01	8.19E+00	2.58E+00	8.12E-01	2.56E-01	8.06E-02	2.54E-02	2.52E-03
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	1.95E+01	1.74E+01	1.55E+01	1.23E+01	7.73E+00	2.44E+00	7.67E-01	2.42E-01	7.61E-02	2.40E-02	2.38E-03
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	3.31E-15	3.35E-19	3.38E-23	3.42E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 77

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	3.05E-03	3.59E-05	4.22E-07	5.84E-11	1.12E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	3.05E-03	3.59E-05	4.22E-07	5.84E-11	1.12E-18	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	4.27E-05	5.02E-07	5.91E-09	8.18E-13	1.57E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09
i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	1.38E-08	1.13E-08	9.32E-09	6.30E-09	2.88E-09	4.06E-10	5.73E-11	8.09E-12	1.14E-12	1.61E-13	3.21E-15
sm145	1.02E-11	2.48E-13	5.98E-15	3.49E-18	1.19E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	3.06E-09	1.63E-09	8.72E-10	2.49E-10	2.03E-11	3.85E-14	7.29E-17	1.38E-19	2.62E-22	4.97E-25	1.78E-30
sm146	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	6.69E-01	1.78E-01	4.76E-02	3.39E-03	1.72E-05	3.14E-11	5.75E-17	1.05E-22	1.92E-28	.00E+00	.00E+00
sm147	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	4.56E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 78

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sm148	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12
eu149	3.85E-22	4.76E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	2.54E-07	2.31E-07	2.10E-07	1.73E-07	1.17E-07	4.45E-08	1.69E-08	6.43E-09	2.44E-09	9.27E-10	1.34E-10
ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	1.87E+00	1.80E+00	1.73E+00	1.61E+00	1.38E+00	9.37E-01	6.37E-01	4.34E-01	2.95E-01	2.01E-01	9.29E-02
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	6.68E-01	5.15E-01	3.97E-01	2.36E-01	8.34E-02	6.19E-03	4.59E-04	3.41E-05	2.53E-06	1.88E-07	1.04E-09
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	6.41E-07	3.40E-09	1.80E-11	5.04E-16	3.96E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 79

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	4.63E-02	3.09E-02	2.06E-02	9.21E-03	1.83E-03	3.24E-05	5.74E-07	1.02E-08	1.80E-10	3.18E-12	9.95E-16
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	4.06E-02	1.94E-02	9.23E-03	2.10E-03	1.09E-04	6.60E-08	4.01E-11	2.44E-14	1.48E-17	9.01E-21	3.33E-27
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	6.69E-20	1.67E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 80
0
nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	15.0 yr	20.0 yr	30.0 yr	50.0 yr	100.0 yr	150.0 yr	200.0 yr	250.0 yr	300.0 yr	400.0 yr
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	1.11E-07	1.11E-07	1.10E-07	1.10E-07	1.08E-07	1.05E-07	1.02E-07	9.94E-08	9.66E-08	9.38E-08	8.86E-08
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	1.76E-19	9.32E-24	4.94E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	4.06E-10	6.68E-11	1.10E-11	2.97E-13	2.18E-16	3.15E-24	4.56E-32	.00E+00	.00E+00	.00E+00	.00E+00
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	9.47E+01	8.51E+01	7.71E+01	6.39E+01	4.54E+01	2.44E+01	1.79E+01	1.58E+01	1.51E+01	1.48E+01	1.46E+01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 81

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
he 4	2.72E+02	2.72E+02	2.74E+02	2.77E+02	2.84E+02	2.90E+02	2.96E+02	3.02E+02	3.07E+02	3.13E+02	3.18E+02
tl206	4.30E-14	4.31E-14	4.33E-14	4.37E-14	4.45E-14	4.54E-14	4.62E-14	4.69E-14	4.77E-14	4.84E-14	4.91E-14
tl207	1.78E-09	1.78E-09	1.78E-09	1.78E-09	1.78E-09	1.78E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09
tl208	1.71E-13	7.20E-14	1.43E-14	1.41E-14	1.44E-14	1.48E-14	1.51E-14	1.55E-14	1.58E-14	1.62E-14	1.65E-14
tl209	8.08E-11	8.09E-11	8.14E-11	8.25E-11	8.46E-11	8.68E-11	8.89E-11	9.10E-11	9.32E-11	9.53E-11	9.74E-11
pb206	1.13E+02	1.14E+02	1.15E+02	1.18E+02	1.24E+02	1.30E+02	1.36E+02	1.42E+02	1.48E+02	1.55E+02	1.61E+02
pb207	6.42E+00	6.44E+00	6.50E+00	6.64E+00	6.91E+00	7.18E+00	7.46E+00	7.73E+00	8.00E+00	8.27E+00	8.54E+00
pb208	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01
pb209	3.41E-07	3.42E-07	3.44E-07	3.48E-07	3.57E-07	3.66E-07	3.76E-07	3.85E-07	3.94E-07	4.03E-07	4.11E-07
pb210	9.28E-02	9.29E-02	9.34E-02	9.43E-02	9.61E-02	9.78E-02	9.95E-02	1.01E-01	1.03E-01	1.04E-01	1.06E-01
pb211	1.38E-08	1.38E-08	1.38E-08	1.38E-08	1.37E-08	1.37E-08	1.37E-08	1.37E-08	1.37E-08	1.37E-08	1.37E-08
pb212	1.01E-10	4.27E-11	8.49E-12	8.35E-12	8.56E-12	8.76E-12	8.97E-12	9.18E-12	9.38E-12	9.59E-12	9.80E-12
pb214	2.16E-07	2.16E-07	2.17E-07	2.20E-07	2.24E-07	2.28E-07	2.32E-07	2.36E-07	2.40E-07	2.43E-07	2.47E-07
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.24E+01	2.25E+01	2.28E+01	2.34E+01	2.47E+01	2.61E+01	2.75E+01	2.89E+01	3.04E+01	3.18E+01	3.34E+01
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	5.71E-05	5.72E-05	5.75E-05	5.80E-05	5.91E-05	6.02E-05	6.13E-05	6.23E-05	6.33E-05	6.43E-05	6.52E-05
bi211	8.16E-10	8.16E-10	8.16E-10	8.15E-10	8.15E-10	8.14E-10	8.14E-10	8.13E-10	8.13E-10	8.13E-10	8.13E-10
bi212	9.60E-12	4.05E-12	8.05E-13	7.92E-13	8.12E-13	8.31E-13	8.51E-13	8.70E-13	8.90E-13	9.10E-13	9.29E-13
bi213	8.12E-08	8.13E-08	8.18E-08	8.29E-08	8.51E-08	8.72E-08	8.94E-08	9.15E-08	9.37E-08	9.58E-08	9.79E-08
bi214	1.60E-07	1.61E-07	1.61E-07	1.63E-07	1.66E-07	1.69E-07	1.72E-07	1.75E-07	1.78E-07	1.81E-07	1.83E-07
po210	1.58E-03	1.58E-03	1.59E-03	1.60E-03	1.63E-03	1.66E-03	1.69E-03	1.72E-03	1.75E-03	1.77E-03	1.80E-03
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.01E-15	9.01E-15	9.02E-15	9.01E-15	9.00E-15	9.00E-15	8.99E-15	8.99E-15	8.99E-15	8.98E-15	8.98E-15
po212	5.05E-22	2.13E-22	4.23E-23	4.16E-23	4.27E-23	4.37E-23	4.47E-23	4.57E-23	4.68E-23	4.78E-23	4.88E-23
po213	1.22E-16	1.22E-16	1.23E-16	1.25E-16	1.28E-16	1.31E-16	1.34E-16	1.38E-16	1.41E-16	1.44E-16	1.47E-16
po214	2.21E-14	2.21E-14	2.22E-14	2.24E-14	2.29E-14	2.33E-14	2.37E-14	2.41E-14	2.45E-14	2.48E-14	2.52E-14

po215	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14
po216	3.91E-16	1.65E-16	3.27E-17	3.22E-17	3.30E-17	3.38E-17	3.46E-17	3.54E-17	3.62E-17	3.70E-17	3.78E-17
po218	2.55E-08	2.55E-08	2.56E-08	2.59E-08	2.64E-08	2.69E-08	2.73E-08	2.78E-08	2.82E-08	2.87E-08	2.91E-08
at217	9.77E-13	9.78E-13	9.85E-13	9.98E-13	1.02E-12	1.05E-12	1.08E-12	1.10E-12	1.13E-12	1.15E-12	1.18E-12
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	2.61E-11	2.61E-11	2.61E-11	2.61E-11	2.61E-11	2.61E-11	2.60E-11	2.60E-11	2.60E-11	2.60E-11	2.60E-11
rn220	1.53E-13	6.43E-14	1.28E-14	1.26E-14	1.29E-14	1.32E-14	1.35E-14	1.38E-14	1.41E-14	1.44E-14	1.48E-14
rn222	4.61E-05	4.61E-05	4.64E-05	4.68E-05	4.77E-05	4.86E-05	4.94E-05	5.03E-05	5.11E-05	5.18E-05	5.26E-05
fr221	9.06E-09	9.07E-09	9.13E-09	9.25E-09	9.49E-09	9.73E-09	9.97E-09	1.02E-08	1.04E-08	1.07E-08	1.09E-08
fr223	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	6.63E-06	6.63E-06	6.63E-06	6.63E-06	6.63E-06	6.62E-06	6.62E-06	6.61E-06	6.61E-06	6.61E-06	6.61E-06
ra224	8.83E-10	3.72E-10	7.40E-11	7.29E-11	7.47E-11	7.65E-11	7.83E-11	8.01E-11	8.19E-11	8.37E-11	8.55E-11
ra225	4.01E-05	4.02E-05	4.04E-05	4.10E-05	4.20E-05	4.31E-05	4.42E-05	4.52E-05	4.63E-05	4.73E-05	4.84E-05
ra226	7.17E+00	7.18E+00	7.21E+00	7.28E+00	7.42E+00	7.56E+00	7.69E+00	7.82E+00	7.94E+00	8.07E+00	8.18E+00
ra228	3.90E-08	3.90E-08	3.93E-08	3.99E-08	4.09E-08	4.20E-08	4.31E-08	4.42E-08	4.53E-08	4.63E-08	4.74E-08
ac225	2.71E-05	2.71E-05	2.73E-05	2.77E-05	2.84E-05	2.91E-05	2.98E-05	3.06E-05	3.13E-05	3.20E-05	3.27E-05
ac227	4.69E-03	4.69E-03	4.70E-03	4.69E-03	4.69E-03	4.69E-03	4.68E-03	4.68E-03	4.68E-03	4.68E-03	4.68E-03
ac228	4.76E-12	4.77E-12	4.80E-12	4.86E-12	5.00E-12	5.13E-12	5.26E-12	5.39E-12	5.52E-12	5.66E-12	5.79E-12
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05
th228	1.72E-07	7.23E-08	1.44E-08	1.42E-08	1.45E-08	1.49E-08	1.52E-08	1.56E-08	1.59E-08	1.63E-08	1.66E-08
th229	7.94E+00	7.95E+00	8.00E+00	8.11E+00	8.32E+00	8.53E+00	8.74E+00	8.95E+00	9.16E+00	9.37E+00	9.58E+00
th230	3.52E+02	3.52E+02	3.54E+02	3.57E+02	3.63E+02	3.70E+02	3.76E+02	3.82E+02	3.88E+02	3.93E+02	3.99E+02
th231	6.25E-07	6.25E-07	6.25E-07	6.26E-07	6.27E-07	6.28E-07	6.29E-07	6.30E-07	6.31E-07	6.32E-07	6.33E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 82

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
th232	9.70E+01	9.71E+01	9.78E+01	9.91E+01	1.02E+02	1.05E+02	1.07E+02	1.10E+02	1.13E+02	1.15E+02	1.18E+02
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04
pa231	7.19E+00	7.19E+00	7.19E+00	7.18E+00	7.18E+00	7.17E+00	7.17E+00	7.17E+00	7.16E+00	7.16E+00	7.16E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.24E-04	3.24E-04	3.23E-04	3.23E-04	3.23E-04	3.23E-04	3.23E-04	3.23E-04	3.22E-04	3.22E-04	3.22E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	5.73E-06	2.14E-06	4.79E-08	3.32E-08	3.28E-08	3.24E-08	3.20E-08	3.17E-08	3.13E-08	3.09E-08	3.05E-08
u233	1.88E+02	1.88E+02	1.89E+02	1.91E+02	1.96E+02	2.00E+02	2.04E+02	2.08E+02	2.13E+02	2.17E+02	2.21E+02
u234	2.38E+03	2.38E+03	2.38E+03	2.37E+03	2.36E+03	2.35E+03	2.34E+03	2.33E+03	2.32E+03	2.31E+03	2.30E+03
u235	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.54E+05	1.55E+05	1.55E+05	1.55E+05	1.55E+05	1.56E+05
u236	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04
u237	3.62E-19	2.95E-21	6.35E-23	5.85E-23	4.97E-23	4.22E-23	3.59E-23	3.05E-23	2.59E-23	2.20E-23	1.87E-23
u238	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.29E-31	1.29E-31	1.32E-31	1.37E-31	1.48E-31	1.59E-31	1.70E-31	1.80E-31	1.91E-31	2.01E-31	2.12E-31
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	6.32E-04	6.31E-04	6.29E-04	6.26E-04	6.18E-04	6.11E-04	6.03E-04	5.96E-04	5.89E-04	5.82E-04	5.75E-04
np237	9.53E+03	9.53E+03	9.52E+03	9.52E+03	9.51E+03	9.51E+03	9.50E+03	9.50E+03	9.49E+03	9.48E+03	9.48E+03
np238	1.31E-13	8.02E-14	6.87E-15	5.03E-17	2.70E-21	1.45E-25	7.80E-30	4.19E-34	.00E+00	.00E+00	.00E+00
np239	3.45E-11	3.41E-11	3.26E-11	2.97E-11	2.46E-11	2.04E-11	1.69E-11	1.40E-11	1.16E-11	9.59E-12	7.95E-12
np240m	1.10E-33	1.10E-33	1.13E-33	1.17E-33	1.26E-33	1.36E-33	1.45E-33	1.54E-33	1.63E-33	1.72E-33	1.81E-33
np240	1.13E-35	1.13E-35	1.16E-35	1.21E-35	1.30E-35	1.39E-35	1.49E-35	1.58E-35	1.68E-35	1.77E-35	1.86E-35
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	1.42E-09	1.42E-09	1.41E-09	1.40E-09	1.39E-09	1.37E-09	1.35E-09	1.34E-09	1.32E-09	1.31E-09	1.29E-09
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	2.78E-02	1.26E-02	2.43E-04	8.98E-08	3.22E-14	1.07E-18	5.76E-23	3.10E-27	1.66E-31	8.93E-36	4.80E-40
pu239	5.74E+03	5.72E+03	5.64E+03	5.48E+03	5.18E+03	4.89E+03	4.61E+03	4.36E+03	4.11E+03	3.88E+03	3.67E+03
pu240	5.63E+01	5.57E+01	5.29E+01	4.76E+01	3.85E+01	3.12E+01	2.52E+01	2.04E+01	1.65E+01	1.34E+01	1.08E+01
pu241	1.19E-11	9.74E-14	2.10E-15	1.93E-15	1.64E-15	1.39E-15	1.18E-15	1.01E-15	8.55E-16	7.26E-16	6.17E-16
pu242	1.17E-02	1.17E-02	1.17E-02	1.17E-02	1.17E-02	1.16E-02	1.16E-02	1.15E-02	1.15E-02	1.15E-02	1.14E-02
pu243	8.11E-28	8.11E-28	8.11E-28	8.11E-28	8.11E-28	8.11E-28	8.11E-28	8.11E-28	8.11E-28	8.11E-28	8.11E-28
pu244	6.52E-21	6.54E-21	6.68E-21	6.95E-21	7.50E-21	8.04E-21	8.59E-21	9.13E-21	9.66E-21	1.02E-20	1.07E-20
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	4.81E-02	4.10E-02	1.84E-02	3.71E-03	1.50E-04	6.09E-06	2.47E-07	1.00E-08	4.06E-10	1.65E-11	6.87E-13
am242m	7.21E-07	4.41E-07	3.77E-08	2.77E-10	1.49E-14	7.98E-19	4.29E-23	2.30E-27	1.24E-31	6.65E-36	3.57E-40
am242	9.30E-12	5.69E-12	4.87E-13	3.57E-15	1.92E-19	1.03E-23	5.53E-28	2.97E-32	1.61E-36	.00E+00	.00E+00
am243	4.01E-05	3.97E-05	3.79E-05	3.45E-05	2.86E-05	2.37E-05	1.96E-05	1.62E-05	1.35E-05	1.11E-05	9.24E-06
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 83

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cm242	1.88E-09	1.15E-09	9.83E-11	7.21E-13	3.88E-17	2.09E-21	1.12E-25	6.02E-30	3.23E-34	1.74E-38	1.02E-42
cm243	1.40E-17	1.23E-18	6.44E-24	1.76E-34	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	1.36E-16	2.95E-18	1.42E-26	3.42E-43	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	1.32E-12	1.31E-12	1.26E-12	1.16E-12	9.87E-13	8.38E-13	7.12E-13	6.05E-13	5.14E-13	4.37E-13	3.71E-13
cm246	8.71E-15	8.59E-15	7.98E-15	6.89E-15	5.14E-15	3.84E-15	2.86E-15	2.13E-15	1.59E-15	1.19E-15	8.86E-16
cm247	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17
cm248	1.49E-19	1.49E-19	1.49E-19	1.49E-19	1.48E-19	1.48E-19	1.47E-19	1.46E-19	1.46E-19	1.45E-19	1.45E-19
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	5.20E-35	5.18E-35	5.08E-35	4.88E-35	4.51E-35	4.16E-35	3.84E-35	3.55E-35	3.28E-35	3.03E-35	2.79E-35
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	7.47E-25	6.13E-25	2.28E-25	3.15E-26	6.04E-28	1.16E-29	2.21E-31	4.23E-33	8.11E-35	1.55E-36	2.97E-38
cf250	2.20E-38	5.54E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	1.09E-31	1.01E-31	6.88E-32	3.18E-32	6.79E-33	1.45E-33	3.10E-34	6.61E-35	1.41E-35	3.02E-36	6.44E-37
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 84

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	9.35E-06	9.36E-06	9.41E-06	9.50E-06	9.69E-06	9.86E-06	1.00E-05	1.02E-05	1.04E-05	1.05E-05	1.07E-05

tl207	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01
tl208	5.06E-05	2.13E-05	4.24E-06	4.17E-06	4.28E-06	4.38E-06	4.48E-06	4.58E-06	4.69E-06	4.79E-06	4.89E-06
tl209	3.30E-02	3.31E-02	3.33E-02	3.37E-02	3.46E-02	3.55E-02	3.64E-02	3.72E-02	3.81E-02	3.90E-02	3.98E-02
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	1.57E+00	1.58E+00	1.59E+00	1.61E+00	1.65E+00	1.69E+00	1.73E+00	1.77E+00	1.82E+00	1.86E+00	1.90E+00
pb210	7.08E+00	7.09E+00	7.13E+00	7.20E+00	7.34E+00	7.47E+00	7.60E+00	7.73E+00	7.85E+00	7.97E+00	8.09E+00
pb211	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01
pb212	1.41E-04	5.93E-05	1.18E-05	1.16E-05	1.19E-05	1.22E-05	1.25E-05	1.28E-05	1.30E-05	1.33E-05	1.36E-05
pb214	7.09E+00	7.10E+00	7.13E+00	7.20E+00	7.34E+00	7.47E+00	7.60E+00	7.73E+00	7.86E+00	7.98E+00	8.09E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	7.09E+00	7.09E+00	7.13E+00	7.20E+00	7.34E+00	7.47E+00	7.60E+00	7.73E+00	7.85E+00	7.97E+00	8.09E+00
bi211	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01
bi212	1.41E-04	5.93E-05	1.18E-05	1.16E-05	1.19E-05	1.22E-05	1.25E-05	1.28E-05	1.30E-05	1.33E-05	1.36E-05
bi213	1.57E+00	1.58E+00	1.59E+00	1.61E+00	1.65E+00	1.69E+00	1.73E+00	1.77E+00	1.82E+00	1.86E+00	1.90E+00
bi214	7.09E+00	7.10E+00	7.13E+00	7.20E+00	7.34E+00	7.47E+00	7.60E+00	7.73E+00	7.86E+00	7.98E+00	8.09E+00
po210	7.09E+00	7.09E+00	7.13E+00	7.20E+00	7.34E+00	7.47E+00	7.60E+00	7.73E+00	7.85E+00	7.97E+00	8.09E+00
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.34E-04	9.34E-04	9.35E-04	9.34E-04	9.33E-04	9.33E-04	9.32E-04	9.32E-04	9.31E-04	9.31E-04	9.31E-04
po212	9.02E-05	3.80E-05	7.56E-06	7.44E-06	7.62E-06	7.80E-06	7.99E-06	8.17E-06	8.36E-06	8.54E-06	8.72E-06
po213	1.54E+00	1.54E+00	1.55E+00	1.57E+00	1.61E+00	1.65E+00	1.70E+00	1.74E+00	1.78E+00	1.82E+00	1.86E+00
po214	7.09E+00	7.10E+00	7.13E+00	7.20E+00	7.34E+00	7.47E+00	7.60E+00	7.73E+00	7.85E+00	7.97E+00	8.09E+00
po215	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01
po216	1.41E-04	5.93E-05	1.18E-05	1.16E-05	1.19E-05	1.22E-05	1.25E-05	1.28E-05	1.30E-05	1.33E-05	1.36E-05
po218	7.09E+00	7.10E+00	7.13E+00	7.20E+00	7.34E+00	7.47E+00	7.61E+00	7.73E+00	7.86E+00	7.98E+00	8.09E+00
at217	1.57E+00	1.58E+00	1.59E+00	1.61E+00	1.65E+00	1.69E+00	1.73E+00	1.77E+00	1.82E+00	1.86E+00	1.90E+00
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01
rn220	1.41E-04	5.93E-05	1.18E-05	1.16E-05	1.19E-05	1.22E-05	1.25E-05	1.28E-05	1.30E-05	1.33E-05	1.36E-05
rn222	7.09E+00	7.10E+00	7.13E+00	7.20E+00	7.34E+00	7.47E+00	7.61E+00	7.73E+00	7.86E+00	7.98E+00	8.09E+00
fr221	1.57E+00	1.58E+00	1.59E+00	1.61E+00	1.65E+00	1.69E+00	1.73E+00	1.77E+00	1.82E+00	1.86E+00	1.90E+00
fr223	4.69E-03	4.69E-03	4.69E-03	4.69E-03	4.68E-03	4.68E-03	4.68E-03	4.68E-03	4.67E-03	4.67E-03	4.67E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01
ra224	1.41E-04	5.93E-05	1.18E-05	1.16E-05	1.19E-05	1.22E-05	1.25E-05	1.28E-05	1.30E-05	1.33E-05	1.36E-05
ra225	1.57E+00	1.58E+00	1.59E+00	1.61E+00	1.65E+00	1.69E+00	1.73E+00	1.77E+00	1.82E+00	1.86E+00	1.90E+00
ra226	7.09E+00	7.10E+00	7.13E+00	7.20E+00	7.34E+00	7.47E+00	7.61E+00	7.73E+00	7.86E+00	7.98E+00	8.09E+00
ra228	1.06E-05	1.07E-05	1.07E-05	1.09E-05	1.12E-05	1.15E-05	1.18E-05	1.21E-05	1.24E-05	1.26E-05	1.29E-05
ac225	1.57E+00	1.58E+00	1.59E+00	1.61E+00	1.65E+00	1.69E+00	1.73E+00	1.77E+00	1.82E+00	1.86E+00	1.90E+00
ac227	3.40E-01	3.40E-01	3.40E-01	3.40E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01
ac228	1.06E-05	1.07E-05	1.07E-05	1.09E-05	1.12E-05	1.15E-05	1.18E-05	1.21E-05	1.24E-05	1.26E-05	1.29E-05
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	3.35E-01	3.35E-01	3.35E-01	3.35E-01	3.35E-01	3.35E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01
th228	1.41E-04	5.93E-05	1.18E-05	1.16E-05	1.19E-05	1.22E-05	1.25E-05	1.28E-05	1.30E-05	1.33E-05	1.36E-05
th229	1.57E+00	1.58E+00	1.59E+00	1.61E+00	1.65E+00	1.69E+00	1.73E+00	1.77E+00	1.82E+00	1.86E+00	1.90E+00
th230	7.25E+00	7.26E+00	7.29E+00	7.36E+00	7.50E+00	7.63E+00	7.75E+00	7.88E+00	8.00E+00	8.11E+00	8.23E+00
th231	3.32E-01	3.32E-01	3.32E-01	3.33E-01	3.33E-01	3.34E-01	3.35E-01	3.35E-01	3.36E-01	3.36E-01	3.37E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 85

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
th232	1.06E-05	1.07E-05	1.07E-05	1.09E-05	1.12E-05	1.15E-05	1.18E-05	1.21E-05	1.24E-05	1.26E-05	1.29E-05
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
pa231	3.40E-01	3.40E-01	3.40E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.38E-01	3.38E-01	3.38E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.72E+00	6.72E+00	6.72E+00	6.71E+00	6.71E+00	6.71E+00	6.70E+00	6.70E+00	6.69E+00	6.69E+00	6.68E+00
pa234m	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
pa234	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	1.27E-04	4.73E-05	1.06E-06	7.34E-07	7.25E-07	7.16E-07	7.08E-07	6.99E-07	6.91E-07	6.83E-07	6.74E-07
u233	1.81E+00	1.81E+00	1.82E+00	1.84E+00	1.89E+00	1.93E+00	1.97E+00	2.01E+00	2.05E+00	2.09E+00	2.13E+00
u234	1.48E+01	1.48E+01	1.48E+01	1.48E+01	1.47E+01	1.46E+01	1.46E+01	1.45E+01	1.44E+01	1.44E+01	1.43E+01
u235	3.32E-01	3.32E-01	3.32E-01	3.33E-01	3.33E-01	3.34E-01	3.35E-01	3.35E-01	3.36E-01	3.36E-01	3.37E-01
u236	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00
u237	2.96E-14	2.41E-16	5.18E-18	4.78E-18	4.06E-18	3.45E-18	2.93E-18	2.49E-18	2.11E-18	1.80E-18	1.52E-18
u238	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.19E-25	1.20E-25	1.22E-25	1.27E-25	1.37E-25	1.47E-25	1.57E-25	1.67E-25	1.77E-25	1.87E-25	1.96E-25
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	8.32E-06	8.32E-06	8.29E-06	8.24E-06	8.15E-06	8.05E-06	7.95E-06	7.86E-06	7.76E-06	7.67E-06	7.58E-06
np237	6.72E+00	6.72E+00	6.72E+00	6.71E+00	6.71E+00	6.71E+00	6.70E+00	6.70E+00	6.69E+00	6.69E+00	6.68E+00
np238	3.40E-08	2.08E-08	1.78E-09	1.30E-11	7.01E-16	3.76E-20	2.02E-24	1.09E-28	.00E+00	.00E+00	.00E+00
np239	8.00E-06	7.92E-06	7.56E-06	6.88E-06	5.70E-06	4.72E-06	3.91E-06	3.24E-06	2.69E-06	2.23E-06	1.84E-06
np240m	1.19E-25	1.20E-25	1.22E-25	1.27E-25	1.37E-25	1.47E-25	1.57E-25	1.67E-25	1.77E-25	1.87E-25	1.96E-25
np240	1.43E-28	1.44E-28	1.47E-28	1.53E-28	1.65E-28	1.77E-28	1.89E-28	2.00E-28	2.12E-28	2.24E-28	2.36E-28
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	7.41E-07	7.40E-07	7.38E-07	7.34E-07	7.25E-07	7.16E-07	7.08E-07	6.99E-07	6.91E-07	6.83E-07	6.74E-07
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	4.76E-01	2.16E-01	4.15E-03	1.54E-06	5.51E-13	1.84E-17	9.87E-22	5.30E-26	2.85E-30	.00E+00	.00E+00
pu239	3.56E+02	3.55E+02	3.50E+02	3.40E+02	3.21E+02	3.03E+02	2.86E+02	2.70E+02	2.55E+02	2.41E+02	2.28E+02
pu240	1.28E+01	1.27E+01	1.20E+01	1.08E+01	8.74E+00	7.08E+00	5.73E+00	4.64E+00	3.76E+00	3.04E+00	2.46E+00
pu241	1.24E-09	1.01E-11	2.17E-13	2.00E-13	1.70E-13	1.44E-13	1.23E-13	1.04E-13	8.84E-14	7.51E-14	6.38E-14
pu242	4.65E-05	4.65E-05	4.64E-05	4.63E-05	4.62E-05	4.60E-05	4.58E-05	4.56E-05	4.55E-05	4.53E-05	4.51E-05
pu243	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21
pu244	1.19E-25	1.20E-25	1.22E-25	1.27E-25	1.37E-25	1.47E-25	1.57E-25	1.67E-25	1.77E-25	1.87E-25	1.97E-25
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	1.65E-01	1.41E-01	6.32E-02	1.27E-02	5.16E-04	2.09E-05	8.48E-07	3.44E-08	1.39E-09	5.66E-11	2.36E-12
am242m	7.56E-06	4.62E-06	3.96E-07	2.90E-09	1.56E-13	8.37E-18	4.49E-22	2.41E-26	1.30E-30	.00E+00	.00E+00
am242	7.52E-06	4.60E-06	3.94E-07	2.89E-09	1.55E-13	8.33E-18	4.47E-22	2.40E-26	1.30E-30	.00E+00	.00E+00
am243	8.00E-06	7.92E-06	7.56E-06	6.88E-06	5.70E-06	4.72E-06	3.91E-06	3.24E-06	2.69E-06	2.23E-06	1.84E-06
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 86

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cm242	6.22E-06	3.80E-06	3.26E-07	2.39E-09	1.29E-13	6.91E-18	3.71E-22	1.99E-26	1.07E-30	.00E+00	.00E+00
cm243	7.24E-16	6.36E-17	3.33E-22	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	1.10E-14	2.39E-16	1.15E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	2.27E-13	2.26E-13	2.17E-13	2.00E-13	1.70E-13	1.44E-13	1.22E-13	1.04E-13	8.83E-14	7.50E-14	6.37E-14
cm246	2.68E-15	2.64E-15	2.45E-15	2.12E-15	1.58E-15	1.18E-15	8.79E-16	6.56E-16	4.89E-16	3.65E-16	2.72E-16
cm247	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21
cm248	6.33E-22	6.33E-22	6.32E-22	6.31E-22	6.29E-22	6.26E-22	6.23E-22	6.21E-22	6.18E-22	6.16E-22	6.13E-22
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	3.06E-24	2.51E-24	9.34E-25	1.29E-25	2.47E-27	4.74E-29	9.13E-31	2.28E-32	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	1.83E-31	1.60E-31	1.14E-31	4.56E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	4.99E+02	4.98E+02	4.92E+02	4.82E+02	4.62E+02	4.44E+02	4.28E+02	4.12E+02	3.98E+02	3.84E+02	3.71E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 87

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
h 3	8.15E-16	2.95E-18	1.82E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04
li 7	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06
be 9	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05
be 10	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.05E-04	1.05E-04	1.05E-04
c 14	1.20E-06	1.19E-06	1.12E-06	9.90E-07	7.77E-07	6.10E-07	4.79E-07	3.76E-07	2.95E-07	2.32E-07	1.82E-07
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08
zn 68	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08
zn 70	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni	74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu	74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn	74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga	74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge	74	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03
co	75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni	75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu	75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn	75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga	75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge	75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge	75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as	75	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01
ni	76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu	76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 88

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

		initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
zn	76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga	76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge	76	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01
as	76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se	76	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04
ni	77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu	77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn	77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga	77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge	77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge	77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as	77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se	77	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01
se	77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni	78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu	78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn	78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga	78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge	78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as	78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se	78	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00
cu	79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn	79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga	79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge	79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as	79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se	79	3.80E+00	3.80E+00	3.80E+00	3.79E+00	3.77E+00	3.76E+00	3.74E+00	3.73E+00	3.71E+00	3.69E+00	3.68E+00
se	79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br	79	3.84E-01	3.85E-01	3.89E-01	3.97E-01	4.13E-01	4.29E-01	4.45E-01	4.60E-01	4.76E-01	4.91E-01	5.07E-01
br	79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr	79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu	80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn	80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga	80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge	80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as	80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se	80	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01
br	80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br	80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr	80	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04

cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01
kr 81	8.02E-07	8.02E-07	8.00E-07	7.98E-07	7.93E-07	7.87E-07	7.82E-07	7.77E-07	7.72E-07	7.67E-07	7.62E-07
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 89

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	1.56E-14	2.42E-17	2.20E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02
rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02
sr 87	6.57E-04	6.58E-04	6.60E-04	6.63E-04	6.71E-04	6.78E-04	6.85E-04	6.93E-04	7.00E-04	7.07E-04	7.15E-04
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 90

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	8.61E-06	7.33E-07	3.29E-12	6.65E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	2.24E-09	1.91E-10	8.56E-16	1.73E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02
nb 91	4.89E-12	4.41E-12	2.65E-12	9.57E-13	1.25E-13	1.62E-14	2.11E-15	2.75E-16	3.58E-17	4.66E-18	6.07E-19
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02
nb 92	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	4.49E+02	4.49E+02	4.49E+02	4.48E+02	4.48E+02	4.47E+02	4.47E+02	4.47E+02	4.46E+02	4.46E+02	4.45E+02
nb 93	9.52E+00	9.54E+00	9.64E+00	9.85E+00	1.03E+01	1.07E+01	1.11E+01	1.15E+01	1.19E+01	1.23E+01	1.27E+01
nb 93m	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.72E-03	4.72E-03	4.71E-03	4.71E-03	4.70E-03	4.70E-03	4.70E-03
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 91

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02
nb 94	5.41E-04	5.39E-04	5.30E-04	5.12E-04	4.78E-04	4.47E-04	4.17E-04	3.90E-04	3.64E-04	3.40E-04	3.18E-04
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02
tc 98	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	6.20E+02	6.20E+02	6.19E+02	6.16E+02	6.12E+02	6.08E+02	6.04E+02	6.01E+02	5.97E+02	5.93E+02	5.89E+02
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	1.00E+02	1.01E+02	1.02E+02	1.04E+02	1.08E+02	1.12E+02	1.16E+02	1.20E+02	1.24E+02	1.27E+02	1.31E+02

rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 92

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 93
0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.53E+01	4.53E+01	4.53E+01
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	2.11E-01	2.11E-01	2.14E-01	2.18E-01	2.28E-01	2.38E-01	2.48E-01	2.57E-01	2.67E-01	2.77E-01	2.86E-01
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01
ag108	9.60E-19	5.56E-19	3.63E-20	1.55E-22	2.81E-27	5.10E-32	9.27E-37	3.10E-41	.00E+00	.00E+00	.00E+00
ag108m	3.11E-10	1.80E-10	1.18E-11	5.01E-14	9.11E-19	1.65E-23	3.00E-28	5.46E-33	9.91E-38	1.82E-42	.00E+00
cd108	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00
ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 94
0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cd110	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01
cd113m	1.80E-14	1.32E-16	2.79E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 95

0

nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sn115	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02

tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 96

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	2.51E-12	7.12E-13	1.31E-15	4.40E-21	4.99E-32	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	5.76E-08	1.63E-08	3.00E-11	1.01E-16	1.15E-27	1.30E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00
te123	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	6.06E+00	6.06E+00	6.04E+00	6.00E+00	5.91E+00	5.83E+00	5.75E+00	5.67E+00	5.59E+00	5.52E+00	5.44E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 97

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sb126	2.88E-07	2.88E-07	2.87E-07	2.85E-07	2.81E-07	2.77E-07	2.73E-07	2.69E-07	2.66E-07	2.62E-07	2.59E-07
sb126m	2.19E-09	2.19E-09	2.18E-09	2.17E-09	2.14E-09	2.11E-09	2.08E-09	2.05E-09	2.02E-09	1.99E-09	1.97E-09
te126	2.22E+00	2.22E+00	2.25E+00	2.29E+00	2.37E+00	2.45E+00	2.53E+00	2.61E+00	2.69E+00	2.77E+00	2.84E+00
xe126	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02
xe129	2.51E-01	2.51E-01	2.54E-01	2.59E-01	2.70E-01	2.81E-01	2.92E-01	3.03E-01	3.14E-01	3.25E-01	3.36E-01
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 98

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06

in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03
ba133	9.14E-24	1.26E-26	6.19E-41	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	1.48E+01	1.48E+01	1.50E+01	1.53E+01	1.59E+01	1.66E+01	1.72E+01	1.78E+01	1.84E+01	1.91E+01	1.97E+01
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 99

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.89E-05	2.87E-06	2.75E-11	2.54E-21	2.15E-41	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03
ba137m	4.42E-12	4.38E-13	4.21E-18	3.88E-28	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03
la138	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 100

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02

i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02
pm145	2.30E-17	4.59E-19	1.44E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02
pm146	4.03E-33	1.45E-38	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 101

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sm148	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02
eu150	2.01E-12	2.90E-13	1.81E-17	7.10E-26	1.05E-42	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	3.53E-03	1.63E-03	3.47E-05	1.57E-08	3.20E-15	6.52E-22	1.33E-28	2.71E-35	5.50E-42	.00E+00	.00E+00
eu151	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01
eu152	5.87E-12	3.23E-14	1.64E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 102

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sm154	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01
eu154	3.68E-18	1.15E-21	3.46E-39	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	6.75E-30	2.50E-36	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 103

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
dy161	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	4.93E-08	4.66E-08	3.49E-08	1.96E-08	6.17E-09	1.94E-09	6.12E-10	1.93E-10	6.07E-11	1.91E-11	6.02E-12
er166	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04
er167	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07
total	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 104

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
h 3	7.88E-12	2.85E-14	1.76E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	2.37E-06	2.37E-06	2.37E-06	2.37E-06	2.36E-06	2.36E-06	2.36E-06	2.36E-06	2.36E-06	2.35E-06	2.35E-06
c 14	5.36E-06	5.29E-06	4.98E-06	4.41E-06	3.46E-06	2.72E-06	2.14E-06	1.68E-06	1.32E-06	1.03E-06	8.11E-07
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 105

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	5.22E-02	5.22E-02	5.21E-02	5.20E-02	5.18E-02	5.16E-02	5.13E-02	5.11E-02	5.09E-02	5.07E-02	5.05E-02
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	1.66E-08	1.66E-08	1.66E-08	1.65E-08	1.64E-08	1.63E-08	1.62E-08	1.61E-08	1.60E-08	1.59E-08	1.58E-08
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part. B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 106

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	6.11E-12	9.50E-15	8.63E-29	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 107

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	1.22E-03	1.04E-04	4.65E-10	9.38E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	1.22E-03	1.04E-04	4.65E-10	9.39E-21	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	2.83E-11	2.55E-11	1.53E-11	5.53E-12	7.20E-13	9.37E-14	1.22E-14	1.59E-15	2.07E-16	2.69E-17	3.51E-18
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 108

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	1.01E-04	1.01E-04	9.94E-05	9.60E-05	8.97E-05	8.38E-05	7.82E-05	7.31E-05	6.82E-05	6.37E-05	5.95E-05
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	1.06E+01	1.06E+01	1.06E+01	1.05E+01	1.05E+01	1.04E+01	1.03E+01	1.03E+01	1.02E+01	1.01E+01	1.01E+01
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 109

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 110

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	7.05E-10	4.09E-10	2.67E-11	1.14E-13	2.07E-18	3.75E-23	6.81E-28	2.28E-32	.00E+00	.00E+00	.00E+00
ag108m	8.11E-09	4.70E-09	3.07E-10	1.31E-12	2.37E-17	4.31E-22	7.83E-27	1.37E-31	.00E+00	.00E+00	.00E+00
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 111

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14
cd113m	4.04E-12	2.96E-14	6.26E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 112

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 113

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	2.40E-06	6.82E-07	1.25E-09	4.21E-15	4.78E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	3.10E-06	8.78E-07	1.61E-09	5.43E-15	6.16E-26	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	1.72E-01	1.72E-01	1.71E-01	1.70E-01	1.68E-01	1.66E-01	1.63E-01	1.61E-01	1.59E-01	1.57E-01	1.54E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 114

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sb126	2.41E-02	2.41E-02	2.40E-02	2.38E-02	2.35E-02	2.32E-02	2.29E-02	2.25E-02	2.22E-02	2.19E-02	2.16E-02
sb126m	1.72E-01	1.72E-01	1.71E-01	1.70E-01	1.68E-01	1.66E-01	1.63E-01	1.61E-01	1.59E-01	1.57E-01	1.54E-01

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 115

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	2.34E-21	3.21E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.21E+00
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 116

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	2.52E-03	2.50E-04	2.40E-09	2.21E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	2.38E-03	2.36E-04	2.26E-09	2.09E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 117

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09
i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	3.21E-15	6.39E-17	2.00E-25	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	1.78E-30	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 118

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sm148	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	1.34E-10	1.93E-11	1.21E-15	4.73E-24	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	9.29E-02	4.30E-02	9.14E-04	4.13E-07	8.42E-14	1.72E-20	3.50E-27	.00E+00	.00E+00	.00E+00	.00E+00
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	1.04E-09	5.71E-12	2.90E-23	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 119

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	9.95E-16	3.11E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	3.33E-27	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 120

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	500.0 yr	1000.0 yr	2000.0 yr	4000.0 yr	6000.0 yr	8000.0 yr	10000.0 yr	12000.0 yr	14000.0 yr	16000.0 yr
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	8.86E-08	8.36E-08	6.26E-08	3.51E-08	1.11E-08	3.49E-09	1.10E-09	3.46E-10	1.09E-10	3.43E-11	1.08E-11
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	1.46E+01	1.46E+01	1.45E+01	1.45E+01	1.44E+01	1.43E+01	1.42E+01	1.42E+01	1.41E+01	1.40E+01	1.39E+01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 121

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
he 4	3.18E+02	3.23E+02	3.27E+02	3.32E+02	3.36E+02	3.40E+02	3.44E+02	3.48E+02	3.52E+02	3.59E+02	3.63E+02
tl206	4.91E-14	4.98E-14	5.05E-14	5.11E-14	5.18E-14	5.24E-14	5.30E-14	5.36E-14	5.41E-14	5.52E-14	5.57E-14
tl207	1.77E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09
tl208	1.65E-14	1.69E-14	1.72E-14	1.76E-14	1.79E-14	1.83E-14	1.86E-14	1.90E-14	1.93E-14	2.00E-14	2.04E-14
tl209	9.74E-11	9.95E-11	1.02E-10	1.04E-10	1.06E-10	1.08E-10	1.10E-10	1.12E-10	1.14E-10	1.18E-10	1.20E-10
pb206	1.61E+02	1.68E+02	1.74E+02	1.81E+02	1.88E+02	1.95E+02	2.02E+02	2.09E+02	2.16E+02	2.30E+02	2.38E+02
pb207	8.54E+00	8.81E+00	9.09E+00	9.36E+00	9.63E+00	9.90E+00	1.02E+01	1.04E+01	1.07E+01	1.13E+01	1.15E+01
pb208	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01
pb209	4.11E-07	4.20E-07	4.29E-07	4.38E-07	4.47E-07	4.55E-07	4.64E-07	4.72E-07	4.81E-07	4.97E-07	5.05E-07
pb210	1.06E-01	1.07E-01	1.09E-01	1.10E-01	1.12E-01	1.13E-01	1.14E-01	1.16E-01	1.17E-01	1.19E-01	1.20E-01
pb211	1.37E-08	1.37E-08	1.37E-08	1.37E-08	1.37E-08	1.37E-08	1.37E-08	1.37E-08	1.37E-08	1.37E-08	1.37E-08
pb212	9.80E-12	1.00E-11	1.02E-11	1.04E-11	1.06E-11	1.08E-11	1.10E-11	1.12E-11	1.14E-11	1.19E-11	1.21E-11
pb214	2.47E-07	2.50E-07	2.54E-07	2.57E-07	2.60E-07	2.63E-07	2.66E-07	2.69E-07	2.72E-07	2.77E-07	2.80E-07
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	3.34E+01	3.49E+01	3.65E+01	3.81E+01	3.98E+01	4.15E+01	4.32E+01	4.49E+01	4.67E+01	5.04E+01	5.22E+01
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	6.52E-05	6.61E-05	6.70E-05	6.79E-05	6.87E-05	6.95E-05	7.03E-05	7.11E-05	7.18E-05	7.33E-05	7.39E-05
bi211	8.13E-10	8.12E-10	8.12E-10	8.12E-10	8.12E-10	8.12E-10	8.12E-10	8.12E-10	8.12E-10	8.13E-10	8.13E-10
bi212	9.29E-13	9.49E-13	9.68E-13	9.88E-13	1.01E-12	1.03E-12	1.05E-12	1.07E-12	1.09E-12	1.13E-12	1.14E-12
bi213	9.79E-08	1.00E-07	1.02E-07	1.04E-07	1.06E-07	1.08E-07	1.10E-07	1.12E-07	1.14E-07	1.18E-07	1.20E-07
bi214	1.83E-07	1.86E-07	1.88E-07	1.91E-07	1.93E-07	1.95E-07	1.98E-07	2.00E-07	2.02E-07	2.06E-07	2.08E-07
po210	1.80E-03	1.83E-03	1.85E-03	1.87E-03	1.90E-03	1.92E-03	1.94E-03	1.96E-03	1.98E-03	2.02E-03	2.04E-03
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	8.98E-15	8.98E-15	8.98E-15	8.98E-15	8.98E-15	8.98E-15	8.98E-15	8.98E-15	8.98E-15	8.98E-15	8.98E-15
po212	4.88E-23	4.99E-23	5.09E-23	5.19E-23	5.29E-23	5.40E-23	5.50E-23	5.60E-23	5.71E-23	5.91E-23	6.02E-23
po213	1.47E-16	1.50E-16	1.54E-16	1.57E-16	1.60E-16	1.63E-16	1.66E-16	1.69E-16	1.72E-16	1.78E-16	1.81E-16
po214	2.52E-14	2.56E-14	2.59E-14	2.62E-14	2.66E-14	2.69E-14	2.72E-14	2.75E-14	2.78E-14	2.83E-14	2.86E-14

po215	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14
po216	3.78E-17	3.86E-17	3.94E-17	4.02E-17	4.10E-17	4.18E-17	4.26E-17	4.34E-17	4.42E-17	4.58E-17	4.66E-17
po218	2.91E-08	2.95E-08	2.99E-08	3.03E-08	3.06E-08	3.10E-08	3.14E-08	3.17E-08	3.20E-08	3.27E-08	3.30E-08
at217	1.18E-12	1.20E-12	1.23E-12	1.25E-12	1.28E-12	1.30E-12	1.33E-12	1.35E-12	1.38E-12	1.42E-12	1.45E-12
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	2.60E-11	2.60E-11	2.60E-11	2.60E-11	2.60E-11	2.60E-11	2.60E-11	2.60E-11	2.60E-11	2.60E-11	2.60E-11
rn220	1.48E-14	1.51E-14	1.54E-14	1.57E-14	1.60E-14	1.63E-14	1.66E-14	1.69E-14	1.72E-14	1.79E-14	1.82E-14
rn222	5.26E-05	5.33E-05	5.41E-05	5.48E-05	5.54E-05	5.61E-05	5.67E-05	5.74E-05	5.80E-05	5.91E-05	5.97E-05
fr221	1.09E-08	1.12E-08	1.14E-08	1.16E-08	1.19E-08	1.21E-08	1.23E-08	1.25E-08	1.28E-08	1.32E-08	1.34E-08
fr223	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	6.61E-06	6.61E-06	6.61E-06	6.60E-06	6.60E-06	6.60E-06	6.61E-06	6.61E-06	6.61E-06	6.61E-06	6.61E-06
ra224	8.55E-11	8.73E-11	8.91E-11	9.09E-11	9.27E-11	9.45E-11	9.63E-11	9.81E-11	9.99E-11	1.03E-10	1.05E-10
ra225	4.84E-05	4.94E-05	5.05E-05	5.15E-05	5.25E-05	5.35E-05	5.45E-05	5.55E-05	5.65E-05	5.85E-05	5.94E-05
ra226	8.18E+00	8.30E+00	8.41E+00	8.52E+00	8.62E+00	8.73E+00	8.83E+00	8.92E+00	9.02E+00	9.19E+00	9.28E+00
ra228	4.74E-08	4.85E-08	4.96E-08	5.07E-08	5.18E-08	5.28E-08	5.39E-08	5.50E-08	5.61E-08	5.82E-08	5.93E-08
ac225	3.27E-05	3.34E-05	3.41E-05	3.48E-05	3.55E-05	3.62E-05	3.68E-05	3.75E-05	3.82E-05	3.95E-05	4.01E-05
ac227	4.68E-03	4.68E-03	4.68E-03	4.68E-03	4.68E-03	4.68E-03	4.68E-03	4.68E-03	4.68E-03	4.68E-03	4.68E-03
ac228	5.79E-12	5.92E-12	6.05E-12	6.18E-12	6.32E-12	6.45E-12	6.58E-12	6.71E-12	6.84E-12	7.11E-12	7.24E-12
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05
th228	1.66E-08	1.70E-08	1.73E-08	1.77E-08	1.80E-08	1.84E-08	1.87E-08	1.91E-08	1.94E-08	2.01E-08	2.05E-08
th229	9.58E+00	9.78E+00	9.99E+00	1.02E+01	1.04E+01	1.06E+01	1.08E+01	1.10E+01	1.12E+01	1.16E+01	1.18E+01
th230	3.99E+02	4.04E+02	4.09E+02	4.14E+02	4.19E+02	4.24E+02	4.29E+02	4.33E+02	4.37E+02	4.46E+02	4.50E+02
th231	6.33E-07	6.34E-07	6.34E-07	6.35E-07	6.36E-07	6.36E-07	6.37E-07	6.38E-07	6.38E-07	6.39E-07	6.40E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 122

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
th232	1.18E+02	1.21E+02	1.23E+02	1.26E+02	1.29E+02	1.31E+02	1.34E+02	1.37E+02	1.39E+02	1.45E+02	1.48E+02
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04
pa231	7.16E+00	7.16E+00	7.16E+00	7.16E+00	7.16E+00	7.16E+00	7.16E+00	7.16E+00	7.16E+00	7.16E+00	7.16E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.22E-04	3.22E-04	3.21E-04	3.21E-04	3.21E-04	3.21E-04	3.21E-04	3.20E-04	3.20E-04	3.20E-04	3.20E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	3.05E-08	3.02E-08	2.98E-08	2.95E-08	2.91E-08	2.88E-08	2.84E-08	2.81E-08	2.77E-08	2.71E-08	2.67E-08
u233	2.21E+02	2.25E+02	2.29E+02	2.33E+02	2.37E+02	2.41E+02	2.45E+02	2.49E+02	2.53E+02	2.60E+02	2.64E+02
u234	2.30E+03	2.29E+03	2.28E+03	2.27E+03	2.26E+03	2.25E+03	2.24E+03	2.23E+03	2.22E+03	2.20E+03	2.19E+03
u235	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.57E+05	1.57E+05	1.57E+05	1.57E+05	1.57E+05	1.57E+05
u236	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04
u237	1.87E-23	1.59E-23	1.35E-23	1.14E-23	9.72E-24	8.26E-24	7.02E-24	5.96E-24	5.06E-24	3.65E-24	3.10E-24
u238	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	2.12E-31	2.22E-31	2.33E-31	2.43E-31	2.54E-31	2.64E-31	2.74E-31	2.84E-31	2.95E-31	3.15E-31	3.25E-31
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	5.75E-04	5.68E-04	5.61E-04	5.55E-04	5.48E-04	5.41E-04	5.35E-04	5.28E-04	5.22E-04	5.10E-04	5.04E-04
np237	9.48E+03	9.47E+03	9.47E+03	9.46E+03	9.45E+03	9.45E+03	9.44E+03	9.43E+03	9.43E+03	9.42E+03	9.41E+03
np238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np239	7.95E-12	6.58E-12	5.46E-12	4.52E-12	3.75E-12	3.10E-12	2.57E-12	2.13E-12	1.76E-12	1.21E-12	1.00E-12
np240m	1.81E-33	1.90E-33	1.99E-33	2.08E-33	2.16E-33	2.25E-33	2.34E-33	2.43E-33	2.51E-33	2.69E-33	2.77E-33
np240	1.86E-35	1.95E-35	2.04E-35	2.14E-35	2.23E-35	2.32E-35	2.41E-35	2.50E-35	2.59E-35	2.76E-35	2.85E-35
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	1.29E-09	1.28E-09	1.26E-09	1.24E-09	1.23E-09	1.22E-09	1.20E-09	1.19E-09	1.17E-09	1.14E-09	1.13E-09
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	4.80E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu239	3.67E+03	3.46E+03	3.27E+03	3.09E+03	2.91E+03	2.75E+03	2.60E+03	2.45E+03	2.31E+03	2.06E+03	1.95E+03
pu240	1.08E+01	8.77E+00	7.10E+00	5.75E+00	4.66E+00	3.77E+00	3.05E+00	2.47E+00	2.00E+00	1.31E+00	1.06E+00
pu241	6.17E-16	5.24E-16	4.45E-16	3.78E-16	3.21E-16	2.73E-16	2.32E-16	1.97E-16	1.67E-16	1.21E-16	1.03E-16
pu242	1.14E-02	1.14E-02	1.13E-02	1.13E-02	1.12E-02	1.12E-02	1.12E-02	1.11E-02	1.11E-02	1.10E-02	1.10E-02
pu243	8.11E-28	8.11E-28	8.11E-28	8.11E-28	8.10E-28	8.10E-28	8.10E-28	8.10E-28	8.10E-28	8.10E-28	8.10E-28
pu244	1.07E-20	1.13E-20	1.18E-20	1.23E-20	1.28E-20	1.34E-20	1.39E-20	1.44E-20	1.49E-20	1.59E-20	1.65E-20
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	6.87E-13	4.36E-14	1.51E-14	1.19E-14	1.01E-14	8.58E-15	7.29E-15	6.19E-15	5.26E-15	3.81E-15	3.23E-15
am242m	3.57E-40	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am243	9.24E-06	7.65E-06	6.34E-06	5.25E-06	4.35E-06	3.61E-06	2.99E-06	2.48E-06	2.05E-06	1.41E-06	1.17E-06
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 123

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cm242	1.02E-42	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	3.71E-13	3.15E-13	2.68E-13	2.27E-13	1.93E-13	1.64E-13	1.39E-13	1.18E-13	1.01E-13	7.26E-14	6.16E-14
cm246	8.86E-16	6.61E-16	4.93E-16	3.68E-16	2.74E-16	2.05E-16	1.53E-16	1.14E-16	8.50E-17	4.73E-17	3.53E-17
cm247	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17
cm248	1.45E-19	1.44E-19	1.43E-19	1.43E-19	1.42E-19	1.42E-19	1.41E-19	1.41E-19	1.40E-19	1.39E-19	1.38E-19
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	2.79E-35	2.58E-35	2.38E-35	2.20E-35	2.03E-35	1.88E-35	1.73E-35	1.60E-35	1.48E-35	1.26E-35	1.16E-35
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	2.97E-38	5.69E-40	1.08E-41	3.49E-43	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	6.44E-37	1.38E-37	2.94E-38	6.27E-39	1.34E-39	2.86E-40	6.12E-41	1.30E-41	2.81E-42	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
fm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 124

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	1.07E-05	1.08E-05	1.10E-05	1.11E-05	1.13E-05	1.14E-05	1.15E-05	1.16E-05	1.18E-05	1.20E-05	1.21E-05

tl207	3.38E-01	3.38E-01	3.37E-01	3.37E-01	3.37E-01	3.37E-01	3.37E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01
tl208	4.89E-06	5.00E-06	5.10E-06	5.20E-06	5.31E-06	5.41E-06	5.51E-06	5.62E-06	5.72E-06	5.93E-06	6.03E-06
tl209	3.98E-02	4.07E-02	4.16E-02	4.24E-02	4.32E-02	4.41E-02	4.49E-02	4.57E-02	4.65E-02	4.82E-02	4.89E-02
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	1.90E+00	1.94E+00	1.98E+00	2.02E+00	2.06E+00	2.10E+00	2.14E+00	2.18E+00	2.22E+00	2.29E+00	2.33E+00
pb210	8.09E+00	8.21E+00	8.32E+00	8.42E+00	8.53E+00	8.63E+00	8.73E+00	8.82E+00	8.91E+00	9.09E+00	9.18E+00
pb211	3.39E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.39E-01	3.39E-01
pb212	1.36E-05	1.39E-05	1.42E-05	1.45E-05	1.48E-05	1.51E-05	1.53E-05	1.56E-05	1.59E-05	1.65E-05	1.68E-05
pb214	8.09E+00	8.21E+00	8.32E+00	8.42E+00	8.53E+00	8.63E+00	8.73E+00	8.82E+00	8.92E+00	9.09E+00	9.18E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	8.09E+00	8.21E+00	8.32E+00	8.42E+00	8.53E+00	8.63E+00	8.73E+00	8.82E+00	8.91E+00	9.09E+00	9.18E+00
bi211	3.39E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.39E-01	3.39E-01
bi212	1.36E-05	1.39E-05	1.42E-05	1.45E-05	1.48E-05	1.51E-05	1.53E-05	1.56E-05	1.59E-05	1.65E-05	1.68E-05
bi213	1.90E+00	1.94E+00	1.98E+00	2.02E+00	2.06E+00	2.10E+00	2.14E+00	2.18E+00	2.22E+00	2.29E+00	2.33E+00
bi214	8.09E+00	8.21E+00	8.32E+00	8.42E+00	8.53E+00	8.63E+00	8.73E+00	8.82E+00	8.92E+00	9.09E+00	9.18E+00
po210	8.09E+00	8.21E+00	8.32E+00	8.42E+00	8.53E+00	8.63E+00	8.73E+00	8.82E+00	8.91E+00	9.09E+00	9.18E+00
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.31E-04	9.31E-04	9.31E-04	9.31E-04	9.31E-04	9.31E-04	9.31E-04	9.31E-04	9.31E-04	9.31E-04	9.31E-04
po212	8.72E-06	8.91E-06	9.09E-06	9.27E-06	9.46E-06	9.64E-06	9.83E-06	1.00E-05	1.02E-05	1.06E-05	1.07E-05
po213	1.86E+00	1.90E+00	1.94E+00	1.98E+00	2.02E+00	2.06E+00	2.09E+00	2.13E+00	2.17E+00	2.24E+00	2.28E+00
po214	8.09E+00	8.21E+00	8.32E+00	8.42E+00	8.53E+00	8.63E+00	8.73E+00	8.82E+00	8.91E+00	9.09E+00	9.18E+00
po215	3.39E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.39E-01	3.39E-01
po216	1.36E-05	1.39E-05	1.42E-05	1.45E-05	1.48E-05	1.51E-05	1.53E-05	1.56E-05	1.59E-05	1.65E-05	1.68E-05
po218	8.09E+00	8.21E+00	8.32E+00	8.43E+00	8.53E+00	8.63E+00	8.73E+00	8.83E+00	8.92E+00	9.09E+00	9.18E+00
at217	1.90E+00	1.94E+00	1.98E+00	2.02E+00	2.06E+00	2.10E+00	2.14E+00	2.18E+00	2.22E+00	2.29E+00	2.33E+00
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	3.39E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.39E-01	3.39E-01
rn220	1.36E-05	1.39E-05	1.42E-05	1.45E-05	1.48E-05	1.51E-05	1.53E-05	1.56E-05	1.59E-05	1.65E-05	1.68E-05
rn222	8.09E+00	8.21E+00	8.32E+00	8.43E+00	8.53E+00	8.63E+00	8.73E+00	8.83E+00	8.92E+00	9.09E+00	9.18E+00
fr221	1.90E+00	1.94E+00	1.98E+00	2.02E+00	2.06E+00	2.10E+00	2.14E+00	2.18E+00	2.22E+00	2.29E+00	2.33E+00
fr223	4.67E-03	4.67E-03	4.67E-03	4.67E-03	4.67E-03	4.67E-03	4.67E-03	4.67E-03	4.67E-03	4.67E-03	4.67E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	3.39E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.39E-01	3.39E-01
ra224	1.36E-05	1.39E-05	1.42E-05	1.45E-05	1.48E-05	1.51E-05	1.53E-05	1.56E-05	1.59E-05	1.65E-05	1.68E-05
ra225	1.90E+00	1.94E+00	1.98E+00	2.02E+00	2.06E+00	2.10E+00	2.14E+00	2.18E+00	2.22E+00	2.29E+00	2.33E+00
ra226	8.09E+00	8.21E+00	8.32E+00	8.43E+00	8.53E+00	8.63E+00	8.73E+00	8.83E+00	8.92E+00	9.09E+00	9.18E+00
ra228	1.29E-05	1.32E-05	1.35E-05	1.38E-05	1.41E-05	1.44E-05	1.47E-05	1.50E-05	1.53E-05	1.59E-05	1.62E-05
ac225	1.90E+00	1.94E+00	1.98E+00	2.02E+00	2.06E+00	2.10E+00	2.14E+00	2.18E+00	2.22E+00	2.29E+00	2.33E+00
ac227	3.39E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.39E-01	3.39E-01
ac228	1.29E-05	1.32E-05	1.35E-05	1.38E-05	1.41E-05	1.44E-05	1.47E-05	1.50E-05	1.53E-05	1.59E-05	1.62E-05
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01
th228	1.36E-05	1.39E-05	1.42E-05	1.45E-05	1.48E-05	1.51E-05	1.53E-05	1.56E-05	1.59E-05	1.65E-05	1.68E-05
th229	1.90E+00	1.94E+00	1.98E+00	2.02E+00	2.06E+00	2.10E+00	2.14E+00	2.18E+00	2.22E+00	2.29E+00	2.33E+00
th230	8.23E+00	8.34E+00	8.44E+00	8.55E+00	8.65E+00	8.75E+00	8.84E+00	8.93E+00	9.02E+00	9.19E+00	9.27E+00
th231	3.37E-01	3.37E-01	3.37E-01	3.38E-01	3.38E-01	3.38E-01	3.39E-01	3.39E-01	3.39E-01	3.40E-01	3.40E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 125

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
th232	1.29E-05	1.32E-05	1.35E-05	1.38E-05	1.41E-05	1.44E-05	1.47E-05	1.50E-05	1.53E-05	1.59E-05	1.62E-05
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
pa231	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.68E+00	6.68E+00	6.67E+00	6.67E+00	6.67E+00	6.66E+00	6.66E+00	6.65E+00	6.65E+00	6.64E+00	6.64E+00
pa234m	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
pa234	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	6.74E-07	6.66E-07	6.58E-07	6.50E-07	6.43E-07	6.35E-07	6.27E-07	6.20E-07	6.12E-07	5.98E-07	5.91E-07
u233	2.13E+00	2.17E+00	2.21E+00	2.25E+00	2.29E+00	2.32E+00	2.36E+00	2.40E+00	2.44E+00	2.51E+00	2.54E+00
u234	1.43E+01	1.42E+01	1.42E+01	1.41E+01	1.40E+01	1.40E+01	1.39E+01	1.39E+01	1.38E+01	1.37E+01	1.36E+01
u235	3.37E-01	3.37E-01	3.37E-01	3.38E-01	3.38E-01	3.38E-01	3.39E-01	3.39E-01	3.39E-01	3.40E-01	3.40E-01
u236	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00
u237	1.52E-18	1.30E-18	1.10E-18	9.35E-19	7.94E-19	6.75E-19	5.73E-19	4.87E-19	4.14E-19	2.98E-19	2.53E-19
u238	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.96E-25	2.06E-25	2.16E-25	2.25E-25	2.35E-25	2.45E-25	2.54E-25	2.64E-25	2.73E-25	2.92E-25	3.01E-25
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	7.58E-06	7.49E-06	7.40E-06	7.31E-06	7.22E-06	7.13E-06	7.05E-06	6.96E-06	6.88E-06	6.72E-06	6.64E-06
np237	6.68E+00	6.68E+00	6.67E+00	6.67E+00	6.67E+00	6.66E+00	6.66E+00	6.65E+00	6.65E+00	6.64E+00	6.64E+00
np238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np239	1.84E-06	1.53E-06	1.27E-06	1.05E-06	8.69E-07	7.20E-07	5.97E-07	4.94E-07	4.10E-07	2.81E-07	2.33E-07
np240m	1.96E-25	2.06E-25	2.16E-25	2.25E-25	2.35E-25	2.45E-25	2.54E-25	2.64E-25	2.73E-25	2.92E-25	3.01E-25
np240	2.36E-28	2.47E-28	2.59E-28	2.70E-28	2.82E-28	2.93E-28	3.05E-28	3.16E-28	3.28E-28	3.50E-28	3.61E-28
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	6.74E-07	6.66E-07	6.58E-07	6.50E-07	6.43E-07	6.35E-07	6.27E-07	6.20E-07	6.12E-07	5.98E-07	5.91E-07
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu239	2.28E+02	2.15E+02	2.03E+02	1.91E+02	1.81E+02	1.71E+02	1.61E+02	1.52E+02	1.44E+02	1.28E+02	1.21E+02
pu240	2.46E+00	1.99E+00	1.61E+00	1.31E+00	1.06E+00	8.56E-01	6.93E-01	5.61E-01	4.54E-01	2.98E-01	2.41E-01
pu241	6.38E-14	5.42E-14	4.60E-14	3.91E-14	3.32E-14	2.82E-14	2.40E-14	2.04E-14	1.73E-14	1.25E-14	1.06E-14
pu242	4.51E-05	4.50E-05	4.48E-05	4.46E-05	4.45E-05	4.43E-05	4.41E-05	4.40E-05	4.38E-05	4.35E-05	4.33E-05
pu243	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21
pu244	1.97E-25	2.06E-25	2.16E-25	2.26E-25	2.35E-25	2.45E-25	2.54E-25	2.64E-25	2.73E-25	2.92E-25	3.01E-25
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	2.36E-12	1.50E-13	5.18E-14	4.10E-14	3.47E-14	2.95E-14	2.50E-14	2.13E-14	1.81E-14	1.31E-14	1.11E-14
am242m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am243	1.84E-06	1.53E-06	1.27E-06	1.05E-06	8.69E-07	7.20E-07	5.97E-07	4.94E-07	4.10E-07	2.81E-07	2.33E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 126

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cm242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	6.37E-14	5.41E-14	4.60E-14	3.90E-14	3.32E-14	2.82E-14	2.39E-14	2.03E-14	1.73E-14	1.25E-14	1.06E-14
cm246	2.72E-16	2.03E-16	1.52E-16	1.13E-16	8.43E-17	6.29E-17	4.69E-17	3.50E-17	2.61E-17	1.45E-17	1.08E-17
cm247	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21
cm248	6.13E-22	6.11E-22	6.08E-22	6.06E-22	6.03E-22	6.01E-22	5.98E-22	5.96E-22	5.94E-22	5.89E-22	5.86E-22
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	3.71E+02	3.60E+02	3.49E+02	3.38E+02	3.29E+02	3.20E+02	3.11E+02	3.03E+02	2.96E+02	2.83E+02	2.76E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 127

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04
li 7	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06
be 9	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05
be 10	1.05E-04	1.05E-04	1.05E-04	1.05E-04	1.05E-04	1.05E-04	1.05E-04	1.05E-04	1.05E-04	1.04E-04	1.04E-04
c 14	1.82E-07	1.43E-07	1.12E-07	8.80E-08	6.91E-08	5.42E-08	4.26E-08	3.34E-08	2.62E-08	1.62E-08	1.27E-08
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08
zn 68	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08
zn 70	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	3.68E+00	3.66E+00	3.65E+00	3.63E+00	3.62E+00	3.60E+00	3.59E+00	3.57E+00	3.56E+00	3.53E+00	3.51E+00
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	5.07E-01	5.22E-01	5.38E-01	5.53E-01	5.68E-01	5.83E-01	5.99E-01	6.14E-01	6.29E-01	6.58E-01	6.73E-01
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04

cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01
kr 81	7.62E-07	7.57E-07	7.52E-07	7.48E-07	7.43E-07	7.38E-07	7.33E-07	7.28E-07	7.24E-07	7.14E-07	7.10E-07
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 129

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02
rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02
sr 87	7.15E-04	7.22E-04	7.29E-04	7.37E-04	7.44E-04	7.51E-04	7.59E-04	7.66E-04	7.73E-04	7.88E-04	7.96E-04
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 130

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02
nb 91	6.07E-19	7.90E-20	1.03E-20	1.34E-21	1.74E-22	2.27E-23	2.95E-24	3.85E-25	5.01E-26	8.49E-28	1.10E-28
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02
nb 92	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	4.45E+02	4.45E+02	4.45E+02	4.44E+02	4.44E+02	4.43E+02	4.43E+02	4.43E+02	4.42E+02	4.41E+02	4.41E+02
nb 93	1.27E+01	1.31E+01	1.35E+01	1.39E+01	1.43E+01	1.47E+01	1.51E+01	1.55E+01	1.59E+01	1.67E+01	1.71E+01
nb 93m	4.70E-03	4.69E-03	4.69E-03	4.68E-03	4.68E-03	4.68E-03	4.67E-03	4.67E-03	4.66E-03	4.65E-03	4.65E-03
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 131

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02
nb 94	3.18E-04	2.97E-04	2.77E-04	2.59E-04	2.42E-04	2.26E-04	2.11E-04	1.97E-04	1.84E-04	1.60E-04	1.50E-04
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02
tc 98	2.01E-04	2.00E-04	2.00E-04	2.00E-04	2.00E-04	2.00E-04	2.00E-04	2.00E-04	2.00E-04	2.00E-04	2.00E-04
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	5.89E+02	5.85E+02	5.81E+02	5.77E+02	5.74E+02	5.70E+02	5.66E+02	5.62E+02	5.59E+02	5.51E+02	5.48E+02
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	1.31E+02	1.35E+02	1.39E+02	1.43E+02	1.47E+02	1.50E+02	1.54E+02	1.58E+02	1.61E+02	1.69E+02	1.72E+02

rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 132

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 133

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	4.53E+01	4.53E+01	4.53E+01	4.53E+01	4.53E+01	4.53E+01	4.53E+01	4.53E+01	4.52E+01	4.52E+01	4.52E+01
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	2.86E-01	2.96E-01	3.06E-01	3.15E-01	3.25E-01	3.35E-01	3.44E-01	3.54E-01	3.63E-01	3.83E-01	3.92E-01
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01
ag108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd108	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00
ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 134

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cd110	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01
cd113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

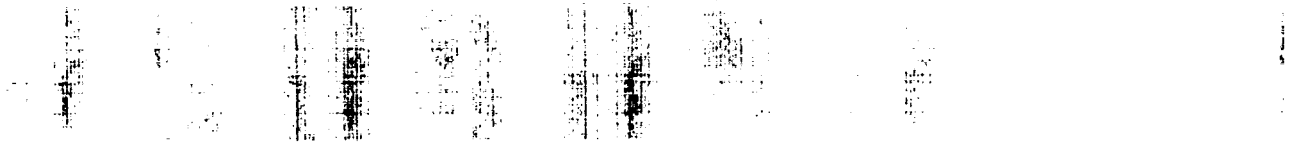
1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 135

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sn115	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02



tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 136

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00
te123	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	5.44E+00	5.37E+00	5.29E+00	5.22E+00	5.15E+00	5.08E+00	5.01E+00	4.94E+00	4.87E+00	4.74E+00	4.67E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 137

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sb126	2.59E-07	2.55E-07	2.51E-07	2.48E-07	2.45E-07	2.41E-07	2.38E-07	2.35E-07	2.31E-07	2.25E-07	2.22E-07
sb126m	1.97E-09	1.94E-09	1.91E-09	1.89E-09	1.86E-09	1.83E-09	1.81E-09	1.78E-09	1.76E-09	1.71E-09	1.69E-09
te126	2.84E+00	2.92E+00	2.99E+00	3.06E+00	3.14E+00	3.21E+00	3.28E+00	3.35E+00	3.41E+00	3.55E+00	3.61E+00
xe126	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02
xe129	3.36E-01	3.47E-01	3.57E-01	3.68E-01	3.79E-01	3.90E-01	4.01E-01	4.12E-01	4.23E-01	4.45E-01	4.55E-01
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 138

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06

in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03
ba133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	1.97E+01	2.03E+01	2.10E+01	2.16E+01	2.22E+01	2.29E+01	2.35E+01	2.41E+01	2.48E+01	2.60E+01	2.66E+01
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 139

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03
ba137m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03
la138	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 140
0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02

i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02
pm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02
pm146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 141

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sm148	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02
eu150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu151	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01
eu152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 142

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sm154	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01
eu154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 143

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
dy161	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	6.02E-12	1.90E-12	5.97E-13	1.88E-13	5.92E-14	1.87E-14	5.87E-15	1.85E-15	5.83E-16	5.78E-17	1.82E-17
er166	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04
er167	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07
total	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 144

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.34E-06	2.34E-06	2.34E-06	2.34E-06	2.34E-06	2.33E-06	2.33E-06
c 14	8.11E-07	6.37E-07	5.00E-07	3.92E-07	3.08E-07	2.42E-07	1.90E-07	1.49E-07	1.17E-07	7.21E-08	5.66E-08
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 145

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	5.05E-02	5.03E-02	5.01E-02	4.99E-02	4.96E-02	4.94E-02	4.92E-02	4.90E-02	4.88E-02	4.84E-02	4.82E-02
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	1.58E-08	1.57E-08	1.56E-08	1.55E-08	1.54E-08	1.53E-08	1.52E-08	1.51E-08	1.50E-08	1.48E-08	1.47E-08
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 146

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 147

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	3.51E-18	4.56E-19	5.94E-20	7.74E-21	1.01E-21	1.31E-22	1.71E-23	2.22E-24	2.89E-25	4.90E-27	6.39E-28
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.11E+00	1.11E+00	1.11E+00	1.11E+00	1.11E+00	1.11E+00
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.11E+00	1.11E+00	1.11E+00	1.11E+00	1.11E+00	1.11E+00
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 148

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	5.95E-05	5.56E-05	5.19E-05	4.85E-05	4.53E-05	4.23E-05	3.95E-05	3.69E-05	3.45E-05	3.01E-05	2.81E-05
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	1.01E+01	1.00E+01	9.94E+00	9.88E+00	9.81E+00	9.75E+00	9.69E+00	9.62E+00	9.56E+00	9.44E+00	9.37E+00
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 149

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 150

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 151

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14
cd113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 152

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 153

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	1.54E-01	1.52E-01	1.50E-01	1.48E-01	1.46E-01	1.44E-01	1.42E-01	1.40E-01	1.38E-01	1.34E-01	1.33E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 154

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sb126	2.16E-02	2.13E-02	2.10E-02	2.07E-02	2.05E-02	2.02E-02	1.99E-02	1.96E-02	1.94E-02	1.88E-02	1.86E-02
sb126m	1.54E-01	1.52E-01	1.50E-01	1.48E-01	1.46E-01	1.44E-01	1.42E-01	1.40E-01	1.38E-01	1.34E-01	1.33E-01

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.17E-02	2.17E-02
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 155

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	1.21E+00	1.21E+00	1.21E+00	1.21E+00	1.20E+00	1.20E+00	1.20E+00	1.20E+00	1.20E+00	1.20E+00	1.20E+00
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 156
0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 157

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09
i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 158

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sm148	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 159

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 160

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	18000.0 yr	20000.0 yr	22000.0 yr	24000.0 yr	26000.0 yr	28000.0 yr	30000.0 yr	32000.0 yr	36000.0 yr	38000.0 yr	yr
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	

eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	1.08E-11	3.40E-12	1.07E-12	3.38E-13	1.06E-13	3.35E-14	1.05E-14	3.32E-15	1.05E-15	1.04E-16	3.27E-17
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	1.39E+01	1.39E+01	1.38E+01	1.37E+01	1.37E+01	1.36E+01	1.35E+01	1.34E+01	1.34E+01	1.32E+01	1.32E+01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 161

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
he 4	3.63E+02	3.66E+02	3.74E+02	3.81E+02	3.88E+02	3.95E+02	4.02E+02	4.08E+02	4.41E+02	5.35E+02	5.80E+02
tl206	5.57E-14	5.62E-14	5.74E-14	5.84E-14	5.94E-14	6.03E-14	6.12E-14	6.19E-14	6.62E-14	6.51E-14	6.22E-14
tl207	1.77E-09	1.77E-09	1.77E-09	1.78E-09	1.78E-09	1.78E-09	1.78E-09	1.78E-09	1.79E-09	1.80E-09	1.80E-09
tl208	2.04E-14	2.07E-14	2.16E-14	2.25E-14	2.33E-14	2.42E-14	2.51E-14	2.60E-14	3.12E-14	4.88E-14	5.77E-14
tl209	1.20E-10	1.22E-10	1.26E-10	1.31E-10	1.35E-10	1.40E-10	1.44E-10	1.48E-10	1.71E-10	2.38E-10	2.46E-10
pb206	2.38E+02	2.45E+02	2.64E+02	2.83E+02	3.02E+02	3.22E+02	3.42E+02	3.63E+02	4.89E+02	9.26E+02	1.14E+03
pb207	1.15E+01	1.18E+01	1.25E+01	1.32E+01	1.38E+01	1.45E+01	1.52E+01	1.59E+01	2.00E+01	3.38E+01	4.07E+01
pb208	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.04E-01	2.06E-01	2.06E-01
pb209	5.05E-07	5.14E-07	5.33E-07	5.53E-07	5.72E-07	5.91E-07	6.09E-07	6.26E-07	7.24E-07	1.01E-06	1.04E-06
pb210	1.20E-01	1.21E-01	1.24E-01	1.26E-01	1.28E-01	1.30E-01	1.32E-01	1.34E-01	1.43E-01	1.40E-01	1.34E-01
pb211	1.37E-08	1.37E-08	1.37E-08	1.37E-08	1.37E-08	1.38E-08	1.38E-08	1.38E-08	1.38E-08	1.39E-08	1.39E-08
pb212	1.21E-11	1.23E-11	1.28E-11	1.33E-11	1.38E-11	1.44E-11	1.49E-11	1.54E-11	1.85E-11	2.90E-11	3.42E-11
pb214	2.80E-07	2.82E-07	2.88E-07	2.94E-07	2.99E-07	3.03E-07	3.07E-07	3.11E-07	3.33E-07	3.27E-07	3.12E-07
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	5.22E+01	5.41E+01	5.90E+01	6.41E+01	6.93E+01	7.48E+01	8.04E+01	8.61E+01	1.24E+02	2.88E+02	3.82E+02
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	7.39E-05	7.46E-05	7.61E-05	7.76E-05	7.89E-05	8.01E-05	8.12E-05	8.22E-05	8.79E-05	8.64E-05	8.26E-05
bi211	8.13E-10	8.13E-10	8.14E-10	8.14E-10	8.15E-10	8.15E-10	8.16E-10	8.17E-10	8.20E-10	8.25E-10	8.26E-10
bi212	1.14E-12	1.16E-12	1.21E-12	1.26E-12	1.31E-12	1.36E-12	1.41E-12	1.46E-12	1.76E-12	2.75E-12	3.24E-12
bi213	1.20E-07	1.22E-07	1.27E-07	1.32E-07	1.36E-07	1.41E-07	1.45E-07	1.49E-07	1.72E-07	2.39E-07	2.47E-07
bi214	2.08E-07	2.10E-07	2.14E-07	2.18E-07	2.22E-07	2.25E-07	2.28E-07	2.31E-07	2.47E-07	2.43E-07	2.32E-07
po210	2.04E-03	2.06E-03	2.10E-03	2.14E-03	2.18E-03	2.21E-03	2.24E-03	2.27E-03	2.43E-03	2.39E-03	2.28E-03
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	8.98E-15	8.99E-15	8.99E-15	9.00E-15	9.01E-15	9.01E-15	9.02E-15	9.03E-15	9.06E-15	9.12E-15	9.13E-15
po212	6.02E-23	6.12E-23	6.38E-23	6.64E-23	6.89E-23	7.15E-23	7.41E-23	7.67E-23	9.23E-23	1.44E-22	1.70E-22
po213	1.81E-16	1.84E-16	1.91E-16	1.98E-16	2.05E-16	2.11E-16	2.18E-16	2.24E-16	2.59E-16	3.60E-16	3.71E-16
po214	2.86E-14	2.88E-14	2.94E-14	3.00E-14	3.05E-14	3.10E-14	3.14E-14	3.18E-14	3.40E-14	3.34E-14	3.19E-14

po215	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.15E-14	1.16E-14	1.17E-14	1.17E-14
po216	4.66E-17	4.74E-17	4.94E-17	5.14E-17	5.34E-17	5.54E-17	5.74E-17	5.94E-17	7.14E-17	1.12E-16	1.32E-16
po218	3.30E-08	3.33E-08	3.40E-08	3.46E-08	3.52E-08	3.57E-08	3.62E-08	3.66E-08	3.92E-08	3.86E-08	3.68E-08
at217	1.45E-12	1.47E-12	1.53E-12	1.58E-12	1.64E-12	1.69E-12	1.74E-12	1.79E-12	2.07E-12	2.88E-12	2.97E-12
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	2.60E-11	2.60E-11	2.60E-11	2.61E-11	2.61E-11	2.61E-11	2.61E-11	2.61E-11	2.63E-11	2.64E-11	2.64E-11
rn220	1.82E-14	1.85E-14	1.93E-14	2.01E-14	2.08E-14	2.16E-14	2.24E-14	2.32E-14	2.79E-14	4.36E-14	5.15E-14
rn222	5.97E-05	6.02E-05	6.14E-05	6.26E-05	6.36E-05	6.46E-05	6.55E-05	6.63E-05	7.09E-05	6.97E-05	6.66E-05
fr221	1.34E-08	1.36E-08	1.42E-08	1.47E-08	1.52E-08	1.57E-08	1.62E-08	1.66E-08	1.92E-08	2.67E-08	2.76E-08
fr223	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.21E-10	1.22E-10	1.23E-10	1.23E-10
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	6.61E-06	6.61E-06	6.62E-06	6.62E-06	6.63E-06	6.63E-06	6.64E-06	6.64E-06	6.67E-06	6.71E-06	6.72E-06
ra224	1.05E-10	1.07E-10	1.12E-10	1.16E-10	1.21E-10	1.25E-10	1.30E-10	1.34E-10	1.61E-10	2.53E-10	2.98E-10
ra225	5.94E-05	6.04E-05	6.27E-05	6.50E-05	6.73E-05	6.94E-05	7.16E-05	7.37E-05	8.51E-05	1.18E-04	1.22E-04
ra226	9.28E+00	9.36E+00	9.56E+00	9.74E+00	9.90E+00	1.01E+01	1.02E+01	1.03E+01	1.10E+01	1.08E+01	1.04E+01
ra228	5.93E-08	6.04E-08	6.31E-08	6.58E-08	6.85E-08	7.12E-08	7.39E-08	7.66E-08	9.28E-08	1.47E-07	1.74E-07
ac225	4.01E-05	4.08E-05	4.24E-05	4.39E-05	4.54E-05	4.69E-05	4.84E-05	4.98E-05	5.75E-05	7.99E-05	8.25E-05
ac227	4.68E-03	4.68E-03	4.68E-03	4.69E-03	4.69E-03	4.69E-03	4.70E-03	4.70E-03	4.72E-03	4.75E-03	4.76E-03
ac228	7.24E-12	7.37E-12	7.70E-12	8.03E-12	8.36E-12	8.69E-12	9.02E-12	9.35E-12	1.13E-11	1.79E-11	2.12E-11
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.09E-05	1.10E-05	1.10E-05	1.10E-05
th228	2.05E-08	2.08E-08	2.17E-08	2.26E-08	2.34E-08	2.43E-08	2.52E-08	2.61E-08	3.14E-08	4.91E-08	5.80E-08
th229	1.18E+01	1.20E+01	1.24E+01	1.29E+01	1.33E+01	1.37E+01	1.42E+01	1.46E+01	1.68E+01	2.34E+01	2.42E+01
th230	4.50E+02	4.53E+02	4.62E+02	4.71E+02	4.78E+02	4.85E+02	4.91E+02	4.97E+02	5.21E+02	5.16E+02	4.90E+02
th231	6.40E-07	6.40E-07	6.41E-07	6.42E-07	6.43E-07	6.43E-07	6.44E-07	6.44E-07	6.46E-07	6.47E-07	6.47E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 162

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
th232	1.48E+02	1.50E+02	1.57E+02	1.64E+02	1.70E+02	1.77E+02	1.84E+02	1.91E+02	2.31E+02	3.65E+02	4.32E+02
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04
pa231	7.16E+00	7.16E+00	7.17E+00	7.17E+00	7.18E+00	7.19E+00	7.19E+00	7.20E+00	7.23E+00	7.28E+00	7.28E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pa233	3.20E-04	3.19E-04	3.19E-04	3.18E-04	3.18E-04	3.17E-04	3.17E-04	3.16E-04	3.13E-04	3.03E-04	2.98E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	2.67E-08	2.64E-08	2.56E-08	2.49E-08	2.41E-08	2.34E-08	2.27E-08	2.21E-08	1.84E-08	1.01E-08	7.45E-09
u233	2.64E+02	2.68E+02	2.77E+02	2.85E+02	2.94E+02	3.02E+02	3.11E+02	3.19E+02	3.63E+02	4.69E+02	5.04E+02
u234	2.19E+03	2.18E+03	2.15E+03	2.13E+03	2.11E+03	2.08E+03	2.06E+03	2.04E+03	1.91E+03	1.56E+03	1.41E+03
u235	1.57E+05	1.57E+05	1.58E+05	1.58E+05	1.58E+05	1.58E+05	1.58E+05	1.58E+05	1.59E+05	1.59E+05	1.59E+05
u236	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.62E+04	4.61E+04	4.60E+04	4.59E+04
u237	3.10E-24	2.64E-24	1.75E-24	1.17E-24	7.76E-25	5.16E-25	3.43E-25	2.28E-25	1.98E-26	5.67E-30	9.60E-32
u238	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06	8.63E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	3.25E-31	3.35E-31	3.60E-31	3.84E-31	4.09E-31	4.33E-31	4.57E-31	4.80E-31	6.17E-31	1.02E-30	1.19E-30
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	5.04E-04	4.98E-04	4.83E-04	4.68E-04	4.54E-04	4.41E-04	4.28E-04	4.15E-04	3.47E-04	1.90E-04	1.40E-04
np237	9.41E+03	9.40E+03	9.39E+03	9.37E+03	9.36E+03	9.34E+03	9.33E+03	9.31E+03	9.22E+03	8.93E+03	8.79E+03
np238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np239	1.00E-12	8.32E-13	5.20E-13	3.25E-13	2.03E-13	1.27E-13	7.92E-14	4.95E-14	2.95E-15	2.43E-19	2.20E-21
np240m	2.77E-33	2.86E-33	3.07E-33	3.28E-33	3.49E-33	3.70E-33	3.90E-33	4.10E-33	5.27E-33	8.68E-33	1.01E-32
np240	2.85E-35	2.94E-35	3.16E-35	3.38E-35	3.59E-35	3.80E-35	4.01E-35	4.22E-35	5.42E-35	8.93E-35	1.04E-34
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pu236	1.13E-09	1.12E-09	1.08E-09	1.05E-09	1.02E-09	9.90E-10	9.60E-10	9.32E-10	7.78E-10	4.26E-10	3.15E-10
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu239	1.95E+03	1.84E+03	1.59E+03	1.38E+03	1.19E+03	1.03E+03	8.96E+02	7.76E+02	3.28E+02	1.85E+01	4.39E+00
pu240	1.06E+00	8.59E-01	5.07E-01	2.99E-01	1.76E-01	1.04E-01	6.13E-02	3.61E-02	1.52E-03	3.93E-08	2.00E-10
pu241	1.03E-16	8.71E-17	5.79E-17	3.85E-17	2.56E-17	1.70E-17	1.13E-17	7.54E-18	6.53E-19	1.87E-22	3.17E-24
pu242	1.10E-02	1.09E-02	1.08E-02	1.07E-02	1.06E-02	1.05E-02	1.04E-02	1.03E-02	9.76E-03	8.11E-03	7.39E-03
pu243	8.10E-28	8.10E-28	8.10E-28	8.10E-28	8.09E-28	8.09E-28	8.09E-28	8.09E-28	8.08E-28	8.04E-28	8.03E-28
pu244	1.65E-20	1.70E-20	1.82E-20	1.95E-20	2.07E-20	2.19E-20	2.31E-20	2.43E-20	3.13E-20	5.15E-20	6.02E-20
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	3.23E-15	2.74E-15	1.75E-15	1.16E-15	7.73E-16	5.14E-16	3.42E-16	2.27E-16	1.97E-17	5.95E-21	9.56E-23
am242m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am243	1.17E-06	9.67E-07	6.04E-07	3.77E-07	2.36E-07	1.47E-07	9.21E-08	5.75E-08	3.42E-09	2.82E-13	2.56E-15
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 163

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cm242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	6.16E-14	5.24E-14	3.48E-14	2.32E-14	1.54E-14	1.02E-14	6.81E-15	4.53E-15	3.92E-16	1.13E-19	1.91E-21
cm246	3.53E-17	2.63E-17	1.27E-17	6.08E-18	2.92E-18	1.40E-18	6.75E-19	3.25E-19	4.00E-21	1.73E-27	1.14E-30
cm247	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.33E-17	2.32E-17	2.31E-17	2.31E-17
cm248	1.38E-19	1.38E-19	1.36E-19	1.35E-19	1.34E-19	1.32E-19	1.31E-19	1.30E-19	1.22E-19	9.94E-20	8.97E-20
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	1.16E-35	1.07E-35	8.80E-36	7.21E-36	5.91E-36	4.84E-36	3.97E-36	3.25E-36	9.84E-37	1.83E-38	2.50E-39
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 164

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
he 4	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tl206	1.21E-05	1.22E-05	1.25E-05	1.27E-05	1.29E-05	1.31E-05	1.33E-05	1.35E-05	1.44E-05	1.42E-05	1.35E-05

tl207	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.41E-01	3.43E-01	3.43E-01
tl208	6.03E-06	6.13E-06	6.39E-06	6.65E-06	6.91E-06	7.17E-06	7.43E-06	7.69E-06	9.25E-06	1.45E-05	1.71E-05
tl209	4.89E-02	4.97E-02	5.17E-02	5.36E-02	5.54E-02	5.72E-02	5.89E-02	6.07E-02	7.01E-02	9.74E-02	1.01E-01
pb206	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pb209	2.33E+00	2.37E+00	2.46E+00	2.55E+00	2.64E+00	2.72E+00	2.81E+00	2.89E+00	3.34E+00	4.64E+00	4.79E+00
pb210	9.18E+00	9.26E+00	9.45E+00	9.63E+00	9.79E+00	9.94E+00	1.01E+01	1.02E+01	1.09E+01	1.07E+01	1.02E+01
pb211	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.40E-01	3.40E-01	3.40E-01	3.42E-01	3.44E-01	3.44E-01
pb212	1.68E-05	1.71E-05	1.78E-05	1.85E-05	1.92E-05	1.99E-05	2.07E-05	2.14E-05	2.57E-05	4.02E-05	4.75E-05
pb214	9.18E+00	9.26E+00	9.45E+00	9.63E+00	9.79E+00	9.94E+00	1.01E+01	1.02E+01	1.09E+01	1.07E+01	1.02E+01
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	9.18E+00	9.26E+00	9.45E+00	9.63E+00	9.79E+00	9.94E+00	1.01E+01	1.02E+01	1.09E+01	1.07E+01	1.02E+01
bi211	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.40E-01	3.40E-01	3.40E-01	3.42E-01	3.44E-01	3.44E-01
bi212	1.68E-05	1.71E-05	1.78E-05	1.85E-05	1.92E-05	1.99E-05	2.07E-05	2.14E-05	2.57E-05	4.02E-05	4.75E-05
bi213	2.33E+00	2.37E+00	2.46E+00	2.55E+00	2.64E+00	2.72E+00	2.81E+00	2.89E+00	3.34E+00	4.64E+00	4.79E+00
bi214	9.18E+00	9.26E+00	9.45E+00	9.63E+00	9.79E+00	9.94E+00	1.01E+01	1.02E+01	1.09E+01	1.07E+01	1.02E+01
po210	9.18E+00	9.26E+00	9.45E+00	9.63E+00	9.79E+00	9.94E+00	1.01E+01	1.02E+01	1.09E+01	1.07E+01	1.02E+01
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.31E-04	9.32E-04	9.32E-04	9.33E-04	9.34E-04	9.34E-04	9.35E-04	9.36E-04	9.40E-04	9.46E-04	9.47E-04
po212	1.07E-05	1.09E-05	1.14E-05	1.19E-05	1.23E-05	1.28E-05	1.32E-05	1.37E-05	1.65E-05	2.58E-05	3.04E-05
po213	2.28E+00	2.32E+00	2.41E+00	2.50E+00	2.58E+00	2.67E+00	2.75E+00	2.83E+00	3.27E+00	4.54E+00	4.69E+00
po214	9.18E+00	9.26E+00	9.45E+00	9.63E+00	9.79E+00	9.94E+00	1.01E+01	1.02E+01	1.09E+01	1.07E+01	1.02E+01
po215	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.40E-01	3.40E-01	3.40E-01	3.42E-01	3.44E-01	3.44E-01
po216	1.68E-05	1.71E-05	1.78E-05	1.85E-05	1.92E-05	1.99E-05	2.07E-05	2.14E-05	2.57E-05	4.02E-05	4.75E-05
po218	9.18E+00	9.26E+00	9.45E+00	9.63E+00	9.79E+00	9.94E+00	1.01E+01	1.02E+01	1.09E+01	1.07E+01	1.03E+01
at217	2.33E+00	2.37E+00	2.46E+00	2.55E+00	2.64E+00	2.72E+00	2.81E+00	2.89E+00	3.34E+00	4.64E+00	4.79E+00
rn218	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rn219	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.40E-01	3.40E-01	3.40E-01	3.42E-01	3.44E-01	3.44E-01
rn220	1.68E-05	1.71E-05	1.78E-05	1.85E-05	1.92E-05	1.99E-05	2.07E-05	2.14E-05	2.57E-05	4.02E-05	4.75E-05
rn222	9.18E+00	9.26E+00	9.45E+00	9.63E+00	9.79E+00	9.94E+00	1.01E+01	1.02E+01	1.09E+01	1.07E+01	1.03E+01
fr221	2.33E+00	2.37E+00	2.46E+00	2.55E+00	2.64E+00	2.72E+00	2.81E+00	2.89E+00	3.34E+00	4.64E+00	4.79E+00
fr223	4.67E-03	4.67E-03	4.68E-03	4.68E-03	4.68E-03	4.69E-03	4.69E-03	4.70E-03	4.72E-03	4.75E-03	4.75E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ra223	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.40E-01	3.40E-01	3.40E-01	3.42E-01	3.44E-01	3.44E-01
ra224	1.68E-05	1.71E-05	1.78E-05	1.85E-05	1.92E-05	1.99E-05	2.07E-05	2.14E-05	2.57E-05	4.02E-05	4.75E-05
ra225	2.33E+00	2.37E+00	2.46E+00	2.55E+00	2.64E+00	2.72E+00	2.81E+00	2.89E+00	3.34E+00	4.64E+00	4.79E+00
ra226	9.18E+00	9.26E+00	9.45E+00	9.63E+00	9.79E+00	9.94E+00	1.01E+01	1.02E+01	1.09E+01	1.07E+01	1.03E+01
ra228	1.62E-05	1.65E-05	1.72E-05	1.80E-05	1.87E-05	1.94E-05	2.02E-05	2.09E-05	2.53E-05	4.00E-05	4.74E-05
ac225	2.33E+00	2.37E+00	2.46E+00	2.55E+00	2.64E+00	2.72E+00	2.81E+00	2.89E+00	3.34E+00	4.64E+00	4.79E+00
ac227	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.40E-01	3.40E-01	3.40E-01	3.42E-01	3.44E-01	3.44E-01
ac228	1.62E-05	1.65E-05	1.72E-05	1.80E-05	1.87E-05	1.94E-05	2.02E-05	2.09E-05	2.53E-05	4.00E-05	4.74E-05
th226	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th227	3.34E-01	3.34E-01	3.34E-01	3.35E-01	3.35E-01	3.35E-01	3.35E-01	3.36E-01	3.37E-01	3.39E-01	3.39E-01
th228	1.68E-05	1.71E-05	1.78E-05	1.85E-05	1.92E-05	1.99E-05	2.07E-05	2.14E-05	2.57E-05	4.02E-05	4.75E-05
th229	2.33E+00	2.37E+00	2.46E+00	2.55E+00	2.64E+00	2.72E+00	2.81E+00	2.89E+00	3.34E+00	4.64E+00	4.79E+00
th230	9.27E+00	9.35E+00	9.54E+00	9.71E+00	9.86E+00	1.00E+01	1.01E+01	1.03E+01	1.07E+01	1.06E+01	1.01E+01
th231	3.40E-01	3.40E-01	3.41E-01	3.41E-01	3.42E-01	3.42E-01	3.42E-01	3.43E-01	3.44E-01	3.44E-01	3.44E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 165

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
th232	1.62E-05	1.65E-05	1.72E-05	1.80E-05	1.87E-05	1.94E-05	2.02E-05	2.09E-05	2.53E-05	4.00E-05	4.74E-05
th233	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
pa231	3.38E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.40E-01	3.40E-01	3.40E-01	3.42E-01	3.44E-01	3.44E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.64E+00	6.63E+00	6.62E+00	6.61E+00	6.60E+00	6.59E+00	6.58E+00	6.57E+00	6.50E+00	6.30E+00	6.20E+00
pa234m	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
pa234	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03	3.77E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	5.91E-07	5.84E-07	5.66E-07	5.49E-07	5.33E-07	5.17E-07	5.02E-07	4.87E-07	4.06E-07	2.22E-07	1.65E-07
u233	2.54E+00	2.58E+00	2.67E+00	2.75E+00	2.84E+00	2.92E+00	3.00E+00	3.07E+00	3.50E+00	4.52E+00	4.86E+00
u234	1.36E+01	1.36E+01	1.34E+01	1.33E+01	1.31E+01	1.30E+01	1.28E+01	1.27E+01	1.19E+01	9.68E+00	8.79E+00
u235	3.40E-01	3.40E-01	3.41E-01	3.41E-01	3.42E-01	3.42E-01	3.42E-01	3.43E-01	3.44E-01	3.44E-01	3.44E-01
u236	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.99E+00	2.98E+00	2.98E+00	2.97E+00
u237	2.53E-19	2.15E-19	1.43E-19	9.53E-20	6.34E-20	4.21E-20	2.80E-20	1.86E-20	1.61E-21	4.63E-25	7.84E-27
u238	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00	2.90E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u240	3.01E-25	3.10E-25	3.33E-25	3.56E-25	3.79E-25	4.01E-25	4.23E-25	4.45E-25	5.72E-25	9.42E-25	1.10E-24
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	6.64E-06	6.56E-06	6.36E-06	6.17E-06	5.99E-06	5.81E-06	5.64E-06	5.47E-06	4.57E-06	2.50E-06	1.85E-06
np237	6.64E+00	6.63E+00	6.62E+00	6.61E+00	6.60E+00	6.59E+00	6.58E+00	6.57E+00	6.50E+00	6.30E+00	6.20E+00
np238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np239	2.33E-07	1.93E-07	1.21E-07	7.54E-08	4.71E-08	2.94E-08	1.84E-08	1.15E-08	6.84E-10	5.63E-14	5.11E-16
np240m	3.01E-25	3.10E-25	3.33E-25	3.56E-25	3.79E-25	4.01E-25	4.23E-25	4.45E-25	5.72E-25	9.42E-25	1.10E-24
np240	3.61E-28	3.72E-28	4.00E-28	4.27E-28	4.55E-28	4.81E-28	5.08E-28	5.34E-28	6.86E-28	1.13E-27	1.32E-27
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	5.91E-07	5.84E-07	5.66E-07	5.49E-07	5.33E-07	5.17E-07	5.02E-07	4.87E-07	4.06E-07	2.22E-07	1.65E-07
pu237	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu239	1.21E+02	1.14E+02	9.88E+01	8.56E+01	7.41E+01	6.42E+01	5.56E+01	4.82E+01	2.03E+01	1.15E+00	2.72E-01
pu240	2.41E-01	1.95E-01	1.15E-01	6.78E-02	4.00E-02	2.36E-02	1.39E-02	8.20E-03	3.45E-04	8.92E-09	4.53E-11
pu241	1.06E-14	9.01E-15	5.99E-15	3.99E-15	2.65E-15	1.76E-15	1.17E-15	7.80E-16	6.75E-17	1.94E-20	3.28E-22
pu242	4.33E-05	4.32E-05	4.28E-05	4.24E-05	4.20E-05	4.16E-05	4.12E-05	4.08E-05	3.86E-05	3.21E-05	2.92E-05
pu243	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.10E-21	2.09E-21	2.09E-21
pu244	3.01E-25	3.11E-25	3.34E-25	3.57E-25	3.79E-25	4.02E-25	4.24E-25	4.46E-25	5.73E-25	9.43E-25	1.10E-24
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	1.11E-14	9.40E-15	6.00E-15	3.99E-15	2.65E-15	1.76E-15	1.17E-15	7.80E-16	6.75E-17	2.04E-20	3.28E-22
am242m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am243	2.33E-07	1.93E-07	1.21E-07	7.54E-08	4.71E-08	2.94E-08	1.84E-08	1.15E-08	6.84E-10	5.63E-14	5.11E-16
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 166

0 nuclide radioactivity, curies

basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cm242	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm245	1.06E-14	8.99E-15	5.98E-15	3.98E-15	2.65E-15	1.76E-15	1.17E-15	7.79E-16	6.74E-17	1.93E-20	3.27E-22
cm246	1.08E-17	8.09E-18	3.89E-18	1.87E-18	8.98E-19	4.32E-19	2.08E-19	9.97E-20	1.23E-21	5.33E-28	3.42E-31
cm247	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.11E-21	2.10E-21	2.09E-21	2.09E-21
cm248	5.86E-22	5.84E-22	5.78E-22	5.72E-22	5.66E-22	5.61E-22	5.55E-22	5.49E-22	5.17E-22	4.21E-22	3.81E-22
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	2.76E+02	2.71E+02	2.58E+02	2.47E+02	2.38E+02	2.30E+02	2.23E+02	2.18E+02	2.00E+02	1.88E+02	1.82E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 167

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04	3.17E-04
li 7	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06	8.41E-06
be 9	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05	1.62E-05
be 10	1.04E-04	1.04E-04	1.04E-04	1.04E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04	1.01E-04	9.72E-05	9.51E-05
c 14	1.27E-08	9.97E-09	5.44E-09	2.97E-09	1.62E-09	8.87E-10	4.84E-10	2.64E-10	7.01E-12	3.90E-17	9.20E-20
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07	3.03E-07
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08	4.98E-08
zn 68	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09	2.95E-09
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08	9.59E-08
zn 70	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06	2.40E-06
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09	2.53E-09
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05	2.90E-05
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03	2.66E-03
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02	1.07E-02
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03	9.24E-03
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 168

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01	3.39E-01
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01	7.55E-01
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	3.51E+00	3.50E+00	3.46E+00	3.43E+00	3.39E+00	3.35E+00	3.32E+00	3.28E+00	3.08E+00	2.50E+00	2.25E+00
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	6.73E-01	6.88E-01	7.24E-01	7.61E-01	7.96E-01	8.32E-01	8.67E-01	9.02E-01	1.10E+00	1.69E+00	1.94E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04	3.99E-04

cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01
kr 81	7.10E-07	7.05E-07	6.94E-07	6.82E-07	6.71E-07	6.61E-07	6.50E-07	6.39E-07	5.80E-07	4.19E-07	3.56E-07
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 169

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01	3.13E+01
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02	3.52E-02
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02	1.94E+02
rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02	2.54E+02
sr 87	7.96E-04	8.03E-04	8.21E-04	8.40E-04	8.58E-04	8.76E-04	8.95E-04	9.13E-04	1.02E-03	1.39E-03	1.57E-03
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 170

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02	3.67E+02
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02	4.96E+02
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02	6.06E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02	6.22E+02
nb 91	1.10E-28	1.44E-29	8.80E-32	5.38E-34	3.29E-36	2.01E-38	1.23E-40	7.65E-43	.00E+00	.00E+00	.00E+00
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02	6.37E+02
nb 92	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.95E-07	3.94E-07	3.94E-07
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	4.41E+02	4.41E+02	4.40E+02	4.39E+02	4.38E+02	4.37E+02	4.36E+02	4.35E+02	4.29E+02	4.10E+02	4.01E+02
nb 93	1.71E+01	1.75E+01	1.85E+01	1.95E+01	2.05E+01	2.15E+01	2.25E+01	2.34E+01	2.93E+01	4.83E+01	5.75E+01
nb 93m	4.65E-03	4.65E-03	4.64E-03	4.62E-03	4.61E-03	4.60E-03	4.59E-03	4.58E-03	4.52E-03	4.32E-03	4.22E-03
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle

0 fission products page 171

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02	7.10E+02
nb 94	1.50E-04	1.40E-04	1.18E-04	9.95E-05	8.39E-05	7.07E-05	5.96E-05	5.02E-05	1.80E-05	5.93E-07	1.08E-07
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02	7.13E+02
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02	6.53E+02
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02	6.81E+02
tc 98	2.00E-04	2.00E-04	2.00E-04	1.99E-04	1.99E-04	1.99E-04	1.99E-04	1.99E-04	1.98E-04	1.95E-04	1.93E-04
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	5.48E+02	5.44E+02	5.35E+02	5.27E+02	5.18E+02	5.10E+02	5.01E+02	4.93E+02	4.47E+02	3.22E+02	2.73E+02
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	1.72E+02	1.76E+02	1.85E+02	1.94E+02	2.02E+02	2.11E+02	2.19E+02	2.27E+02	2.73E+02	3.98E+02	4.47E+02

rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 172

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02	7.55E+02
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00	5.50E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02	6.24E+02
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02	5.39E+02
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02	3.99E+02
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02	2.69E+02
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01	1.58E+01
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02	1.64E+02

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 173
nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01	8.76E+01
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	4.52E+01	4.52E+01	4.52E+01	4.52E+01	4.51E+01	4.51E+01	4.51E+01	4.51E+01	4.49E+01	4.44E+01	4.42E+01
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	3.92E-01	4.02E-01	4.26E-01	4.50E-01	4.74E-01	4.98E-01	5.22E-01	5.46E-01	6.90E-01	1.17E+00	1.40E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01
ag108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd108	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04	5.25E-04
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01	1.84E+01
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00	8.63E+00
ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 174
nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cd110	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01	5.61E-01
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00	5.01E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00	3.25E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01	1.96E-01
cd113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00	4.91E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 175

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sn115	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02	8.75E-02

tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00	2.72E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02	7.57E-02
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00	2.06E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00	2.05E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 176

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00	2.22E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00	2.63E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03	3.56E-03
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00
te123	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06	1.69E-06
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00	4.46E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03	5.36E-03
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00	5.20E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	4.67E+00	4.61E+00	4.45E+00	4.30E+00	4.15E+00	4.01E+00	3.87E+00	3.74E+00	3.04E+00	1.52E+00	1.07E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 177

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sb126	2.22E-07	2.19E-07	2.11E-07	2.04E-07	1.97E-07	1.91E-07	1.84E-07	1.78E-07	1.44E-07	7.22E-08	5.11E-08
sb126m	1.69E-09	1.66E-09	1.61E-09	1.55E-09	1.50E-09	1.45E-09	1.40E-09	1.35E-09	1.10E-09	5.49E-10	3.88E-10
te126	3.61E+00	3.68E+00	3.83E+00	3.98E+00	4.13E+00	4.27E+00	4.41E+00	4.54E+00	5.24E+00	6.76E+00	7.21E+00
xe126	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10	8.47E-10
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01	5.81E+01
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02	3.17E-02
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.22E+02	1.22E+02
xe129	4.55E-01	4.66E-01	4.93E-01	5.21E-01	5.48E-01	5.75E-01	6.02E-01	6.29E-01	7.92E-01	1.33E+00	1.60E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02	2.79E+02
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01	5.45E-01
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02	4.50E+02
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 178

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02	7.09E+02
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06

in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03	1.06E+03
ba133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01	1.07E+01
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.03E+03	1.03E+03	1.03E+03	1.02E+03	9.92E+02	9.77E+02
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	2.66E+01	2.73E+01	2.88E+01	3.04E+01	3.20E+01	3.35E+01	3.51E+01	3.66E+01	4.59E+01	7.63E+01	9.11E+01
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03	1.03E+03
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00	4.03E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 179

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03
ba137m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba138	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03	1.10E+03
la138	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03	5.84E-03
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02	9.88E+02
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00	1.90E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1
0 Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 180

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02	9.53E+02
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02	9.70E+02

i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02	6.66E+02
pm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02	5.25E+02
pm146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.36E-04	8.36E-04	8.36E-04
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02	3.89E+02
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02	2.98E+02
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 181

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sm148	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00	8.64E+00
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00	8.79E+00
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02
eu150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu151	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01	3.76E+01
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01	7.57E+01
eu152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01	2.01E+01
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01	3.65E+01
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 182

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sm154	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01	1.64E+01
eu154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00	2.15E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01	6.66E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01	1.12E+01
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00	3.07E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01	4.41E-01
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 183

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
dy161	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02	3.62E-02
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03	3.85E-03
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ho165	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	1.82E-17	5.73E-18	3.19E-19	1.78E-20	9.90E-22	5.51E-23	3.07E-24	1.71E-25	5.08E-33	.00E+00	.00E+00
er166	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04
er167	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06	1.25E-06
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07	3.38E-07
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07	4.80E-07
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07	5.06E-07
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09	2.88E-09
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07	7.02E-07
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07	4.57E-07
total	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04	2.78E+04

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 184

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
be 10	2.33E-06	2.33E-06	2.32E-06	2.32E-06	2.31E-06	2.31E-06	2.30E-06	2.30E-06	2.27E-06	2.17E-06	2.13E-06
c 14	5.66E-08	4.45E-08	2.43E-08	1.33E-08	7.24E-09	3.95E-09	2.16E-09	1.18E-09	3.13E-11	1.74E-16	4.10E-19
ni 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 185

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
zn 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 79	4.82E-02	4.80E-02	4.75E-02	4.70E-02	4.65E-02	4.60E-02	4.55E-02	4.51E-02	4.23E-02	3.43E-02	3.09E-02
se 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	1.47E-08	1.46E-08	1.44E-08	1.41E-08	1.39E-08	1.37E-08	1.35E-08	1.33E-08	1.20E-08	8.68E-09	7.38E-09
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 186

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05
sr 87	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 187

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	6.39E-28	8.31E-29	5.02E-31	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
se 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.39E-11	4.38E-11	4.37E-11
se 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	1.11E+00	1.11E+00	1.11E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.09E+00	1.08E+00	1.03E+00	1.01E+00
nb 93	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	1.11E+00	1.11E+00	1.11E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.09E+00	1.08E+00	1.03E+00	1.01E+00
br 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 188

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	2.81E-05	2.62E-05	2.21E-05	1.86E-05	1.57E-05	1.32E-05	1.12E-05	9.42E-06	3.38E-06	1.11E-07	2.02E-08
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	1.74E-07	1.74E-07	1.73E-07	1.73E-07	1.73E-07	1.73E-07	1.73E-07	1.73E-07	1.72E-07	1.69E-07	1.68E-07
rb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	9.37E+00	9.31E+00	9.16E+00	9.01E+00	8.86E+00	8.72E+00	8.58E+00	8.44E+00	7.65E+00	5.51E+00	4.67E+00
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 189

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 190

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
y106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd107	2.33E-02	2.33E-02	2.32E-02	2.32E-02	2.32E-02	2.32E-02	2.32E-02	2.32E-02	2.31E-02	2.29E-02	2.27E-02
pd107m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd108	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ag110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 191

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd113	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14	6.67E-14
cd113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in115	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11	1.18E-11
in115m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 192

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 193

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb121	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te123	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16	3.96E-16
te123m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn126	1.33E-01	1.31E-01	1.26E-01	1.22E-01	1.18E-01	1.14E-01	1.10E-01	1.06E-01	8.63E-02	4.31E-02	3.05E-02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 194

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sb126	1.86E-02	1.83E-02	1.77E-02	1.71E-02	1.65E-02	1.59E-02	1.54E-02	1.49E-02	1.21E-02	6.04E-03	4.27E-03
sb126m	1.33E-01	1.31E-01	1.26E-01	1.22E-01	1.18E-01	1.14E-01	1.10E-01	1.06E-01	8.63E-02	4.31E-02	3.05E-02

te126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i129	2.17E-02	2.17E-02	2.17E-02	2.17E-02	2.17E-02	2.17E-02	2.17E-02	2.17E-02	2.17E-02	2.16E-02	2.15E-02
xe129	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 195

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
cd132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba133	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs135	1.20E+00	1.20E+00	1.20E+00	1.20E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.18E+00	1.14E+00	1.13E+00
cs135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 196

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sb137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la138	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10
sb139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce142	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05
pr142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 197

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
xe143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd144	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09	1.15E-09
i145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm146	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm146	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08
xe147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm147	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06	8.92E-06
cs148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 198

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sm148	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12	2.64E-12
cs149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm149	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12	2.11E-12
eu149	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu150	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu151	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd152	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10	4.39E-10
la153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 199

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd154	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 200

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	40000. yr	45000. yr	50000. yr	55000. yr	60000. yr	65000. yr	70000. yr	100000. yr	200000. yr	250000. yr
dy161	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

eu165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho165	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
dy166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	3.27E-17	1.03E-17	5.73E-19	3.19E-20	1.78E-21	9.89E-23	5.51E-24	3.07E-25	.00E+00	.00E+00	.00E+00
er166	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er167m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb168	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb169	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb170	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb171	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
er172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
yb172	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	1.32E+01	1.31E+01	1.29E+01	1.28E+01	1.26E+01	1.24E+01	1.23E+01	1.21E+01	1.13E+01	8.88E+00	7.95E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 201

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
he 4	5.80E+02	6.23E+02	7.83E+02	1.10E+03
tl206	6.22E-14	5.83E-14	4.25E-14	2.38E-14
tl207	1.80E-09	1.80E-09	1.80E-09	1.80E-09
tl208	5.77E-14	6.65E-14	1.02E-13	1.89E-13
tl209	2.46E-10	2.59E-10	2.91E-10	2.68E-10
pb206	1.14E+03	1.33E+03	1.99E+03	3.02E+03
pb207	4.07E+01	4.76E+01	7.52E+01	1.44E+02
pb208	2.06E-01	2.08E-01	2.13E-01	2.37E-01
pb209	1.04E-06	1.10E-06	1.23E-06	1.13E-06
pb210	1.34E-01	1.26E-01	9.16E-02	5.14E-02
pb211	1.39E-08	1.39E-08	1.39E-08	1.39E-08
pb212	3.42E-11	3.94E-11	6.04E-11	1.12E-10
pb214	3.12E-07	2.93E-07	2.13E-07	1.20E-07
bi208	.00E+00	.00E+00	.00E+00	.00E+00
bi209	3.82E+02	4.82E+02	9.26E+02	2.05E+03
bi210m	.00E+00	.00E+00	.00E+00	.00E+00
bi210	8.26E-05	7.74E-05	5.64E-05	3.16E-05
bi211	8.26E-10	8.26E-10	8.26E-10	8.26E-10
bi212	3.24E-12	3.74E-12	5.73E-12	1.07E-11
bi213	2.47E-07	2.61E-07	2.92E-07	2.69E-07
bi214	2.32E-07	2.17E-07	1.59E-07	8.89E-08
po210	2.28E-03	2.14E-03	1.56E-03	8.74E-04
po211m	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.13E-15	9.13E-15	9.13E-15	9.13E-15
po212	1.70E-22	1.97E-22	3.01E-22	5.60E-22
po213	3.71E-16	3.92E-16	4.40E-16	4.04E-16
po214	3.19E-14	2.99E-14	2.18E-14	1.22E-14

po215	1.17E-14	1.17E-14	1.17E-14	1.17E-14
po216	1.32E-16	1.52E-16	2.33E-16	4.33E-16
po218	3.68E-08	3.45E-08	2.52E-08	1.41E-08
at217	2.97E-12	3.14E-12	3.52E-12	3.24E-12
rn218	.00E+00	.00E+00	.00E+00	.00E+00
rn219	2.64E-11	2.65E-11	2.64E-11	2.64E-11
rn220	5.15E-14	5.94E-14	9.09E-14	1.69E-13
rn222	6.66E-05	6.24E-05	4.55E-05	2.55E-05
fr221	2.76E-08	2.91E-08	3.26E-08	3.00E-08
fr223	1.23E-10	1.23E-10	1.23E-10	1.23E-10
ra222	.00E+00	.00E+00	.00E+00	.00E+00
ra223	6.72E-06	6.72E-06	6.72E-06	6.71E-06
ra224	2.98E-10	3.44E-10	5.27E-10	9.80E-10
ra225	1.22E-04	1.29E-04	1.44E-04	1.33E-04
ra226	1.04E+01	9.71E+00	7.08E+00	3.97E+00
ra228	1.74E-07	2.00E-07	3.07E-07	5.72E-07
ac225	8.25E-05	8.71E-05	9.76E-05	8.98E-05
ac227	4.76E-03	4.76E-03	4.76E-03	4.75E-03
ac228	2.12E-11	2.45E-11	3.75E-11	6.98E-11
th226	.00E+00	.00E+00	.00E+00	.00E+00
th227	1.10E-05	1.10E-05	1.10E-05	1.10E-05
th228	5.80E-08	6.68E-08	1.02E-07	1.90E-07
th229	2.42E+01	2.55E+01	2.86E+01	2.63E+01
th230	4.90E+02	4.59E+02	3.38E+02	1.90E+02
th231	6.47E-07	6.47E-07	6.47E-07	6.47E-07

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 202

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
th232	4.32E+02	4.98E+02	7.64E+02	1.42E+03
th233	.00E+00	.00E+00	.00E+00	.00E+00
th234	1.25E-04	1.25E-04	1.25E-04	1.25E-04
pa231	7.28E+00	7.28E+00	7.28E+00	7.28E+00
pa232	.00E+00	.00E+00	.00E+00	.00E+00
pa233	2.98E-04	2.94E-04	2.75E-04	2.34E-04
pa234m	4.23E-09	4.23E-09	4.23E-09	4.23E-09
pa234	1.89E-09	1.89E-09	1.89E-09	1.89E-09
pa235	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00
u232	7.45E-09	5.51E-09	1.65E-09	8.11E-11
u233	5.04E+02	5.30E+02	5.76E+02	5.37E+02
u234	1.41E+03	1.29E+03	9.34E+02	5.81E+02
u235	1.59E+05	1.59E+05	1.59E+05	1.59E+05
u236	4.59E+04	4.58E+04	4.56E+04	4.49E+04
u237	9.60E-32	1.63E-33	1.34E-40	.00E+00
u238	8.63E+06	8.63E+06	8.63E+06	8.63E+06
u239	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.19E-30	1.34E-30	1.82E-30	2.43E-30
u241	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00
np236	1.40E-04	1.04E-04	3.11E-05	1.53E-06
np237	8.79E+03	8.64E+03	8.10E+03	6.89E+03
np238	.00E+00	.00E+00	.00E+00	.00E+00
np239	2.20E-21	2.00E-23	8.91E-27	8.72E-27
np240m	1.01E-32	1.15E-32	1.56E-32	2.07E-32
np240	1.04E-34	1.18E-34	1.60E-34	2.13E-34
np241	.00E+00	.00E+00	.00E+00	.00E+00

pu236	3.15E-10	2.33E-10	6.98E-11	3.43E-12
pu237	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00
pu239	4.39E+00	1.04E+00	3.31E-03	1.89E-09
pu240	2.00E-10	1.02E-12	6.86E-22	9.91E-24
pu241	3.17E-24	5.37E-26	4.42E-33	.00E+00
pu242	7.39E-03	6.74E-03	4.65E-03	1.84E-03
pu243	8.03E-28	8.01E-28	7.94E-28	7.77E-28
pu244	6.02E-20	6.80E-20	9.23E-20	1.23E-19
pu245	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00
am241	9.56E-23	1.62E-24	1.40E-31	.00E+00
am242m	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00
am243	2.56E-15	2.32E-17	1.04E-20	1.01E-20
am244m	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 203

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
cm242	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00
cm245	1.91E-21	3.23E-23	2.66E-30	.00E+00
cm246	1.14E-30	7.51E-34	.00E+00	.00E+00
cm247	2.31E-17	2.30E-17	2.28E-17	2.23E-17
cm248	8.97E-20	8.10E-20	5.39E-20	1.94E-20
cm249	.00E+00	.00E+00	.00E+00	.00E+00
cm250	2.50E-39	3.41E-40	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00
total	8.85E+06	8.85E+06	8.85E+06	8.85E+06

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 204

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
he 4	.00E+00	.00E+00	.00E+00	.00E+00
tl206	1.35E-05	1.27E-05	9.24E-06	5.18E-06

tl207	3.43E-01	3.43E-01	3.43E-01	3.43E-01
tl208	1.71E-05	1.97E-05	3.01E-05	5.61E-05
tl209	1.01E-01	1.06E-01	1.19E-01	1.09E-01
pb206	.00E+00	.00E+00	.00E+00	.00E+00
pb207	.00E+00	.00E+00	.00E+00	.00E+00
pb208	.00E+00	.00E+00	.00E+00	.00E+00
pb209	4.79E+00	5.06E+00	5.67E+00	5.21E+00
pb210	1.02E+01	9.60E+00	7.00E+00	3.93E+00
pb211	3.44E-01	3.44E-01	3.44E-01	3.44E-01
pb212	4.75E-05	5.48E-05	8.39E-05	1.56E-04
pb214	1.02E+01	9.60E+00	7.00E+00	3.93E+00
bi208	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	.00E+00	.00E+00	.00E+00
bi210m	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.02E+01	9.60E+00	7.00E+00	3.93E+00
bi211	3.44E-01	3.44E-01	3.44E-01	3.44E-01
bi212	4.75E-05	5.48E-05	8.39E-05	1.56E-04
bi213	4.79E+00	5.06E+00	5.67E+00	5.21E+00
bi214	1.02E+01	9.60E+00	7.00E+00	3.93E+00
po210	1.02E+01	9.60E+00	7.00E+00	3.93E+00
po211m	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.47E-04	9.47E-04	9.47E-04	9.46E-04
po212	3.04E-05	3.51E-05	5.38E-05	1.00E-04
po213	4.69E+00	4.95E+00	5.55E+00	5.10E+00
po214	1.02E+01	9.60E+00	7.00E+00	3.93E+00
po215	3.44E-01	3.44E-01	3.44E-01	3.44E-01
po216	4.75E-05	5.48E-05	8.39E-05	1.56E-04
po218	1.03E+01	9.60E+00	7.00E+00	3.93E+00
at217	4.79E+00	5.06E+00	5.67E+00	5.21E+00
rn218	.00E+00	.00E+00	.00E+00	.00E+00
rn219	3.44E-01	3.44E-01	3.44E-01	3.44E-01
rn220	4.75E-05	5.48E-05	8.39E-05	1.56E-04
rn222	1.03E+01	9.60E+00	7.00E+00	3.93E+00
fr221	4.79E+00	5.06E+00	5.67E+00	5.21E+00
fr223	4.75E-03	4.75E-03	4.75E-03	4.75E-03
ra222	.00E+00	.00E+00	.00E+00	.00E+00
ra223	3.44E-01	3.44E-01	3.44E-01	3.44E-01
ra224	4.75E-05	5.48E-05	8.39E-05	1.56E-04
ra225	4.79E+00	5.06E+00	5.67E+00	5.21E+00
ra226	1.03E+01	9.60E+00	7.00E+00	3.93E+00
ra228	4.74E-05	5.47E-05	8.39E-05	1.56E-04
ac225	4.79E+00	5.06E+00	5.67E+00	5.21E+00
ac227	3.44E-01	3.44E-01	3.44E-01	3.44E-01
ac228	4.74E-05	5.47E-05	8.39E-05	1.56E-04
th226	.00E+00	.00E+00	.00E+00	.00E+00
th227	3.39E-01	3.40E-01	3.39E-01	3.39E-01
th228	4.75E-05	5.48E-05	8.39E-05	1.56E-04
th229	4.79E+00	5.06E+00	5.67E+00	5.21E+00
th230	1.01E+01	9.46E+00	6.97E+00	3.93E+00
th231	3.44E-01	3.44E-01	3.44E-01	3.44E-01

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 205

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
th232	4.74E-05	5.47E-05	8.39E-05	1.56E-04
th233	.00E+00	.00E+00	.00E+00	.00E+00
th234	2.90E+00	2.90E+00	2.90E+00	2.90E+00
pa231	3.44E-01	3.44E-01	3.44E-01	3.44E-01
pa232	.00E+00	.00E+00	.00E+00	.00E+00

pa233	6.20E+00	6.10E+00	5.71E+00	4.86E+00
pa234m	2.90E+00	2.90E+00	2.90E+00	2.90E+00
pa234	3.77E-03	3.77E-03	3.77E-03	3.77E-03
pa235	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	.00E+00	.00E+00	.00E+00
u231	.00E+00	.00E+00	.00E+00	.00E+00
u232	1.65E-07	1.22E-07	3.65E-08	1.79E-09
u233	4.86E+00	5.11E+00	5.55E+00	5.18E+00
u234	8.79E+00	8.02E+00	5.81E+00	3.61E+00
u235	3.44E-01	3.44E-01	3.44E-01	3.44E-01
u236	2.97E+00	2.97E+00	2.95E+00	2.91E+00
u237	7.84E-27	1.33E-28	.00E+00	.00E+00
u238	2.90E+00	2.90E+00	2.90E+00	2.90E+00
u239	.00E+00	.00E+00	.00E+00	.00E+00
u240	1.10E-24	1.24E-24	1.69E-24	2.25E-24
u241	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	.00E+00	.00E+00	.00E+00
np236m	.00E+00	.00E+00	.00E+00	.00E+00
np236	1.85E-06	1.37E-06	4.10E-07	2.01E-08
np237	6.20E+00	6.10E+00	5.71E+00	4.86E+00
np238	.00E+00	.00E+00	.00E+00	.00E+00
np239	5.11E-16	4.64E-18	2.07E-21	2.02E-21
np240m	1.10E-24	1.24E-24	1.69E-24	2.25E-24
np240	1.32E-27	1.49E-27	2.03E-27	2.70E-27
np241	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.65E-07	1.22E-07	3.65E-08	1.79E-09
pu237	.00E+00	.00E+00	.00E+00	.00E+00
pu238	.00E+00	.00E+00	.00E+00	.00E+00
pu239	2.72E-01	6.47E-02	2.06E-04	1.17E-10
pu240	4.53E-11	2.31E-13	1.56E-22	2.25E-24
pu241	3.28E-22	5.55E-24	4.56E-31	.00E+00
pu242	2.92E-05	2.66E-05	1.84E-05	7.27E-06
pu243	2.09E-21	2.08E-21	2.07E-21	2.02E-21
pu244	1.10E-24	1.25E-24	1.69E-24	2.25E-24
pu245	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	.00E+00	.00E+00	.00E+00
am240	.00E+00	.00E+00	.00E+00	.00E+00
am241	3.28E-22	5.55E-24	4.79E-31	.00E+00
am242m	.00E+00	.00E+00	.00E+00	.00E+00
am242	.00E+00	.00E+00	.00E+00	.00E+00
am243	5.11E-16	4.64E-18	2.07E-21	2.02E-21
am244m	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	.00E+00	.00E+00	.00E+00
am245	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle actinides page 206

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
cm242	.00E+00	.00E+00	.00E+00	.00E+00
cm243	.00E+00	.00E+00	.00E+00	.00E+00
cm244	.00E+00	.00E+00	.00E+00	.00E+00
cm245	3.27E-22	5.55E-24	4.56E-31	.00E+00
cm246	3.42E-31	.00E+00	.00E+00	.00E+00
cm247	2.09E-21	2.08E-21	2.07E-21	2.02E-21
cm248	3.81E-22	3.44E-22	2.29E-22	8.25E-23
cm249	.00E+00	.00E+00	.00E+00	.00E+00

cm250	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00
bk249	.00E+00	.00E+00	.00E+00	.00E+00
bk250	.00E+00	.00E+00	.00E+00	.00E+00
bk251	.00E+00	.00E+00	.00E+00	.00E+00
cf249	.00E+00	.00E+00	.00E+00	.00E+00
cf250	.00E+00	.00E+00	.00E+00	.00E+00
cf251	.00E+00	.00E+00	.00E+00	.00E+00
cf252	.00E+00	.00E+00	.00E+00	.00E+00
cf253	.00E+00	.00E+00	.00E+00	.00E+00
cf254	.00E+00	.00E+00	.00E+00	.00E+00
cf255	.00E+00	.00E+00	.00E+00	.00E+00
es253	.00E+00	.00E+00	.00E+00	.00E+00
es254m	.00E+00	.00E+00	.00E+00	.00E+00
es254	.00E+00	.00E+00	.00E+00	.00E+00
es255	.00E+00	.00E+00	.00E+00	.00E+00
s250	.00E+00	.00E+00	.00E+00	.00E+00
total	1.82E+02	1.77E+02	1.54E+02	1.15E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 207

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00
li 6	3.17E-04	3.17E-04	3.17E-04	3.17E-04
li 7	8.41E-06	8.41E-06	8.41E-06	8.41E-06
be 9	1.62E-05	1.62E-05	1.62E-05	1.62E-05
be 10	9.51E-05	9.31E-05	8.53E-05	6.87E-05
c 14	9.20E-20	2.17E-22	6.71E-33	.00E+00
ni 66	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	3.03E-07	3.03E-07	3.03E-07	3.03E-07
cu 67	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	4.98E-08	4.98E-08	4.98E-08	4.98E-08
zn 68	2.95E-09	2.95E-09	2.95E-09	2.95E-09
zn 69	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	9.59E-08	9.59E-08	9.59E-08	9.59E-08
zn 70	2.40E-06	2.40E-06	2.40E-06	2.40E-06
ga 70	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	2.53E-09	2.53E-09	2.53E-09	2.53E-09
zn 71	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	2.90E-05	2.90E-05	2.90E-05	2.90E-05
ge 71	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	2.66E-03	2.66E-03	2.66E-03	2.66E-03
co 73	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00
zn 73	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	1.07E-02	1.07E-02	1.07E-02	1.07E-02
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00

ni 74	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	9.24E-03	9.24E-03	9.24E-03	9.24E-03
co 75	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00
as 75	1.04E-01	1.04E-01	1.04E-01	1.04E-01
ni 76	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00

1
Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 208
0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
zn 76	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	3.39E-01	3.39E-01	3.39E-01	3.39E-01
as 76	.00E+00	.00E+00	.00E+00	.00E+00
se 76	1.09E-04	1.09E-04	1.09E-04	1.09E-04
ni 77	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00
se 77	7.55E-01	7.55E-01	7.55E-01	7.55E-01
se 77m	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00
se 78	2.05E+00	2.05E+00	2.05E+00	2.05E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00
se 79	2.25E+00	2.03E+00	1.33E+00	4.65E-01
se 79m	.00E+00	.00E+00	.00E+00	.00E+00
br 79	1.94E+00	2.16E+00	2.86E+00	3.72E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00
as 80	.00E+00	.00E+00	.00E+00	.00E+00
se 80	1.23E+01	1.23E+01	1.23E+01	1.23E+01
br 80	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	3.99E-04	3.99E-04	3.99E-04	3.99E-04

cu 81	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00
br 81	1.84E+01	1.84E+01	1.84E+01	1.84E+01
kr 81	3.56E-07	3.02E-07	1.58E-07	3.10E-08
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 209

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
ge 82	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00
se 82	3.13E+01	3.13E+01	3.13E+01	3.13E+01
br 82	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	3.52E-02	3.52E-02	3.52E-02	3.52E-02
zn 83	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	5.03E+01	5.03E+01	5.03E+01	5.03E+01
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	1.06E+02	1.06E+02	1.06E+02	1.06E+02
ga 85	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	1.20E+02	1.20E+02	1.20E+02	1.20E+02
ge 86	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	1.94E+02	1.94E+02	1.94E+02	1.94E+02
rb 86	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	1.28E-02	1.28E-02	1.28E-02	1.28E-02
ge 87	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00

se 87	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	2.54E+02	2.54E+02	2.54E+02	2.54E+02
sr 87	1.57E-03	1.76E-03	2.49E-03	4.33E-03
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 210

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
br 88	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	3.67E+02	3.67E+02	3.67E+02	3.67E+02
as 89	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00
y 89	4.96E+02	4.96E+02	4.96E+02	4.96E+02
y 89m	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	6.06E+02	6.06E+02	6.06E+02	6.06E+02
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	6.22E+02	6.22E+02	6.22E+02	6.22E+02
nb 91	.00E+00	.00E+00	.00E+00	.00E+00
se 92	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	6.37E+02	6.37E+02	6.37E+02	6.37E+02
nb 92	3.94E-07	3.93E-07	3.92E-07	3.88E-07
se 93	.00E+00	.00E+00	.00E+00	.00E+00
br 93	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00

zr 93	4.01E+02	3.92E+02	3.58E+02	2.85E+02
nb 93	5.75E+01	6.65E+01	1.00E+02	1.73E+02
nb 93m	4.22E-03	4.13E-03	3.77E-03	3.01E-03
br 94	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 211

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sr 94	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	7.10E+02	7.10E+02	7.10E+02	7.10E+02
nb 94	1.08E-07	1.95E-08	2.11E-11	8.10E-19
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	7.23E+02	7.23E+02	7.23E+02	7.23E+02
br 96	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	7.13E+02	7.13E+02	7.13E+02	7.13E+02
nb 96	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	3.07E+00	3.07E+00	3.07E+00	3.07E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	6.53E+02	6.53E+02	6.53E+02	6.53E+02
kr 98	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	6.81E+02	6.81E+02	6.81E+02	6.81E+02
tc 98	1.93E-04	1.91E-04	1.85E-04	1.70E-04
rb 99	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00
nb 99m	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	2.73E+02	2.32E+02	1.20E+02	2.33E+01
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	4.47E+02	4.88E+02	6.00E+02	6.97E+02

rb100	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 212

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00
mo100	7.55E+02	7.55E+02	7.55E+02	7.55E+02
tc100	.00E+00	.00E+00	.00E+00	.00E+00
ru100	5.50E+00	5.50E+00	5.50E+00	5.50E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00
ru101	6.24E+02	6.24E+02	6.24E+02	6.24E+02
sr102	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00
ru102	5.39E+02	5.39E+02	5.39E+02	5.39E+02
rh102	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00
rh103	3.99E+02	3.99E+02	3.99E+02	3.99E+02
rh103m	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00
ru104	2.69E+02	2.69E+02	2.69E+02	2.69E+02
rh104	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00
pd104	1.58E+01	1.58E+01	1.58E+01	1.58E+01
y105	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00
tc105	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00
pd105	1.64E+02	1.64E+02	1.64E+02	1.64E+02

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 213

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
y106	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00
pd106	8.76E+01	8.76E+01	8.76E+01	8.76E+01
ag106	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00
pd107	4.42E+01	4.40E+01	4.30E+01	4.08E+01
pd107m	.00E+00	.00E+00	.00E+00	.00E+00
ag107	1.40E+00	1.64E+00	2.57E+00	4.80E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00
pd108	2.60E+01	2.60E+01	2.60E+01	2.60E+01
ag108	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00
cd108	5.25E-04	5.25E-04	5.25E-04	5.25E-04
zr109	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00
ag109	1.84E+01	1.84E+01	1.84E+01	1.84E+01
ag109m	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00
pd110	8.63E+00	8.63E+00	8.63E+00	8.63E+00
ag110	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 214

0 nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
cd110	5.61E-01	5.61E-01	5.61E-01	5.61E-01
nb111	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00
cd111	5.01E+00	5.01E+00	5.01E+00	5.01E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00
cd112	3.25E+00	3.25E+00	3.25E+00	3.25E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00
cd113	1.96E-01	1.96E-01	1.96E-01	1.96E-01
cd113m	.00E+00	.00E+00	.00E+00	.00E+00
in113	4.50E-02	4.50E-02	4.50E-02	4.50E-02
in113m	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00
cd114	4.91E+00	4.91E+00	4.91E+00	4.91E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00
sn114	1.10E-04	1.10E-04	1.10E-04	1.10E-04
mo115	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00
in115	1.67E+00	1.67E+00	1.67E+00	1.67E+00
in115m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 215

0

nuclide concentrations, grams

basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sn115	8.75E-02	8.75E-02	8.75E-02	8.75E-02

tc116	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00
cd116	2.72E+00	2.72E+00	2.72E+00	2.72E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00
sn116	7.57E-02	7.57E-02	7.57E-02	7.57E-02
tc117	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00
sn117	1.99E+00	1.99E+00	1.99E+00	1.99E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00
sn118	1.88E+00	1.88E+00	1.88E+00	1.88E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00
sn119	2.06E+00	2.06E+00	2.06E+00	2.06E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00
sn120	2.05E+00	2.05E+00	2.05E+00	2.05E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 216

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
pd121	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00

in121m	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00
sb121	2.22E+00	2.22E+00	2.22E+00	2.22E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00
sn122	2.63E+00	2.63E+00	2.63E+00	2.63E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00
te122	3.56E-03	3.56E-03	3.56E-03	3.56E-03
rh123	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00
sb123	2.68E+00	2.68E+00	2.68E+00	2.68E+00
te123	1.69E-06	1.69E-06	1.69E-06	1.69E-06
te123m	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00
sn124	4.46E+00	4.46E+00	4.46E+00	4.46E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00
te124	5.36E-03	5.36E-03	5.36E-03	5.36E-03
pd125	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00
te125	5.20E+00	5.20E+00	5.20E+00	5.20E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00
sn126	1.07E+00	7.60E-01	1.90E-01	5.94E-03

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 217

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sb126	5.11E-08	3.61E-08	9.03E-09	2.82E-10
sb126m	3.88E-10	2.74E-10	6.86E-11	2.14E-12
te126	7.21E+00	7.52E+00	8.09E+00	8.28E+00
xe126	8.47E-10	8.47E-10	8.47E-10	8.47E-10
ag127	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00

in127m	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00
i127	2.21E+01	2.21E+01	2.21E+01	2.21E+01
xe127	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00
te128	5.81E+01	5.81E+01	5.81E+01	5.81E+01
i128	.00E+00	.00E+00	.00E+00	.00E+00
xe128	3.17E-02	3.17E-02	3.17E-02	3.17E-02
cd129	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00
i129	1.22E+02	1.22E+02	1.21E+02	1.18E+02
xe129	1.60E+00	1.87E+00	2.94E+00	5.58E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00
te130	2.79E+02	2.79E+02	2.79E+02	2.79E+02
i130	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00
xe130	5.45E-01	5.45E-01	5.45E-01	5.45E-01
cd131	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00
xe131	4.50E+02	4.50E+02	4.50E+02	4.50E+02
xe131m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 218

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
cd132	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00
te132	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00
xe132	7.09E+02	7.09E+02	7.09E+02	7.09E+02
cs132	.00E+00	.00E+00	.00E+00	.00E+00
ba132	4.87E-06	4.87E-06	4.87E-06	4.87E-06

in133	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00
cs133	1.06E+03	1.06E+03	1.06E+03	1.06E+03
ba133	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00
xe134	1.26E+03	1.26E+03	1.26E+03	1.26E+03
xe134m	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00
ba134	1.07E+01	1.07E+01	1.07E+01	1.07E+01
sn135	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00
cs135	9.77E+02	9.62E+02	9.06E+02	7.79E+02
cs135m	.00E+00	.00E+00	.00E+00	.00E+00
ba135	9.11E+01	1.06E+02	1.62E+02	2.89E+02
ba135m	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00
xe136	1.03E+03	1.03E+03	1.03E+03	1.03E+03
cs136	.00E+00	.00E+00	.00E+00	.00E+00
ba136	4.03E+00	4.03E+00	4.03E+00	4.03E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 219

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sb137	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00
ba137	1.04E+03	1.04E+03	1.04E+03	1.04E+03
ba137m	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00
te138	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00

ba138	1.10E+03	1.10E+03	1.10E+03	1.10E+03
la138	5.84E-03	5.84E-03	5.84E-03	5.84E-03
sb139	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00
la139	1.05E+03	1.05E+03	1.05E+03	1.05E+03
ce139	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00
ce140	1.05E+03	1.05E+03	1.05E+03	1.05E+03
pr140	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00
pr141	9.73E+02	9.73E+02	9.73E+02	9.73E+02
nd141	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00
ce142	9.88E+02	9.88E+02	9.88E+02	9.88E+02
pr142	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00
nd142	1.90E+00	1.90E+00	1.90E+00	1.90E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 220

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
xe143	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00
nd143	9.53E+02	9.53E+02	9.53E+02	9.53E+02
i144	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00
la144	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00
nd144	9.70E+02	9.70E+02	9.70E+02	9.70E+02

i145	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00
nd145	6.66E+02	6.66E+02	6.66E+02	6.66E+02
pm145	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00
nd146	5.25E+02	5.25E+02	5.25E+02	5.25E+02
pm146	.00E+00	.00E+00	.00E+00	.00E+00
sm146	8.36E-04	8.35E-04	8.34E-04	8.31E-04
xe147	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00
sm147	3.89E+02	3.89E+02	3.89E+02	3.89E+02
cs148	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00
nd148	2.98E+02	2.98E+02	2.98E+02	2.98E+02
pm148	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 221

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sm148	8.64E+00	8.64E+00	8.64E+00	8.64E+00
cs149	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00
sm149	8.79E+00	8.79E+00	8.79E+00	8.79E+00
eu149	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00
pr150	.00E+00	.00E+00	.00E+00	.00E+00
nd150	1.23E+02	1.23E+02	1.23E+02	1.23E+02
pm150	.00E+00	.00E+00	.00E+00	.00E+00
sm150	1.85E+02	1.85E+02	1.85E+02	1.85E+02
eu150	.00E+00	.00E+00	.00E+00	.00E+00

ba151	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00
eu151	3.76E+01	3.76E+01	3.76E+01	3.76E+01
ba152	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00
sm152	7.57E+01	7.57E+01	7.57E+01	7.57E+01
eu152	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00
gd152	2.01E+01	2.01E+01	2.01E+01	2.01E+01
la153	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00
eu153	3.65E+01	3.65E+01	3.65E+01	3.65E+01
gd153	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 222

0 nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sm154	1.64E+01	1.64E+01	1.64E+01	1.64E+01
eu154	.00E+00	.00E+00	.00E+00	.00E+00
gd154	2.15E+00	2.15E+00	2.15E+00	2.15E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00
gd155	6.66E-01	6.66E-01	6.66E-01	6.66E-01
ce156	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00
eu156	.00E+00	.00E+00	.00E+00	.00E+00
gd156	1.12E+01	1.12E+01	1.12E+01	1.12E+01
ce157	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00

pm157	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00
gd157	5.42E-02	5.42E-02	5.42E-02	5.42E-02
pr158	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00
gd158	3.07E+00	3.07E+00	3.07E+00	3.07E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00
tb159	4.41E-01	4.41E-01	4.41E-01	4.41E-01
nd160	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00
gd160	1.79E-01	1.79E-01	1.79E-01	1.79E-01
tb160	.00E+00	.00E+00	.00E+00	.00E+00
dy160	2.30E-03	2.30E-03	2.30E-03	2.30E-03
nd161	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 223

0

nuclide concentrations, grams
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
dy161	7.00E-02	7.00E-02	7.00E-02	7.00E-02
pm162	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00
dy162	3.62E-02	3.62E-02	3.62E-02	3.62E-02
sm163	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00
dy163	1.35E-02	1.35E-02	1.35E-02	1.35E-02
sm164	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00
dy164	3.85E-03	3.85E-03	3.85E-03	3.85E-03
sm165	.00E+00	.00E+00	.00E+00	.00E+00
eu165	.00E+00	.00E+00	.00E+00	.00E+00
gd165	.00E+00	.00E+00	.00E+00	.00E+00
tb165	.00E+00	.00E+00	.00E+00	.00E+00
dy165	.00E+00	.00E+00	.00E+00	.00E+00
dy165m	.00E+00	.00E+00	.00E+00	.00E+00

ho165	2.94E-03	2.94E-03	2.94E-03	2.94E-03
dy166	.00E+00	.00E+00	.00E+00	.00E+00
ho166	.00E+00	.00E+00	.00E+00	.00E+00
ho166m	.00E+00	.00E+00	.00E+00	.00E+00
er166	3.07E-04	3.07E-04	3.07E-04	3.07E-04
er167	1.25E-06	1.25E-06	1.25E-06	1.25E-06
er167m	.00E+00	.00E+00	.00E+00	.00E+00
er168	3.38E-07	3.38E-07	3.38E-07	3.38E-07
yb168	.00E+00	.00E+00	.00E+00	.00E+00
er169	.00E+00	.00E+00	.00E+00	.00E+00
tm169	4.80E-07	4.80E-07	4.80E-07	4.80E-07
yb169	.00E+00	.00E+00	.00E+00	.00E+00
er170	5.06E-07	5.06E-07	5.06E-07	5.06E-07
tm170	.00E+00	.00E+00	.00E+00	.00E+00
tm170m	.00E+00	.00E+00	.00E+00	.00E+00
yb170	2.88E-09	2.88E-09	2.88E-09	2.88E-09
er171	.00E+00	.00E+00	.00E+00	.00E+00
tm171	.00E+00	.00E+00	.00E+00	.00E+00
yb171	7.02E-07	7.02E-07	7.02E-07	7.02E-07
er172	.00E+00	.00E+00	.00E+00	.00E+00
tm172	.00E+00	.00E+00	.00E+00	.00E+00
yb172	4.57E-07	4.57E-07	4.57E-07	4.57E-07
total	2.78E+04	2.78E+04	2.78E+04	2.78E+04

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 224

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
h 3	.00E+00	.00E+00	.00E+00	.00E+00
li 6	.00E+00	.00E+00	.00E+00	.00E+00
li 7	.00E+00	.00E+00	.00E+00	.00E+00
be 9	.00E+00	.00E+00	.00E+00	.00E+00
be 10	2.13E-06	2.08E-06	1.91E-06	1.54E-06
c 14	4.10E-19	9.68E-22	2.28E-32	.00E+00
ni 66	.00E+00	.00E+00	.00E+00	.00E+00
cu 66	.00E+00	.00E+00	.00E+00	.00E+00
zn 66	.00E+00	.00E+00	.00E+00	.00E+00
cu 67	.00E+00	.00E+00	.00E+00	.00E+00
zn 67	.00E+00	.00E+00	.00E+00	.00E+00
zn 68	.00E+00	.00E+00	.00E+00	.00E+00
zn 69	.00E+00	.00E+00	.00E+00	.00E+00
zn 69m	.00E+00	.00E+00	.00E+00	.00E+00
ga 69	.00E+00	.00E+00	.00E+00	.00E+00
zn 70	.00E+00	.00E+00	.00E+00	.00E+00
ga 70	.00E+00	.00E+00	.00E+00	.00E+00
ge 70	.00E+00	.00E+00	.00E+00	.00E+00
zn 71	.00E+00	.00E+00	.00E+00	.00E+00
zn 71m	.00E+00	.00E+00	.00E+00	.00E+00
ga 71	.00E+00	.00E+00	.00E+00	.00E+00
ge 71	.00E+00	.00E+00	.00E+00	.00E+00
ge 71m	.00E+00	.00E+00	.00E+00	.00E+00
co 72	.00E+00	.00E+00	.00E+00	.00E+00
ni 72	.00E+00	.00E+00	.00E+00	.00E+00
cu 72	.00E+00	.00E+00	.00E+00	.00E+00
zn 72	.00E+00	.00E+00	.00E+00	.00E+00
ga 72	.00E+00	.00E+00	.00E+00	.00E+00
ge 72	.00E+00	.00E+00	.00E+00	.00E+00
co 73	.00E+00	.00E+00	.00E+00	.00E+00
ni 73	.00E+00	.00E+00	.00E+00	.00E+00
cu 73	.00E+00	.00E+00	.00E+00	.00E+00

zn 73	.00E+00	.00E+00	.00E+00	.00E+00
ga 73	.00E+00	.00E+00	.00E+00	.00E+00
ge 73	.00E+00	.00E+00	.00E+00	.00E+00
ge 73m	.00E+00	.00E+00	.00E+00	.00E+00
co 74	.00E+00	.00E+00	.00E+00	.00E+00
ni 74	.00E+00	.00E+00	.00E+00	.00E+00
cu 74	.00E+00	.00E+00	.00E+00	.00E+00
zn 74	.00E+00	.00E+00	.00E+00	.00E+00
ga 74	.00E+00	.00E+00	.00E+00	.00E+00
ge 74	.00E+00	.00E+00	.00E+00	.00E+00
co 75	.00E+00	.00E+00	.00E+00	.00E+00
ni 75	.00E+00	.00E+00	.00E+00	.00E+00
cu 75	.00E+00	.00E+00	.00E+00	.00E+00
zn 75	.00E+00	.00E+00	.00E+00	.00E+00
ga 75	.00E+00	.00E+00	.00E+00	.00E+00
ge 75	.00E+00	.00E+00	.00E+00	.00E+00
ge 75m	.00E+00	.00E+00	.00E+00	.00E+00
as 75	.00E+00	.00E+00	.00E+00	.00E+00
ni 76	.00E+00	.00E+00	.00E+00	.00E+00
cu 76	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 225

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
zn 76	.00E+00	.00E+00	.00E+00	.00E+00
ga 76	.00E+00	.00E+00	.00E+00	.00E+00
ge 76	.00E+00	.00E+00	.00E+00	.00E+00
as 76	.00E+00	.00E+00	.00E+00	.00E+00
se 76	.00E+00	.00E+00	.00E+00	.00E+00
ni 77	.00E+00	.00E+00	.00E+00	.00E+00
cu 77	.00E+00	.00E+00	.00E+00	.00E+00
zn 77	.00E+00	.00E+00	.00E+00	.00E+00
ga 77	.00E+00	.00E+00	.00E+00	.00E+00
ge 77	.00E+00	.00E+00	.00E+00	.00E+00
ge 77m	.00E+00	.00E+00	.00E+00	.00E+00
as 77	.00E+00	.00E+00	.00E+00	.00E+00
se 77	.00E+00	.00E+00	.00E+00	.00E+00
se 77m	.00E+00	.00E+00	.00E+00	.00E+00
ni 78	.00E+00	.00E+00	.00E+00	.00E+00
cu 78	.00E+00	.00E+00	.00E+00	.00E+00
zn 78	.00E+00	.00E+00	.00E+00	.00E+00
ga 78	.00E+00	.00E+00	.00E+00	.00E+00
ge 78	.00E+00	.00E+00	.00E+00	.00E+00
as 78	.00E+00	.00E+00	.00E+00	.00E+00
se 78	.00E+00	.00E+00	.00E+00	.00E+00
cu 79	.00E+00	.00E+00	.00E+00	.00E+00
zn 79	.00E+00	.00E+00	.00E+00	.00E+00
ga 79	.00E+00	.00E+00	.00E+00	.00E+00
ge 79	.00E+00	.00E+00	.00E+00	.00E+00
as 79	.00E+00	.00E+00	.00E+00	.00E+00
se 79	3.09E-02	2.78E-02	1.83E-02	6.38E-03
se 79m	.00E+00	.00E+00	.00E+00	.00E+00
br 79	.00E+00	.00E+00	.00E+00	.00E+00
br 79m	.00E+00	.00E+00	.00E+00	.00E+00
kr 79	.00E+00	.00E+00	.00E+00	.00E+00
cu 80	.00E+00	.00E+00	.00E+00	.00E+00
zn 80	.00E+00	.00E+00	.00E+00	.00E+00
ga 80	.00E+00	.00E+00	.00E+00	.00E+00
ge 80	.00E+00	.00E+00	.00E+00	.00E+00

as 80	.00E+00	.00E+00	.00E+00	.00E+00
se 80	.00E+00	.00E+00	.00E+00	.00E+00
br 80	.00E+00	.00E+00	.00E+00	.00E+00
br 80m	.00E+00	.00E+00	.00E+00	.00E+00
kr 80	.00E+00	.00E+00	.00E+00	.00E+00
cu 81	.00E+00	.00E+00	.00E+00	.00E+00
zn 81	.00E+00	.00E+00	.00E+00	.00E+00
ga 81	.00E+00	.00E+00	.00E+00	.00E+00
ge 81	.00E+00	.00E+00	.00E+00	.00E+00
as 81	.00E+00	.00E+00	.00E+00	.00E+00
se 81	.00E+00	.00E+00	.00E+00	.00E+00
se 81m	.00E+00	.00E+00	.00E+00	.00E+00
br 81	.00E+00	.00E+00	.00E+00	.00E+00
kr 81	7.38E-09	6.27E-09	3.27E-09	6.43E-10
kr 81m	.00E+00	.00E+00	.00E+00	.00E+00
zn 82	.00E+00	.00E+00	.00E+00	.00E+00
ga 82	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 226

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
ge 82	.00E+00	.00E+00	.00E+00	.00E+00
as 82	.00E+00	.00E+00	.00E+00	.00E+00
as 82m	.00E+00	.00E+00	.00E+00	.00E+00
se 82	.00E+00	.00E+00	.00E+00	.00E+00
br 82	.00E+00	.00E+00	.00E+00	.00E+00
br 82m	.00E+00	.00E+00	.00E+00	.00E+00
kr 82	.00E+00	.00E+00	.00E+00	.00E+00
zn 83	.00E+00	.00E+00	.00E+00	.00E+00
ga 83	.00E+00	.00E+00	.00E+00	.00E+00
ge 83	.00E+00	.00E+00	.00E+00	.00E+00
as 83	.00E+00	.00E+00	.00E+00	.00E+00
se 83	.00E+00	.00E+00	.00E+00	.00E+00
se 83m	.00E+00	.00E+00	.00E+00	.00E+00
br 83	.00E+00	.00E+00	.00E+00	.00E+00
kr 83	.00E+00	.00E+00	.00E+00	.00E+00
kr 83m	.00E+00	.00E+00	.00E+00	.00E+00
ga 84	.00E+00	.00E+00	.00E+00	.00E+00
ge 84	.00E+00	.00E+00	.00E+00	.00E+00
as 84	.00E+00	.00E+00	.00E+00	.00E+00
se 84	.00E+00	.00E+00	.00E+00	.00E+00
br 84	.00E+00	.00E+00	.00E+00	.00E+00
br 84m	.00E+00	.00E+00	.00E+00	.00E+00
kr 84	.00E+00	.00E+00	.00E+00	.00E+00
ga 85	.00E+00	.00E+00	.00E+00	.00E+00
ge 85	.00E+00	.00E+00	.00E+00	.00E+00
as 85	.00E+00	.00E+00	.00E+00	.00E+00
se 85	.00E+00	.00E+00	.00E+00	.00E+00
se 85m	.00E+00	.00E+00	.00E+00	.00E+00
br 85	.00E+00	.00E+00	.00E+00	.00E+00
kr 85	.00E+00	.00E+00	.00E+00	.00E+00
kr 85m	.00E+00	.00E+00	.00E+00	.00E+00
rb 85	.00E+00	.00E+00	.00E+00	.00E+00
ge 86	.00E+00	.00E+00	.00E+00	.00E+00
as 86	.00E+00	.00E+00	.00E+00	.00E+00
se 86	.00E+00	.00E+00	.00E+00	.00E+00
br 86	.00E+00	.00E+00	.00E+00	.00E+00
br 86m	.00E+00	.00E+00	.00E+00	.00E+00
kr 86	.00E+00	.00E+00	.00E+00	.00E+00

rb 86	.00E+00	.00E+00	.00E+00	.00E+00
rb 86m	.00E+00	.00E+00	.00E+00	.00E+00
sr 86	.00E+00	.00E+00	.00E+00	.00E+00
ge 87	.00E+00	.00E+00	.00E+00	.00E+00
as 87	.00E+00	.00E+00	.00E+00	.00E+00
se 87	.00E+00	.00E+00	.00E+00	.00E+00
br 87	.00E+00	.00E+00	.00E+00	.00E+00
kr 87	.00E+00	.00E+00	.00E+00	.00E+00
rb 87	2.18E-05	2.18E-05	2.18E-05	2.18E-05
sr 87	.00E+00	.00E+00	.00E+00	.00E+00
sr 87m	.00E+00	.00E+00	.00E+00	.00E+00
ge 88	.00E+00	.00E+00	.00E+00	.00E+00
as 88	.00E+00	.00E+00	.00E+00	.00E+00
se 88	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 227

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
br 88	.00E+00	.00E+00	.00E+00	.00E+00
kr 88	.00E+00	.00E+00	.00E+00	.00E+00
rb 88	.00E+00	.00E+00	.00E+00	.00E+00
sr 88	.00E+00	.00E+00	.00E+00	.00E+00
as 89	.00E+00	.00E+00	.00E+00	.00E+00
se 89	.00E+00	.00E+00	.00E+00	.00E+00
br 89	.00E+00	.00E+00	.00E+00	.00E+00
kr 89	.00E+00	.00E+00	.00E+00	.00E+00
rb 89	.00E+00	.00E+00	.00E+00	.00E+00
sr 89	.00E+00	.00E+00	.00E+00	.00E+00
y 89	.00E+00	.00E+00	.00E+00	.00E+00
y 89m	.00E+00	.00E+00	.00E+00	.00E+00
as 90	.00E+00	.00E+00	.00E+00	.00E+00
se 90	.00E+00	.00E+00	.00E+00	.00E+00
br 90	.00E+00	.00E+00	.00E+00	.00E+00
kr 90	.00E+00	.00E+00	.00E+00	.00E+00
rb 90	.00E+00	.00E+00	.00E+00	.00E+00
rb 90m	.00E+00	.00E+00	.00E+00	.00E+00
sr 90	.00E+00	.00E+00	.00E+00	.00E+00
y 90	.00E+00	.00E+00	.00E+00	.00E+00
y 90m	.00E+00	.00E+00	.00E+00	.00E+00
zr 90	.00E+00	.00E+00	.00E+00	.00E+00
zr 90m	.00E+00	.00E+00	.00E+00	.00E+00
se 91	.00E+00	.00E+00	.00E+00	.00E+00
br 91	.00E+00	.00E+00	.00E+00	.00E+00
kr 91	.00E+00	.00E+00	.00E+00	.00E+00
rb 91	.00E+00	.00E+00	.00E+00	.00E+00
sr 91	.00E+00	.00E+00	.00E+00	.00E+00
y 91	.00E+00	.00E+00	.00E+00	.00E+00
y 91m	.00E+00	.00E+00	.00E+00	.00E+00
zr 91	.00E+00	.00E+00	.00E+00	.00E+00
nb 91	.00E+00	.00E+00	.00E+00	.00E+00
se 92	.00E+00	.00E+00	.00E+00	.00E+00
br 92	.00E+00	.00E+00	.00E+00	.00E+00
kr 92	.00E+00	.00E+00	.00E+00	.00E+00
rb 92	.00E+00	.00E+00	.00E+00	.00E+00
sr 92	.00E+00	.00E+00	.00E+00	.00E+00
y 92	.00E+00	.00E+00	.00E+00	.00E+00
zr 92	.00E+00	.00E+00	.00E+00	.00E+00
nb 92	4.37E-11	4.37E-11	4.35E-11	4.31E-11
se 93	.00E+00	.00E+00	.00E+00	.00E+00

br 93	.00E+00	.00E+00	.00E+00	.00E+00
kr 93	.00E+00	.00E+00	.00E+00	.00E+00
rb 93	.00E+00	.00E+00	.00E+00	.00E+00
sr 93	.00E+00	.00E+00	.00E+00	.00E+00
y 93	.00E+00	.00E+00	.00E+00	.00E+00
zr 93	1.01E+00	9.85E-01	8.99E-01	7.17E-01
nb 93	.00E+00	.00E+00	.00E+00	.00E+00
nb 93m	1.01E+00	9.85E-01	8.99E-01	7.17E-01
br 94	.00E+00	.00E+00	.00E+00	.00E+00
kr 94	.00E+00	.00E+00	.00E+00	.00E+00
rb 94	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 228

0

nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sr 94	.00E+00	.00E+00	.00E+00	.00E+00
y 94	.00E+00	.00E+00	.00E+00	.00E+00
zr 94	.00E+00	.00E+00	.00E+00	.00E+00
nb 94	2.02E-08	3.65E-09	3.95E-12	1.52E-19
nb 94m	.00E+00	.00E+00	.00E+00	.00E+00
br 95	.00E+00	.00E+00	.00E+00	.00E+00
kr 95	.00E+00	.00E+00	.00E+00	.00E+00
rb 95	.00E+00	.00E+00	.00E+00	.00E+00
sr 95	.00E+00	.00E+00	.00E+00	.00E+00
y 95	.00E+00	.00E+00	.00E+00	.00E+00
zr 95	.00E+00	.00E+00	.00E+00	.00E+00
nb 95	.00E+00	.00E+00	.00E+00	.00E+00
nb 95m	.00E+00	.00E+00	.00E+00	.00E+00
mo 95	.00E+00	.00E+00	.00E+00	.00E+00
br 96	.00E+00	.00E+00	.00E+00	.00E+00
kr 96	.00E+00	.00E+00	.00E+00	.00E+00
rb 96	.00E+00	.00E+00	.00E+00	.00E+00
sr 96	.00E+00	.00E+00	.00E+00	.00E+00
y 96	.00E+00	.00E+00	.00E+00	.00E+00
zr 96	.00E+00	.00E+00	.00E+00	.00E+00
nb 96	.00E+00	.00E+00	.00E+00	.00E+00
mo 96	.00E+00	.00E+00	.00E+00	.00E+00
kr 97	.00E+00	.00E+00	.00E+00	.00E+00
rb 97	.00E+00	.00E+00	.00E+00	.00E+00
sr 97	.00E+00	.00E+00	.00E+00	.00E+00
y 97	.00E+00	.00E+00	.00E+00	.00E+00
zr 97	.00E+00	.00E+00	.00E+00	.00E+00
nb 97	.00E+00	.00E+00	.00E+00	.00E+00
nb 97m	.00E+00	.00E+00	.00E+00	.00E+00
mo 97	.00E+00	.00E+00	.00E+00	.00E+00
kr 98	.00E+00	.00E+00	.00E+00	.00E+00
rb 98	.00E+00	.00E+00	.00E+00	.00E+00
sr 98	.00E+00	.00E+00	.00E+00	.00E+00
y 98	.00E+00	.00E+00	.00E+00	.00E+00
zr 98	.00E+00	.00E+00	.00E+00	.00E+00
nb 98	.00E+00	.00E+00	.00E+00	.00E+00
nb 98m	.00E+00	.00E+00	.00E+00	.00E+00
mo 98	.00E+00	.00E+00	.00E+00	.00E+00
tc 98	1.68E-07	1.66E-07	1.61E-07	1.48E-07
rb 99	.00E+00	.00E+00	.00E+00	.00E+00
sr 99	.00E+00	.00E+00	.00E+00	.00E+00
y 99	.00E+00	.00E+00	.00E+00	.00E+00
zr 99	.00E+00	.00E+00	.00E+00	.00E+00
nb 99	.00E+00	.00E+00	.00E+00	.00E+00

nb 99m	.00E+00	.00E+00	.00E+00	.00E+00
mo 99	.00E+00	.00E+00	.00E+00	.00E+00
tc 99	4.67E+00	3.97E+00	2.06E+00	3.98E-01
tc 99m	.00E+00	.00E+00	.00E+00	.00E+00
ru 99	.00E+00	.00E+00	.00E+00	.00E+00
rb100	.00E+00	.00E+00	.00E+00	.00E+00
sr100	.00E+00	.00E+00	.00E+00	.00E+00
y100	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 229

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
zr100	.00E+00	.00E+00	.00E+00	.00E+00
nb100	.00E+00	.00E+00	.00E+00	.00E+00
nb100m	.00E+00	.00E+00	.00E+00	.00E+00
mo100	.00E+00	.00E+00	.00E+00	.00E+00
tc100	.00E+00	.00E+00	.00E+00	.00E+00
ru100	.00E+00	.00E+00	.00E+00	.00E+00
rb101	.00E+00	.00E+00	.00E+00	.00E+00
sr101	.00E+00	.00E+00	.00E+00	.00E+00
y101	.00E+00	.00E+00	.00E+00	.00E+00
zr101	.00E+00	.00E+00	.00E+00	.00E+00
nb101	.00E+00	.00E+00	.00E+00	.00E+00
mo101	.00E+00	.00E+00	.00E+00	.00E+00
tc101	.00E+00	.00E+00	.00E+00	.00E+00
ru101	.00E+00	.00E+00	.00E+00	.00E+00
sr102	.00E+00	.00E+00	.00E+00	.00E+00
y102	.00E+00	.00E+00	.00E+00	.00E+00
zr102	.00E+00	.00E+00	.00E+00	.00E+00
nb102	.00E+00	.00E+00	.00E+00	.00E+00
mo102	.00E+00	.00E+00	.00E+00	.00E+00
tc102	.00E+00	.00E+00	.00E+00	.00E+00
tc102m	.00E+00	.00E+00	.00E+00	.00E+00
ru102	.00E+00	.00E+00	.00E+00	.00E+00
rh102	.00E+00	.00E+00	.00E+00	.00E+00
pd102	.00E+00	.00E+00	.00E+00	.00E+00
sr103	.00E+00	.00E+00	.00E+00	.00E+00
y103	.00E+00	.00E+00	.00E+00	.00E+00
zr103	.00E+00	.00E+00	.00E+00	.00E+00
nb103	.00E+00	.00E+00	.00E+00	.00E+00
mo103	.00E+00	.00E+00	.00E+00	.00E+00
tc103	.00E+00	.00E+00	.00E+00	.00E+00
ru103	.00E+00	.00E+00	.00E+00	.00E+00
rh103	.00E+00	.00E+00	.00E+00	.00E+00
rh103m	.00E+00	.00E+00	.00E+00	.00E+00
sr104	.00E+00	.00E+00	.00E+00	.00E+00
y104	.00E+00	.00E+00	.00E+00	.00E+00
zr104	.00E+00	.00E+00	.00E+00	.00E+00
nb104	.00E+00	.00E+00	.00E+00	.00E+00
mo104	.00E+00	.00E+00	.00E+00	.00E+00
tc104	.00E+00	.00E+00	.00E+00	.00E+00
ru104	.00E+00	.00E+00	.00E+00	.00E+00
rh104	.00E+00	.00E+00	.00E+00	.00E+00
rh104m	.00E+00	.00E+00	.00E+00	.00E+00
pd104	.00E+00	.00E+00	.00E+00	.00E+00
y105	.00E+00	.00E+00	.00E+00	.00E+00
zr105	.00E+00	.00E+00	.00E+00	.00E+00
nb105	.00E+00	.00E+00	.00E+00	.00E+00
mo105	.00E+00	.00E+00	.00E+00	.00E+00

tc105	.00E+00	.00E+00	.00E+00	.00E+00
ru105	.00E+00	.00E+00	.00E+00	.00E+00
rh105	.00E+00	.00E+00	.00E+00	.00E+00
rh105m	.00E+00	.00E+00	.00E+00	.00E+00
pd105	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 230

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	Initial300000. yr	500000. yr	999999. yr	
y106	.00E+00	.00E+00	.00E+00	.00E+00
zr106	.00E+00	.00E+00	.00E+00	.00E+00
nb106	.00E+00	.00E+00	.00E+00	.00E+00
mo106	.00E+00	.00E+00	.00E+00	.00E+00
tc106	.00E+00	.00E+00	.00E+00	.00E+00
ru106	.00E+00	.00E+00	.00E+00	.00E+00
rh106	.00E+00	.00E+00	.00E+00	.00E+00
rh106m	.00E+00	.00E+00	.00E+00	.00E+00
pd106	.00E+00	.00E+00	.00E+00	.00E+00
ag106	.00E+00	.00E+00	.00E+00	.00E+00
y107	.00E+00	.00E+00	.00E+00	.00E+00
zr107	.00E+00	.00E+00	.00E+00	.00E+00
nb107	.00E+00	.00E+00	.00E+00	.00E+00
mo107	.00E+00	.00E+00	.00E+00	.00E+00
tc107	.00E+00	.00E+00	.00E+00	.00E+00
ru107	.00E+00	.00E+00	.00E+00	.00E+00
rh107	.00E+00	.00E+00	.00E+00	.00E+00
pd107	2.27E-02	2.26E-02	2.21E-02	2.10E-02
pd107m	.00E+00	.00E+00	.00E+00	.00E+00
ag107	.00E+00	.00E+00	.00E+00	.00E+00
zr108	.00E+00	.00E+00	.00E+00	.00E+00
nb108	.00E+00	.00E+00	.00E+00	.00E+00
mo108	.00E+00	.00E+00	.00E+00	.00E+00
tc108	.00E+00	.00E+00	.00E+00	.00E+00
ru108	.00E+00	.00E+00	.00E+00	.00E+00
rh108	.00E+00	.00E+00	.00E+00	.00E+00
rh108m	.00E+00	.00E+00	.00E+00	.00E+00
pd108	.00E+00	.00E+00	.00E+00	.00E+00
ag108	.00E+00	.00E+00	.00E+00	.00E+00
ag108m	.00E+00	.00E+00	.00E+00	.00E+00
cd108	.00E+00	.00E+00	.00E+00	.00E+00
zr109	.00E+00	.00E+00	.00E+00	.00E+00
nb109	.00E+00	.00E+00	.00E+00	.00E+00
mo109	.00E+00	.00E+00	.00E+00	.00E+00
tc109	.00E+00	.00E+00	.00E+00	.00E+00
ru109	.00E+00	.00E+00	.00E+00	.00E+00
rh109	.00E+00	.00E+00	.00E+00	.00E+00
rh109m	.00E+00	.00E+00	.00E+00	.00E+00
pd109	.00E+00	.00E+00	.00E+00	.00E+00
pd109m	.00E+00	.00E+00	.00E+00	.00E+00
ag109	.00E+00	.00E+00	.00E+00	.00E+00
ag109m	.00E+00	.00E+00	.00E+00	.00E+00
cd109	.00E+00	.00E+00	.00E+00	.00E+00
nb110	.00E+00	.00E+00	.00E+00	.00E+00
mo110	.00E+00	.00E+00	.00E+00	.00E+00
tc110	.00E+00	.00E+00	.00E+00	.00E+00
ru110	.00E+00	.00E+00	.00E+00	.00E+00
rh110	.00E+00	.00E+00	.00E+00	.00E+00
rh110m	.00E+00	.00E+00	.00E+00	.00E+00
pd110	.00E+00	.00E+00	.00E+00	.00E+00

ag110	.00E+00	.00E+00	.00E+00	.00E+00
ag110m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 231

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
cd110	.00E+00	.00E+00	.00E+00	.00E+00
nb111	.00E+00	.00E+00	.00E+00	.00E+00
mo111	.00E+00	.00E+00	.00E+00	.00E+00
tc111	.00E+00	.00E+00	.00E+00	.00E+00
ru111	.00E+00	.00E+00	.00E+00	.00E+00
rh111	.00E+00	.00E+00	.00E+00	.00E+00
pd111	.00E+00	.00E+00	.00E+00	.00E+00
pd111m	.00E+00	.00E+00	.00E+00	.00E+00
ag111	.00E+00	.00E+00	.00E+00	.00E+00
ag111m	.00E+00	.00E+00	.00E+00	.00E+00
cd111	.00E+00	.00E+00	.00E+00	.00E+00
cd111m	.00E+00	.00E+00	.00E+00	.00E+00
nb112	.00E+00	.00E+00	.00E+00	.00E+00
mo112	.00E+00	.00E+00	.00E+00	.00E+00
tc112	.00E+00	.00E+00	.00E+00	.00E+00
ru112	.00E+00	.00E+00	.00E+00	.00E+00
rh112	.00E+00	.00E+00	.00E+00	.00E+00
pd112	.00E+00	.00E+00	.00E+00	.00E+00
ag112	.00E+00	.00E+00	.00E+00	.00E+00
cd112	.00E+00	.00E+00	.00E+00	.00E+00
mo113	.00E+00	.00E+00	.00E+00	.00E+00
tc113	.00E+00	.00E+00	.00E+00	.00E+00
ru113	.00E+00	.00E+00	.00E+00	.00E+00
rh113	.00E+00	.00E+00	.00E+00	.00E+00
pd113	.00E+00	.00E+00	.00E+00	.00E+00
ag113	.00E+00	.00E+00	.00E+00	.00E+00
ag113m	.00E+00	.00E+00	.00E+00	.00E+00
cd113	6.67E-14	6.67E-14	6.67E-14	6.67E-14
cd113m	.00E+00	.00E+00	.00E+00	.00E+00
in113	.00E+00	.00E+00	.00E+00	.00E+00
in113m	.00E+00	.00E+00	.00E+00	.00E+00
mo114	.00E+00	.00E+00	.00E+00	.00E+00
tc114	.00E+00	.00E+00	.00E+00	.00E+00
ru114	.00E+00	.00E+00	.00E+00	.00E+00
rh114	.00E+00	.00E+00	.00E+00	.00E+00
pd114	.00E+00	.00E+00	.00E+00	.00E+00
ag114	.00E+00	.00E+00	.00E+00	.00E+00
cd114	.00E+00	.00E+00	.00E+00	.00E+00
in114	.00E+00	.00E+00	.00E+00	.00E+00
in114m	.00E+00	.00E+00	.00E+00	.00E+00
sn114	.00E+00	.00E+00	.00E+00	.00E+00
mo115	.00E+00	.00E+00	.00E+00	.00E+00
tc115	.00E+00	.00E+00	.00E+00	.00E+00
ru115	.00E+00	.00E+00	.00E+00	.00E+00
rh115	.00E+00	.00E+00	.00E+00	.00E+00
pd115	.00E+00	.00E+00	.00E+00	.00E+00
ag115	.00E+00	.00E+00	.00E+00	.00E+00
ag115m	.00E+00	.00E+00	.00E+00	.00E+00
cd115	.00E+00	.00E+00	.00E+00	.00E+00
cd115m	.00E+00	.00E+00	.00E+00	.00E+00
in115	1.18E-11	1.18E-11	1.18E-11	1.18E-11
in115m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 232

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sn115	.00E+00	.00E+00	.00E+00	.00E+00
tc116	.00E+00	.00E+00	.00E+00	.00E+00
ru116	.00E+00	.00E+00	.00E+00	.00E+00
rh116	.00E+00	.00E+00	.00E+00	.00E+00
pd116	.00E+00	.00E+00	.00E+00	.00E+00
ag116	.00E+00	.00E+00	.00E+00	.00E+00
ag116m	.00E+00	.00E+00	.00E+00	.00E+00
cd116	.00E+00	.00E+00	.00E+00	.00E+00
in116	.00E+00	.00E+00	.00E+00	.00E+00
in116m	.00E+00	.00E+00	.00E+00	.00E+00
sn116	.00E+00	.00E+00	.00E+00	.00E+00
tc117	.00E+00	.00E+00	.00E+00	.00E+00
ru117	.00E+00	.00E+00	.00E+00	.00E+00
rh117	.00E+00	.00E+00	.00E+00	.00E+00
pd117	.00E+00	.00E+00	.00E+00	.00E+00
ag117	.00E+00	.00E+00	.00E+00	.00E+00
ag117m	.00E+00	.00E+00	.00E+00	.00E+00
cd117	.00E+00	.00E+00	.00E+00	.00E+00
cd117m	.00E+00	.00E+00	.00E+00	.00E+00
in117	.00E+00	.00E+00	.00E+00	.00E+00
in117m	.00E+00	.00E+00	.00E+00	.00E+00
sn117	.00E+00	.00E+00	.00E+00	.00E+00
sn117m	.00E+00	.00E+00	.00E+00	.00E+00
tc118	.00E+00	.00E+00	.00E+00	.00E+00
ru118	.00E+00	.00E+00	.00E+00	.00E+00
rh118	.00E+00	.00E+00	.00E+00	.00E+00
pd118	.00E+00	.00E+00	.00E+00	.00E+00
ag118	.00E+00	.00E+00	.00E+00	.00E+00
ag118m	.00E+00	.00E+00	.00E+00	.00E+00
cd118	.00E+00	.00E+00	.00E+00	.00E+00
in118	.00E+00	.00E+00	.00E+00	.00E+00
in118m	.00E+00	.00E+00	.00E+00	.00E+00
sn118	.00E+00	.00E+00	.00E+00	.00E+00
ru119	.00E+00	.00E+00	.00E+00	.00E+00
rh119	.00E+00	.00E+00	.00E+00	.00E+00
pd119	.00E+00	.00E+00	.00E+00	.00E+00
ag119	.00E+00	.00E+00	.00E+00	.00E+00
cd119	.00E+00	.00E+00	.00E+00	.00E+00
cd119m	.00E+00	.00E+00	.00E+00	.00E+00
in119	.00E+00	.00E+00	.00E+00	.00E+00
in119m	.00E+00	.00E+00	.00E+00	.00E+00
sn119	.00E+00	.00E+00	.00E+00	.00E+00
sn119m	.00E+00	.00E+00	.00E+00	.00E+00
ru120	.00E+00	.00E+00	.00E+00	.00E+00
rh120	.00E+00	.00E+00	.00E+00	.00E+00
pd120	.00E+00	.00E+00	.00E+00	.00E+00
ag120	.00E+00	.00E+00	.00E+00	.00E+00
cd120	.00E+00	.00E+00	.00E+00	.00E+00
in120	.00E+00	.00E+00	.00E+00	.00E+00
in120m	.00E+00	.00E+00	.00E+00	.00E+00
sn120	.00E+00	.00E+00	.00E+00	.00E+00
rh121	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 233

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
pd121	.00E+00	.00E+00	.00E+00	.00E+00
ag121	.00E+00	.00E+00	.00E+00	.00E+00
cd121	.00E+00	.00E+00	.00E+00	.00E+00
in121	.00E+00	.00E+00	.00E+00	.00E+00
in121m	.00E+00	.00E+00	.00E+00	.00E+00
sn121	.00E+00	.00E+00	.00E+00	.00E+00
sn121m	.00E+00	.00E+00	.00E+00	.00E+00
sb121	.00E+00	.00E+00	.00E+00	.00E+00
rh122	.00E+00	.00E+00	.00E+00	.00E+00
pd122	.00E+00	.00E+00	.00E+00	.00E+00
ag122	.00E+00	.00E+00	.00E+00	.00E+00
cd122	.00E+00	.00E+00	.00E+00	.00E+00
in122	.00E+00	.00E+00	.00E+00	.00E+00
in122m	.00E+00	.00E+00	.00E+00	.00E+00
sn122	.00E+00	.00E+00	.00E+00	.00E+00
sb122	.00E+00	.00E+00	.00E+00	.00E+00
sb122m	.00E+00	.00E+00	.00E+00	.00E+00
te122	.00E+00	.00E+00	.00E+00	.00E+00
rh123	.00E+00	.00E+00	.00E+00	.00E+00
pd123	.00E+00	.00E+00	.00E+00	.00E+00
ag123	.00E+00	.00E+00	.00E+00	.00E+00
cd123	.00E+00	.00E+00	.00E+00	.00E+00
in123	.00E+00	.00E+00	.00E+00	.00E+00
in123m	.00E+00	.00E+00	.00E+00	.00E+00
sn123	.00E+00	.00E+00	.00E+00	.00E+00
sn123m	.00E+00	.00E+00	.00E+00	.00E+00
sb123	.00E+00	.00E+00	.00E+00	.00E+00
te123	3.96E-16	3.96E-16	3.96E-16	3.96E-16
te123m	.00E+00	.00E+00	.00E+00	.00E+00
pd124	.00E+00	.00E+00	.00E+00	.00E+00
ag124	.00E+00	.00E+00	.00E+00	.00E+00
cd124	.00E+00	.00E+00	.00E+00	.00E+00
in124	.00E+00	.00E+00	.00E+00	.00E+00
sn124	.00E+00	.00E+00	.00E+00	.00E+00
sb124	.00E+00	.00E+00	.00E+00	.00E+00
sb124m	.00E+00	.00E+00	.00E+00	.00E+00
te124	.00E+00	.00E+00	.00E+00	.00E+00
pd125	.00E+00	.00E+00	.00E+00	.00E+00
ag125	.00E+00	.00E+00	.00E+00	.00E+00
cd125	.00E+00	.00E+00	.00E+00	.00E+00
in125	.00E+00	.00E+00	.00E+00	.00E+00
in125m	.00E+00	.00E+00	.00E+00	.00E+00
sn125	.00E+00	.00E+00	.00E+00	.00E+00
sn125m	.00E+00	.00E+00	.00E+00	.00E+00
sb125	.00E+00	.00E+00	.00E+00	.00E+00
te125	.00E+00	.00E+00	.00E+00	.00E+00
te125m	.00E+00	.00E+00	.00E+00	.00E+00
pd126	.00E+00	.00E+00	.00E+00	.00E+00
ag126	.00E+00	.00E+00	.00E+00	.00E+00
cd126	.00E+00	.00E+00	.00E+00	.00E+00
in126	.00E+00	.00E+00	.00E+00	.00E+00
sn126	3.05E-02	2.16E-02	5.39E-03	1.69E-04

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 234

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sb126	4.27E-03	3.02E-03	7.55E-04	2.36E-05
sb126m	3.05E-02	2.16E-02	5.39E-03	1.69E-04

te126	.00E+00	.00E+00	.00E+00	.00E+00
xe126	.00E+00	.00E+00	.00E+00	.00E+00
ag127	.00E+00	.00E+00	.00E+00	.00E+00
cd127	.00E+00	.00E+00	.00E+00	.00E+00
in127	.00E+00	.00E+00	.00E+00	.00E+00
in127m	.00E+00	.00E+00	.00E+00	.00E+00
sn127	.00E+00	.00E+00	.00E+00	.00E+00
sn127m	.00E+00	.00E+00	.00E+00	.00E+00
sb127	.00E+00	.00E+00	.00E+00	.00E+00
te127	.00E+00	.00E+00	.00E+00	.00E+00
te127m	.00E+00	.00E+00	.00E+00	.00E+00
i127	.00E+00	.00E+00	.00E+00	.00E+00
xe127	.00E+00	.00E+00	.00E+00	.00E+00
ag128	.00E+00	.00E+00	.00E+00	.00E+00
cd128	.00E+00	.00E+00	.00E+00	.00E+00
in128	.00E+00	.00E+00	.00E+00	.00E+00
sn128	.00E+00	.00E+00	.00E+00	.00E+00
sb128	.00E+00	.00E+00	.00E+00	.00E+00
sb128m	.00E+00	.00E+00	.00E+00	.00E+00
te128	.00E+00	.00E+00	.00E+00	.00E+00
i128	.00E+00	.00E+00	.00E+00	.00E+00
xe128	.00E+00	.00E+00	.00E+00	.00E+00
cd129	.00E+00	.00E+00	.00E+00	.00E+00
in129	.00E+00	.00E+00	.00E+00	.00E+00
sn129	.00E+00	.00E+00	.00E+00	.00E+00
sn129m	.00E+00	.00E+00	.00E+00	.00E+00
sb129	.00E+00	.00E+00	.00E+00	.00E+00
te129	.00E+00	.00E+00	.00E+00	.00E+00
te129m	.00E+00	.00E+00	.00E+00	.00E+00
i129	2.15E-02	2.15E-02	2.13E-02	2.08E-02
xe129	.00E+00	.00E+00	.00E+00	.00E+00
xe129m	.00E+00	.00E+00	.00E+00	.00E+00
cd130	.00E+00	.00E+00	.00E+00	.00E+00
in130	.00E+00	.00E+00	.00E+00	.00E+00
sn130	.00E+00	.00E+00	.00E+00	.00E+00
sb130	.00E+00	.00E+00	.00E+00	.00E+00
sb130m	.00E+00	.00E+00	.00E+00	.00E+00
te130	.00E+00	.00E+00	.00E+00	.00E+00
i130	.00E+00	.00E+00	.00E+00	.00E+00
i130m	.00E+00	.00E+00	.00E+00	.00E+00
xe130	.00E+00	.00E+00	.00E+00	.00E+00
cd131	.00E+00	.00E+00	.00E+00	.00E+00
in131	.00E+00	.00E+00	.00E+00	.00E+00
sn131	.00E+00	.00E+00	.00E+00	.00E+00
sb131	.00E+00	.00E+00	.00E+00	.00E+00
te131	.00E+00	.00E+00	.00E+00	.00E+00
te131m	.00E+00	.00E+00	.00E+00	.00E+00
i131	.00E+00	.00E+00	.00E+00	.00E+00
xe131	.00E+00	.00E+00	.00E+00	.00E+00
xe131m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 235

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
cd132	.00E+00	.00E+00	.00E+00	.00E+00
in132	.00E+00	.00E+00	.00E+00	.00E+00
sn132	.00E+00	.00E+00	.00E+00	.00E+00
sb132	.00E+00	.00E+00	.00E+00	.00E+00
sb132m	.00E+00	.00E+00	.00E+00	.00E+00

te132	.00E+00	.00E+00	.00E+00	.00E+00
i132	.00E+00	.00E+00	.00E+00	.00E+00
xe132	.00E+00	.00E+00	.00E+00	.00E+00
cs132	.00E+00	.00E+00	.00E+00	.00E+00
ba132	.00E+00	.00E+00	.00E+00	.00E+00
in133	.00E+00	.00E+00	.00E+00	.00E+00
sn133	.00E+00	.00E+00	.00E+00	.00E+00
sb133	.00E+00	.00E+00	.00E+00	.00E+00
te133	.00E+00	.00E+00	.00E+00	.00E+00
te133m	.00E+00	.00E+00	.00E+00	.00E+00
i133	.00E+00	.00E+00	.00E+00	.00E+00
i133m	.00E+00	.00E+00	.00E+00	.00E+00
xe133	.00E+00	.00E+00	.00E+00	.00E+00
xe133m	.00E+00	.00E+00	.00E+00	.00E+00
cs133	.00E+00	.00E+00	.00E+00	.00E+00
ba133	.00E+00	.00E+00	.00E+00	.00E+00
in134	.00E+00	.00E+00	.00E+00	.00E+00
sn134	.00E+00	.00E+00	.00E+00	.00E+00
sb134	.00E+00	.00E+00	.00E+00	.00E+00
sb134m	.00E+00	.00E+00	.00E+00	.00E+00
te134	.00E+00	.00E+00	.00E+00	.00E+00
i134	.00E+00	.00E+00	.00E+00	.00E+00
i134m	.00E+00	.00E+00	.00E+00	.00E+00
xe134	.00E+00	.00E+00	.00E+00	.00E+00
xe134m	.00E+00	.00E+00	.00E+00	.00E+00
cs134	.00E+00	.00E+00	.00E+00	.00E+00
cs134m	.00E+00	.00E+00	.00E+00	.00E+00
ba134	.00E+00	.00E+00	.00E+00	.00E+00
sn135	.00E+00	.00E+00	.00E+00	.00E+00
sb135	.00E+00	.00E+00	.00E+00	.00E+00
te135	.00E+00	.00E+00	.00E+00	.00E+00
i135	.00E+00	.00E+00	.00E+00	.00E+00
xe135	.00E+00	.00E+00	.00E+00	.00E+00
xe135m	.00E+00	.00E+00	.00E+00	.00E+00
cs135	1.13E+00	1.11E+00	1.04E+00	8.97E-01
cs135m	.00E+00	.00E+00	.00E+00	.00E+00
ba135	.00E+00	.00E+00	.00E+00	.00E+00
ba135m	.00E+00	.00E+00	.00E+00	.00E+00
sn136	.00E+00	.00E+00	.00E+00	.00E+00
sb136	.00E+00	.00E+00	.00E+00	.00E+00
te136	.00E+00	.00E+00	.00E+00	.00E+00
i136	.00E+00	.00E+00	.00E+00	.00E+00
i136m	.00E+00	.00E+00	.00E+00	.00E+00
xe136	.00E+00	.00E+00	.00E+00	.00E+00
cs136	.00E+00	.00E+00	.00E+00	.00E+00
ba136	.00E+00	.00E+00	.00E+00	.00E+00
ba136m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 236

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
sb137	.00E+00	.00E+00	.00E+00	.00E+00
te137	.00E+00	.00E+00	.00E+00	.00E+00
i137	.00E+00	.00E+00	.00E+00	.00E+00
xe137	.00E+00	.00E+00	.00E+00	.00E+00
cs137	.00E+00	.00E+00	.00E+00	.00E+00
ba137	.00E+00	.00E+00	.00E+00	.00E+00
ba137m	.00E+00	.00E+00	.00E+00	.00E+00
sb138	.00E+00	.00E+00	.00E+00	.00E+00

te138	.00E+00	.00E+00	.00E+00	.00E+00
i138	.00E+00	.00E+00	.00E+00	.00E+00
xe138	.00E+00	.00E+00	.00E+00	.00E+00
cs138	.00E+00	.00E+00	.00E+00	.00E+00
cs138m	.00E+00	.00E+00	.00E+00	.00E+00
ba138	.00E+00	.00E+00	.00E+00	.00E+00
la138	1.44E-10	1.44E-10	1.44E-10	1.44E-10
sb139	.00E+00	.00E+00	.00E+00	.00E+00
te139	.00E+00	.00E+00	.00E+00	.00E+00
i139	.00E+00	.00E+00	.00E+00	.00E+00
xe139	.00E+00	.00E+00	.00E+00	.00E+00
cs139	.00E+00	.00E+00	.00E+00	.00E+00
ba139	.00E+00	.00E+00	.00E+00	.00E+00
la139	.00E+00	.00E+00	.00E+00	.00E+00
ce139	.00E+00	.00E+00	.00E+00	.00E+00
pr139	.00E+00	.00E+00	.00E+00	.00E+00
te140	.00E+00	.00E+00	.00E+00	.00E+00
i140	.00E+00	.00E+00	.00E+00	.00E+00
xe140	.00E+00	.00E+00	.00E+00	.00E+00
cs140	.00E+00	.00E+00	.00E+00	.00E+00
ba140	.00E+00	.00E+00	.00E+00	.00E+00
la140	.00E+00	.00E+00	.00E+00	.00E+00
ce140	.00E+00	.00E+00	.00E+00	.00E+00
pr140	.00E+00	.00E+00	.00E+00	.00E+00
te141	.00E+00	.00E+00	.00E+00	.00E+00
i141	.00E+00	.00E+00	.00E+00	.00E+00
xe141	.00E+00	.00E+00	.00E+00	.00E+00
cs141	.00E+00	.00E+00	.00E+00	.00E+00
ba141	.00E+00	.00E+00	.00E+00	.00E+00
la141	.00E+00	.00E+00	.00E+00	.00E+00
ce141	.00E+00	.00E+00	.00E+00	.00E+00
pr141	.00E+00	.00E+00	.00E+00	.00E+00
nd141	.00E+00	.00E+00	.00E+00	.00E+00
te142	.00E+00	.00E+00	.00E+00	.00E+00
i142	.00E+00	.00E+00	.00E+00	.00E+00
xe142	.00E+00	.00E+00	.00E+00	.00E+00
cs142	.00E+00	.00E+00	.00E+00	.00E+00
ba142	.00E+00	.00E+00	.00E+00	.00E+00
la142	.00E+00	.00E+00	.00E+00	.00E+00
ce142	2.37E-05	2.37E-05	2.37E-05	2.37E-05
pr142	.00E+00	.00E+00	.00E+00	.00E+00
pr142m	.00E+00	.00E+00	.00E+00	.00E+00
nd142	.00E+00	.00E+00	.00E+00	.00E+00
i143	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 237

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial300000. yr	500000. yr	999999. yr	
xe143	.00E+00	.00E+00	.00E+00	.00E+00
cs143	.00E+00	.00E+00	.00E+00	.00E+00
ba143	.00E+00	.00E+00	.00E+00	.00E+00
la143	.00E+00	.00E+00	.00E+00	.00E+00
ce143	.00E+00	.00E+00	.00E+00	.00E+00
pr143	.00E+00	.00E+00	.00E+00	.00E+00
nd143	.00E+00	.00E+00	.00E+00	.00E+00
i144	.00E+00	.00E+00	.00E+00	.00E+00
xe144	.00E+00	.00E+00	.00E+00	.00E+00
cs144	.00E+00	.00E+00	.00E+00	.00E+00
ba144	.00E+00	.00E+00	.00E+00	.00E+00

la144	.00E+00	.00E+00	.00E+00	.00E+00
ce144	.00E+00	.00E+00	.00E+00	.00E+00
pr144	.00E+00	.00E+00	.00E+00	.00E+00
pr144m	.00E+00	.00E+00	.00E+00	.00E+00
nd144	1.15E-09	1.15E-09	1.15E-09	1.15E-09
i145	.00E+00	.00E+00	.00E+00	.00E+00
xe145	.00E+00	.00E+00	.00E+00	.00E+00
cs145	.00E+00	.00E+00	.00E+00	.00E+00
ba145	.00E+00	.00E+00	.00E+00	.00E+00
la145	.00E+00	.00E+00	.00E+00	.00E+00
ce145	.00E+00	.00E+00	.00E+00	.00E+00
pr145	.00E+00	.00E+00	.00E+00	.00E+00
nd145	.00E+00	.00E+00	.00E+00	.00E+00
pm145	.00E+00	.00E+00	.00E+00	.00E+00
sm145	.00E+00	.00E+00	.00E+00	.00E+00
xe146	.00E+00	.00E+00	.00E+00	.00E+00
cs146	.00E+00	.00E+00	.00E+00	.00E+00
ba146	.00E+00	.00E+00	.00E+00	.00E+00
la146	.00E+00	.00E+00	.00E+00	.00E+00
ce146	.00E+00	.00E+00	.00E+00	.00E+00
pr146	.00E+00	.00E+00	.00E+00	.00E+00
nd146	.00E+00	.00E+00	.00E+00	.00E+00
pm146	.00E+00	.00E+00	.00E+00	.00E+00
sm146	1.99E-08	1.99E-08	1.98E-08	1.98E-08
xe147	.00E+00	.00E+00	.00E+00	.00E+00
cs147	.00E+00	.00E+00	.00E+00	.00E+00
ba147	.00E+00	.00E+00	.00E+00	.00E+00
la147	.00E+00	.00E+00	.00E+00	.00E+00
ce147	.00E+00	.00E+00	.00E+00	.00E+00
pr147	.00E+00	.00E+00	.00E+00	.00E+00
nd147	.00E+00	.00E+00	.00E+00	.00E+00
pm147	.00E+00	.00E+00	.00E+00	.00E+00
sm147	8.92E-06	8.92E-06	8.92E-06	8.92E-06
cs148	.00E+00	.00E+00	.00E+00	.00E+00
ba148	.00E+00	.00E+00	.00E+00	.00E+00
la148	.00E+00	.00E+00	.00E+00	.00E+00
ce148	.00E+00	.00E+00	.00E+00	.00E+00
pr148	.00E+00	.00E+00	.00E+00	.00E+00
nd148	.00E+00	.00E+00	.00E+00	.00E+00
pm148	.00E+00	.00E+00	.00E+00	.00E+00
pm148m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 238

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sm148	2.64E-12	2.64E-12	2.64E-12	2.64E-12
cs149	.00E+00	.00E+00	.00E+00	.00E+00
ba149	.00E+00	.00E+00	.00E+00	.00E+00
la149	.00E+00	.00E+00	.00E+00	.00E+00
ce149	.00E+00	.00E+00	.00E+00	.00E+00
pr149	.00E+00	.00E+00	.00E+00	.00E+00
nd149	.00E+00	.00E+00	.00E+00	.00E+00
pm149	.00E+00	.00E+00	.00E+00	.00E+00
sm149	2.11E-12	2.11E-12	2.11E-12	2.11E-12
eu149	.00E+00	.00E+00	.00E+00	.00E+00
cs150	.00E+00	.00E+00	.00E+00	.00E+00
ba150	.00E+00	.00E+00	.00E+00	.00E+00
la150	.00E+00	.00E+00	.00E+00	.00E+00
ce150	.00E+00	.00E+00	.00E+00	.00E+00

pr150	.00E+00	.00E+00	.00E+00	.00E+00
nd150	.00E+00	.00E+00	.00E+00	.00E+00
pm150	.00E+00	.00E+00	.00E+00	.00E+00
sm150	.00E+00	.00E+00	.00E+00	.00E+00
eu150	.00E+00	.00E+00	.00E+00	.00E+00
ba151	.00E+00	.00E+00	.00E+00	.00E+00
la151	.00E+00	.00E+00	.00E+00	.00E+00
ce151	.00E+00	.00E+00	.00E+00	.00E+00
pr151	.00E+00	.00E+00	.00E+00	.00E+00
nd151	.00E+00	.00E+00	.00E+00	.00E+00
pm151	.00E+00	.00E+00	.00E+00	.00E+00
sm151	.00E+00	.00E+00	.00E+00	.00E+00
eu151	.00E+00	.00E+00	.00E+00	.00E+00
ba152	.00E+00	.00E+00	.00E+00	.00E+00
la152	.00E+00	.00E+00	.00E+00	.00E+00
ce152	.00E+00	.00E+00	.00E+00	.00E+00
pr152	.00E+00	.00E+00	.00E+00	.00E+00
nd152	.00E+00	.00E+00	.00E+00	.00E+00
pm152	.00E+00	.00E+00	.00E+00	.00E+00
pm152m	.00E+00	.00E+00	.00E+00	.00E+00
sm152	.00E+00	.00E+00	.00E+00	.00E+00
eu152	.00E+00	.00E+00	.00E+00	.00E+00
eu152m	.00E+00	.00E+00	.00E+00	.00E+00
gd152	4.39E-10	4.39E-10	4.39E-10	4.39E-10
la153	.00E+00	.00E+00	.00E+00	.00E+00
ce153	.00E+00	.00E+00	.00E+00	.00E+00
pr153	.00E+00	.00E+00	.00E+00	.00E+00
nd153	.00E+00	.00E+00	.00E+00	.00E+00
pm153	.00E+00	.00E+00	.00E+00	.00E+00
sm153	.00E+00	.00E+00	.00E+00	.00E+00
eu153	.00E+00	.00E+00	.00E+00	.00E+00
gd153	.00E+00	.00E+00	.00E+00	.00E+00
la154	.00E+00	.00E+00	.00E+00	.00E+00
ce154	.00E+00	.00E+00	.00E+00	.00E+00
pr154	.00E+00	.00E+00	.00E+00	.00E+00
nd154	.00E+00	.00E+00	.00E+00	.00E+00
pm154	.00E+00	.00E+00	.00E+00	.00E+00
pm154m	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 239

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

	initial	300000. yr	500000. yr	999999. yr
sm154	.00E+00	.00E+00	.00E+00	.00E+00
eu154	.00E+00	.00E+00	.00E+00	.00E+00
gd154	.00E+00	.00E+00	.00E+00	.00E+00
la155	.00E+00	.00E+00	.00E+00	.00E+00
ce155	.00E+00	.00E+00	.00E+00	.00E+00
pr155	.00E+00	.00E+00	.00E+00	.00E+00
nd155	.00E+00	.00E+00	.00E+00	.00E+00
pm155	.00E+00	.00E+00	.00E+00	.00E+00
sm155	.00E+00	.00E+00	.00E+00	.00E+00
eu155	.00E+00	.00E+00	.00E+00	.00E+00
gd155m	.00E+00	.00E+00	.00E+00	.00E+00
gd155	.00E+00	.00E+00	.00E+00	.00E+00
ce156	.00E+00	.00E+00	.00E+00	.00E+00
pr156	.00E+00	.00E+00	.00E+00	.00E+00
nd156	.00E+00	.00E+00	.00E+00	.00E+00
pm156	.00E+00	.00E+00	.00E+00	.00E+00
sm156	.00E+00	.00E+00	.00E+00	.00E+00

eu156	.00E+00	.00E+00	.00E+00	.00E+00
gd156	.00E+00	.00E+00	.00E+00	.00E+00
ce157	.00E+00	.00E+00	.00E+00	.00E+00
pr157	.00E+00	.00E+00	.00E+00	.00E+00
nd157	.00E+00	.00E+00	.00E+00	.00E+00
pm157	.00E+00	.00E+00	.00E+00	.00E+00
sm157	.00E+00	.00E+00	.00E+00	.00E+00
eu157	.00E+00	.00E+00	.00E+00	.00E+00
gd157	.00E+00	.00E+00	.00E+00	.00E+00
pr158	.00E+00	.00E+00	.00E+00	.00E+00
nd158	.00E+00	.00E+00	.00E+00	.00E+00
pm158	.00E+00	.00E+00	.00E+00	.00E+00
sm158	.00E+00	.00E+00	.00E+00	.00E+00
eu158	.00E+00	.00E+00	.00E+00	.00E+00
gd158	.00E+00	.00E+00	.00E+00	.00E+00
pr159	.00E+00	.00E+00	.00E+00	.00E+00
nd159	.00E+00	.00E+00	.00E+00	.00E+00
pm159	.00E+00	.00E+00	.00E+00	.00E+00
sm159	.00E+00	.00E+00	.00E+00	.00E+00
eu159	.00E+00	.00E+00	.00E+00	.00E+00
gd159	.00E+00	.00E+00	.00E+00	.00E+00
tb159	.00E+00	.00E+00	.00E+00	.00E+00
nd160	.00E+00	.00E+00	.00E+00	.00E+00
pm160	.00E+00	.00E+00	.00E+00	.00E+00
sm160	.00E+00	.00E+00	.00E+00	.00E+00
eu160	.00E+00	.00E+00	.00E+00	.00E+00
gd160	.00E+00	.00E+00	.00E+00	.00E+00
tb160	.00E+00	.00E+00	.00E+00	.00E+00
dy160	.00E+00	.00E+00	.00E+00	.00E+00
nd161	.00E+00	.00E+00	.00E+00	.00E+00
pm161	.00E+00	.00E+00	.00E+00	.00E+00
sm161	.00E+00	.00E+00	.00E+00	.00E+00
eu161	.00E+00	.00E+00	.00E+00	.00E+00
gd161	.00E+00	.00E+00	.00E+00	.00E+00
tb161	.00E+00	.00E+00	.00E+00	.00E+00

1

Part B 8% UO2 in Tuff (47% H2O) DBF Fuel 100k year cycle fission products page 240

0 nuclide radioactivity, curies
basis =per critical mass 10.1 MT UO2

initial300000. yr500000. yr999999. yr

dy161	.00E+00	.00E+00	.00E+00	.00E+00
pm162	.00E+00	.00E+00	.00E+00	.00E+00
sm162	.00E+00	.00E+00	.00E+00	.00E+00
eu162	.00E+00	.00E+00	.00E+00	.00E+00
gd162	.00E+00	.00E+00	.00E+00	.00E+00
tb162	.00E+00	.00E+00	.00E+00	.00E+00
tb162m	.00E+00	.00E+00	.00E+00	.00E+00
dy162	.00E+00	.00E+00	.00E+00	.00E+00
sm163	.00E+00	.00E+00	.00E+00	.00E+00
eu163	.00E+00	.00E+00	.00E+00	.00E+00
gd163	.00E+00	.00E+00	.00E+00	.00E+00
tb163	.00E+00	.00E+00	.00E+00	.00E+00
tb163m	.00E+00	.00E+00	.00E+00	.00E+00
dy163	.00E+00	.00E+00	.00E+00	.00E+00
sm164	.00E+00	.00E+00	.00E+00	.00E+00
eu164	.00E+00	.00E+00	.00E+00	.00E+00
gd164	.00E+00	.00E+00	.00E+00	.00E+00
tb164	.00E+00	.00E+00	.00E+00	.00E+00
dy164	.00E+00	.00E+00	.00E+00	.00E+00
sm165	.00E+00	.00E+00	.00E+00	.00E+00

```
     eu165    .00E+00   .00E+00   .00E+00   .00E+00
     gd165    .00E+00   .00E+00   .00E+00   .00E+00
     tb165    .00E+00   .00E+00   .00E+00   .00E+00
     dy165    .00E+00   .00E+00   .00E+00   .00E+00
     dy165m   .00E+00   .00E+00   .00E+00   .00E+00
     ho165    .00E+00   .00E+00   .00E+00   .00E+00
     dy166    .00E+00   .00E+00   .00E+00   .00E+00
     ho166    .00E+00   .00E+00   .00E+00   .00E+00
     ho166m   .00E+00   .00E+00   .00E+00   .00E+00
     er166    .00E+00   .00E+00   .00E+00   .00E+00
     er167    .00E+00   .00E+00   .00E+00   .00E+00
     er167m   .00E+00   .00E+00   .00E+00   .00E+00
     er168    .00E+00   .00E+00   .00E+00   .00E+00
     yb168    .00E+00   .00E+00   .00E+00   .00E+00
     er169    .00E+00   .00E+00   .00E+00   .00E+00
     tm169    .00E+00   .00E+00   .00E+00   .00E+00
     yb169    .00E+00   .00E+00   .00E+00   .00E+00
     er170    .00E+00   .00E+00   .00E+00   .00E+00
     tm170    .00E+00   .00E+00   .00E+00   .00E+00
     tm170m   .00E+00   .00E+00   .00E+00   .00E+00
     yb170    .00E+00   .00E+00   .00E+00   .00E+00
     er171    .00E+00   .00E+00   .00E+00   .00E+00
     tm171    .00E+00   .00E+00   .00E+00   .00E+00
     yb171    .00E+00   .00E+00   .00E+00   .00E+00
     er172    .00E+00   .00E+00   .00E+00   .00E+00
     tm172    .00E+00   .00E+00   .00E+00   .00E+00
     yb172    .00E+00   .00E+00   .00E+00   .00E+00
   total     7.95E+00  7.16E+00  4.97E+00  2.78E+00
1  * normal termination of execution *
0                                        table of contents for material tables
0                                          case or subcase printed      page

                                                     1                   1
                                                     2                  41
                                                     3                  81
                                                     4                 121
                                                     5                 161
                                                     6                 201
0ndset          33
            21           4           1          27           6           0           0           0           0           0
             0           0           0           0           0           0          -1        1698         690         130
           880        7935           0           5          99           3          13          96          18          18
            18           0          71
0   35$ array      1 entries read
0    0t
   54$$ a8 1 e
    56$$ 0 7 a5 1 a13 -1 a15 3 0 4 e   5t
0   56$ array     20 entries read
0    5t
     l90   97344
     l116  60787
     l32   33663 nudata (library) storage size
     l44   33734
     l103  75921
   61** f1-20
   65$$ a4 1 2z 1 2z 1 5z 1 2z 1
    a25 1 2z 1 2z 1 5z 1 2z 1
    a46 1 2z 1 2z 1 5z 1 2z 1 e
0   60* array      7 entries read
0   65$ array     63 entries read
```

```
0    6t
     l140  66851
     used   100723 in size   150000
0jopt            12
             0           0           0           0           0           0           0           0           0           0
             0           0
0therm            4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non              5
          7935          20           6          18        1697
0mmn             19
             0           7           0           0           1           1           0           0           0           0
            21         100          -1           4           3           0           4           0           0
0tconst           5
  8.640000E+04  .000000E+00  .000000E+00  .000000E+00 5.000000E-02
0mzero            4
             0         689         129         879
0pow              3
   .000000E+00  .000000E+00  .000000E+00
0 linp            9
             6           0          51          26           2        3000        1000        1697           5
0 case or subcase    1  Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel  100k year cycle
    56$$ 0 -6 a10 1  e  t
0   56$ array     20 entries read
0   57* array      5 entries read
0    5t
     l90  102444
     l116  66199
     l32   33663 nudata (library) storage size
     l44   33734
     l103  81099
   61** f1-20
   65$$ a4 1 2z 1 2z 1 5z 1 2z 1
    a25 1 2z 1 2z 1 5z 1 2z 1
    a46 1 2z 1 2z 1 5z 1 2z 1 e
0   60* array     10 entries read
0   65$ array     63 entries read
0    6t
     l140  71957
     used   107068 in size   150000
0jopt            12
             0           0           0           0           0           0           0           0           0           0
             0           0
0therm            4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non              5
          7935          20           6          18        1697
0mmn             19
             0          10           0           0           1           1           0           0           0           7
            21         100           0           5           0           0           4           0           0
0tconst           5
  3.156000E+07 1.000000E+01 2.300000E+01  .000000E+00 5.000000E-02
0mzero            4
            18         689         129         879
0pow              3
   .000000E+00  .000000E+00  .000000E+00
0 linp            9
             6           0          51          26           2        3000        1000        1697           5
0 case or subcase    2  Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel  100k year cycle
0   56$ array     20 entries read
```

```
0   57* array      5 entries read
0    5t
     l90  102444
     l116  66199
     l32   33663 nudata (library) storage size
     l44   33734
     l103  81099
     61** f1-20
0   60* array     10 entries read
0   65$ array     63 entries read
0    6t
     l140  71957
     used   107068 in size   150000
0jopt            12
              0            0            0            0            0            0            0            0            0            0
              0            0
0therm           4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non             5
           7935           20            6           18         1697
0mmn            19
              0           10            0            0            1            1            0            0            0           10
             21          100            0            5            0            0            4            0            0
0tconst          5
  3.156000E+07 4.000000E+02 2.800000E+01  .000000E+00 5.000000E-02
0mzero           4
             21          689          129          879
0pow             3
   .000000E+00  .000000E+00  .000000E+00
0 linp           9
              6            0           51           26            2         3000         1000         1697            5
0 case or subcase    3  Part B 8% UO2 in Tuff (47%  H2O) DBF Fuel  100k year cycle
0   56$ array     20 entries read
0   57* array      5 entries read
0    5t
     l90  102444
     l116  66199
     l32   33663 nudata (library) storage size
     l44   33734
     l103  81099
    61** f1-20
0   60* array     10 entries read
0   65$ array     63 entries read
0    6t
     l140  71957
     used   107068 in size   150000
0jopt            12
              0            0            0            0            0            0            0            0            0            0
              0            0
0therm           4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
0non             5
           7935           20            6           18         1697
0mmn            19
              0           10            0            0            1            1            0            0            0           10
             21          100            0            5            0            0            4            0            0
0tconst          5
  3.156000E+07 1.600000E+04 2.500000E+01  .000000E+00 5.000000E-02
0mzero           4
             21          689          129          879
```

```
Opow              3
   .000000E+00  .000000E+00  .000000E+00
0 linp            9
             6            0           51           26            2         3000         1000         1697            5
0 case or subcase    4  Part B 8% UO2 in Tuff (47% H2O) DBF Fuel  100k year cycle
0   56$ array     20 entries read
0   57* array      5 entries read
0    5t
     l90  102444
     l116  66199
     l32   33663 nudata (library) storage size
     l44   33734
     l103  81099
     61** f1-20
0   60* array     10 entries read
0   65$ array     63 entries read
0    6t
     l140  71957
     used   107068 in size   150000
Ojopt            12
             0            0            0            0            0            0            0            0            0            0
             0            0
Otherm           4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
Onon             5
          7935           20            6           18         1697
Ommn            19
             0           10            0            0            1            1            0            0            0           10
            21          100            0            5            0            0            4            0            0
Otconst          5
  3.156000E+07 3.800000E+04 2.500000E+01  .000000E+00 5.000000E-02
Omzero           4
            21          689          129          879
Opow             3
   .000000E+00  .000000E+00  .000000E+00
0 linp           9
             6            0           51           26            2         3000         1000         1697            5
0 case or subcase    5  Part B 8% UO2 in Tuff (47% H2O) DBF Fuel  100k year cycle
0   56$ array     20 entries read
0   57* array      5 entries read
0    5t
     l90   90544
     l116  53571
     l32   33663 nudata (library) storage size
     l44   33734
     l103  69017
   61** f1-20
0   60* array      3 entries read
0   65$ array     63 entries read
0    6t
     l140  60057
     used    92263 in size   150000
Ojopt            12
             0            0            0            0            0            0            0            0            0            0
             0            0
Otherm           4
  5.272101E-01 3.663942E-01 2.909018E+00 1.000000E-25
Onon             5
          7935           20            6           18         1697
Ommn            19
```

```
            0           3           0           0           1           1           0           0           0          10
           21         100           0           5           0           0           4           0           0
Otconst     5
  3.156000E+07 2.500000E+05 2.600000E+01  .000000E+00 5.000000E-02
Omzero      4
           21         689         129         879
Opow        3
   .000000E+00  .000000E+00  .000000E+00
0 linp      9
            6           0          51          26           2        3000        1000        1697           5
0 case or subcase    6  Part B 8% UO2 in Tuff (47% H2O) DBF Fuel  100k year cycle
    56$$ 0 -10 a10 1 e  t
0   56$ array     20 entries read
0    0t
```

```
1mcnp     version 4a    ld=10/01/93                          08/29/96 17:16:39
*************************************************************************                probid =   08/29/96 17:16:39
 inp=sp40e1 outp=sp40e10

        Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40e1) 1000 Years  600K
        C    Calico Hills Tuff 1.5095 g/cc  .40 porosity -  sphere surrounded by tuff
        C    Water and UO2 offset each other in porous space / H2O @ 500k
        C     CELL SPECIFICATIONS
        C     INNER WATER REGION
        1     1  7.48784-2   -1   IMP:N=1
        2     2  8.38290-2  1 -2  IMP:N=1
        C     OUTSIDE WORLD
        3     0  2   IMP:N=0

        C     SURFACE SPECIFICATIONS
        1     SO  140       $ INNER FUEL ZONE
        2     SO  200       $ TUFF REFLECTOR

        MODE  N
        KCODE  4000 1. 30 130
        C     KSRC   0 0 1  0 0 10  0 0 -20  0 0 29  0 20 5  0 0 -5  -10 0 -10
        C       0 -5 -20 -10 0 -13 0 -10 14 0 0 -15 -10 -5  -16 5 5 0 10 10 17
        C      MATERIAL SPECIFICATIONS
        c        32 (x .776 at 265 C) vol% water in calico Hills tuff - 8 vol% UO2
        c        3.0% Original Enrichment/ 20 GWD/MT decayed to Uranium isotopes
        c       1000 yr critical
        m1    62149.50c   2.0302E-09
              62151.50c   1.9060E-10
              60143.50c   2.0165E-08
              45103.50c   1.0845E-08
              63151.55c   1.2151E-09
              64157.50c   1.1152E-11
              64155.50c   9.4362E-11
              48000.50c   3.2119E-10
              54131.50c   9.9667E-09
              55133.50c   2.3024E-08
              43099.50c   2.0926E-08
              62147.50c   7.7393E-09
              62152.50c   1.0071E-09
              60145.50c   1.3415E-08
              42095.50c   2.2139E-08
              92233.50c   7.1050E-10
              92234.50c   4.8749E-07
              92235.53c   3.8398E-05
              92236.50c   9.3098E-06
              92238.53c   1.9289E-03
              93237.50c   2.2324E-06
              94238.50c   1.2260E-09
              94239.55c   2.5206E-07
              94240.50c   1.1983E-09
                 1001.53c 1.6549-2
                 8016.53c 4.0446-2
                11023.50c 3.9366-4
                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
                19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
        mt1     lwtr.03t
        c        40 (x .99 at 50 C) vol% water in calico Hills tuff
        m2       1001.53c 2.6477-2   8016.53c 4.1448-2  11023.50c 3.9366-4
                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
                19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
```

```
  57-       mt2     lwtr.02t
  58-       PRINT
1     initial source from file   srctp

 original number of points                          4109
    points not in any cell                 0
    points in cells of zero importance     0
    points in void cells                   0
    points in ambiguous cells              0
 total points rejected                                 0
 points remaining                                   4109
 points after expansion or contraction              3998
 nominal source size                                4000

 initial guess for k(eff.)                      1.000000

 cycles to skip before tallying                       30

 number of keff cycles that can be stored            260

 total fission nubar data are being used.

 warning.    lwtr.02t and   lwtr.03t are both called for.
1material composition                                                    print table 40

 material
  number     component nuclide, atom fraction

     1          62149,   .00000     62151,   .00000     60143,   .00000     45103,   .00000
                63151,   .00000     64157,   .00000     64155,   .00000     48000,   .00000
                54131,   .00000     55133,   .00000     43099,   .00000     62147,   .00000
                62152,   .00000     60145,   .00000     42095,   .00000     92233,   .00000
                92234,   .00001     92235,   .00051     92236,   .00012     92238,   .02576
                93237,   .00003     94238,   .00000     94239,   .00000     94240,   .00000
                 1001,   .22101      8016,   .54016     11023,   .00526     12000,   .00309
                13027,   .03482     14000,   .15233     19000,   .00742     20000,   .00761
                26000,   .00187
 associated thermal s(a,b) data sets:    lwtr.03t
     2           1001,   .31585      8016,   .49444     11023,   .00470     12000,   .00276
                13027,   .03110     14000,   .13606     19000,   .00663     20000,   .00679
                26000,   .00167
 associated thermal s(a,b) data sets:    lwtr.02t



 material
  number     component nuclide, mass fraction

     1          62149,   .00000     62151,   .00000     60143,   .00000     45103,   .00000
                63151,   .00000     64157,   .00000     64155,   .00000     48000,   .00000
                54131,   .00000     55133,   .00000     43099,   .00000     62147,   .00000
                62152,   .00000     60145,   .00000     42095,   .00000     92233,   .00000
                92234,   .00007     92235,   .00567     92236,   .00138     92238,   .28834
                93237,   .00033     94238,   .00000     94239,   .00004     94240,   .00000
                 1001,   .01047      8016,   .40624     11023,   .00568     12000,   .00353
                13027,   .04417     14000,   .20116     19000,   .01365     20000,   .01433
                26000,   .00492
     2           1001,   .02326      8016,   .57779     11023,   .00789     12000,   .00490
```

13027, .06130 14000, .27919 19000, .01894 20000, .01989
26000, .00683

1cell volumes and masses print table 50

cell		atom density	gram density	input volume	calculated volume	mass	pieces	reason volume not calculated
1	1	7.48784E-02	2.64442E+00	.00000E+00	1.14940E+07	3.03951E+07	1	
2	2	8.38290E-02	1.90533E+00	.00000E+00	2.20163E+07	4.19483E+07	1	
3	3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	0	infinite

1problem summary

run terminated when 130 kcode cycles were done.

+ 08/29/96 20:06:20

Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40e1) 1000 Years 600K probid = 08/29/96 17:16:39

0

neutron creation	tracks	weight (per source particle)	energy (per source particle)	neutron loss	tracks	weight (per source particle)	energy (per source particle)
source	519674	1.0006E+00	2.0326E+00	escape	126	1.3718E-04	1.2736E-04
				energy cutoff	0	0.	0.
				time cutoff	0	0.	0.
weight window	0	0.	0.	weight window	0	0.	0.
cell importance	0	0.	0.	cell importance	0	0.	0.
weight cutoff	0	6.3380E-02	4.4399E-05	weight cutoff	519843	6.3632E-02	1.6609E-05
energy importance	0	0.	0.	energy importance	0	0.	0.
dxtran	0	0.	0.	dxtran	0	0.	0.
forced collisions	0	0.	0.	forced collisions	0	0.	0.
exp. transform	0	0.	0.	exp. transform	0	0.	0.
upscattering	0	0.	3.3583E-07	downscattering	0	0.	1.9288E+00
				capture	0	6.1749E-01	6.3069E-02
(n,xn)	588	8.6112E-04	6.6018E-04	loss to (n,xn)	293	4.2907E-04	3.6224E-03
fission	0	0.	0.	loss to fission	0	3.8318E-01	3.7712E-02
total	520262	1.0649E+00	2.0333E+00	total	520262	1.0649E+00	2.0333E+00

number of neutrons banked	295	average lifetime, shakes		cutoffs
neutron tracks per source particle	1.0011E+00	escape	2.9292E+04	tco 1.0000E+34
neutron collisions per source particle	7.9251E+01	capture	9.4549E+03	eco .0000E+00
total neutron collisions	41184790	capture or escape	9.4576E+03	wc1 -5.0000E-01
net multiplication	1.0004E+00 .0000	any termination	1.0298E+04	wc2 -2.5000E-01
computer time so far in this run	169.26 minutes	maximum number ever in bank	2	
computer time in mcrun	169.20 minutes	bank overflows to backup file	0	
source particles per minute	3.0714E+03	field length	0	
random numbers generated	477387773	most random numbers used was	11632 in history 510173	

range of sampled source weights = 9.3633E-01 to 1.0667E+00

1neutron activity in each cell print table 126

cell		tracks entering	population	collisions	collisions * weight (per history)	number weighted energy	flux weighted energy	average track weight (relative)	average track mfp (cm)
1	1	602498	519969	33779469	4.7696E+01	3.1733E-04	5.1024E-01	8.0498E-01	2.5168E+00
2	2	106614	50337	7405321	7.5479E+00	4.6489E-05	2.0115E-01	5.7874E-01	1.3153E+00
total		709112	570306	41184790	5.5244E+01				

1keff results for: Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40e1) 1000 Years 600K probid = 08/29/96 17:16:39

the initial fission neutron source distribution was read from the srctp file named srctp .
the criticality problem was scheduled to skip 30 cycles and run a total of 130 cycles with nominally 4000 neutrons per cycle.
this problem has run 30 inactive cycles with 119522 neutron histories and 100 active cycles with 400152 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 519674 fission neutron source histories.
all cells with fissionable material were sampled and had fission neutron source points.

the results of the w test for normality applied to the individual collision, absorption, and track-length keff cycle values are:

the k(collision) cycle values appear normally distributed at the 95 percent confidence level
the k(absorption) cycle values appear normally distributed at the 95 percent confidence level
the k(trk length) cycle values appear normally distributed at the 95 percent confidence level

---

the final estimated combined collision/absorption/track-length keff = .93949 with an estimated standard deviation of .00097

the estimated 68, 95, & 99 percent keff confidence intervals are .93852 to .94046, .93756 to .94142, and .93693 to .94205

the estimated collision/absorption neutron removal lifetime = 9.46E-05 seconds with an estimated standard deviation of 2.00E-07

---

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.93888	.00149	.93739 to .94037	.93591 to .94184	.93495 to .94281	
absorption	.94002	.00117	.93884 to .94119	.93768 to .94235	.93692 to .94311	
track length	.93915	.00153	.93762 to .94068	.93610 to .94220	.93511 to .94319	
col/absorp	.93959	.00096	.93863 to .94055	.93768 to .94150	.93706 to .94213	.0735
abs/trk len	.93970	.00097	.93873 to .94068	.93777 to .94164	.93714 to .94227	.0761
col/trk len	.93868	.00150	.93719 to .94018	.93570 to .94167	.93473 to .94264	.9889
col/abs/trk len	.93949	.00097	.93852 to .94046	.93756 to .94142	.93693 to .94205	

```
1mcnp     version 4a    ld=10/01/93                          08/16/96 10:52:15
 ************************************************************************                probid =   08/16/96 10:52:15
 inp=sp40f1 outp=sp40f10

      Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40f1) 5000 Years  600K
      C    Calico Hills Tuff 1.5095 g/cc  .40 porosity -  sphere surrounded by tuff
      C    Water and UO2 offset each other in porous space / H2O @ 500k
      C     CELL SPECIFICATIONS
      C     INNER WATER REGION
      1     1  7.48597-2   -1   IMP:N=1
      2     2  8.38290-2  1 -2  IMP:N=1
      C     OUTSIDE WORLD
      3     0  2   IMP:N=0

      C     SURFACE SPECIFICATIONS
      1     SO  140       $ INNER FUEL ZONE
      2     SO  200       $ TUFF REFLECTOR

      MODE  N
      KCODE  4000 1. 30 130
      C     KSRC   0 0 1  0 0 10  0 0 -20  0 0 29  0 20 5  0 0 -5  -10 0 -10
      C       0 -5 -20 -10 0 -13 0 -10 14 0 0 -15 -10 -5  -16 5 5 0 10 10 17
      C      MATERIAL SPECIFICATIONS
      c        32 (x .776 at 265 C) vol% water in calico Hills tuff - 8 vol% UO2
      c        3.0% Original Enrichment/ 20 GWD/MT decayed to Uranium isotopes
      c       5000 yr critical
      m1    62149.50c   2.7761E-09
            62150.50c   1.5868E-08
            60143.50c   9.8994E-08
            45103.50c   5.5500E-08
            63151.55c   5.7285E-09
            64157.50c   1.8097E-11
            64155.50c   2.3641E-10
            48000.50c   1.8479E-09
            54131.50c   4.9633E-08
            55133.50c   1.1472E-07
            43099.50c   1.0383E-07
            62147.50c   3.8518E-08
            62152.50c   5.8288E-09
            60145.50c   6.6530E-08
            42095.50c   1.0987E-07
            92233.50c   3.4401E-09
            92234.50c   5.4119E-07
            92235.53c   3.8842E-05
            92236.50c   1.0034E-05
            92238.53c   2.0287E-03
            93237.50c   2.3313E-06
            94238.50c   1.2084E-09
            94239.55c   1.1354E-06
            94240.50c   2.3573E-08
               1001.53c 1.6331-2
               8016.53c 4.0542-2
              11023.50c 3.9366-4
              12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
              19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
      mt1     lwtr.03t
      c        40 (x .99 at 50 C) vol% water in calico Hills tuff
      m2       1001.53c 2.6477-2   8016.53c 4.1448-2  11023.50c 3.9366-4
              12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
              19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
```

```
   57-       mt2     lwtr.02t
   58-       PRINT
1     initial source from file   srctp

 original number of points                          3860
    points not in any cell                  0
    points in cells of zero importance      0
    points in void cells                    0
    points in ambiguous cells               0
 total points rejected                             0
 points remaining                                3860
 points after expansion or contraction           4006
 nominal source size                             4000

 initial guess for k(eff.)                    1.000000

 cycles to skip before tallying                    30

 number of keff cycles that can be stored          260

 total fission nubar data are being used.

 warning.    lwtr.02t and   lwtr.03t are both called for.
1material composition                                                    print table 40

 material
  number     component nuclide, atom fraction

     1          62149,   .00000      62150,   .00000      60143,   .00000      45103,   .00000
                63151,   .00000      64157,   .00000      64155,   .00000      48000,   .00000
                54131,   .00000      55133,   .00000      43099,   .00000      62147,   .00000
                62152,   .00000      60145,   .00000      42095,   .00000      92233,   .00000
                92234,   .00001      92235,   .00052      92236,   .00013      92238,   .02710
                93237,   .00003      94238,   .00000      94239,   .00002      94240,   .00000
                 1001,   .21816       8016,   .54158      11023,   .00526      12000,   .00309
                13027,   .03483      14000,   .15237      19000,   .00743      20000,   .00761
                26000,   .00188
 associated thermal s(a,b) data sets:    lwtr.03t
     2           1001,   .31585       8016,   .49444      11023,   .00470      12000,   .00276
                13027,   .03110      14000,   .13606      19000,   .00663      20000,   .00679
                26000,   .00167
 associated thermal s(a,b) data sets:    lwtr.02t



 material
  number     component nuclide, mass fraction

     1          62149,   .00000      62150,   .00000      60143,   .00001      45103,   .00000
                63151,   .00000      64157,   .00000      64155,   .00000      48000,   .00000
                54131,   .00000      55133,   .00001      43099,   .00001      62147,   .00000
                62152,   .00000      60145,   .00001      42095,   .00001      92233,   .00000
                92234,   .00008      92235,   .00564      92236,   .00146      92238,   .29845
                93237,   .00034      94238,   .00000      94239,   .00017      94240,   .00000
                 1001,   .01017       8016,   .40075      11023,   .00559      12000,   .00347
                13027,   .04347      14000,   .19797      19000,   .01343      20000,   .01411
                26000,   .00484
     2           1001,   .02326       8016,   .57779      11023,   .00789      12000,   .00490
```

13027, .06130 14000, .27919 19000, .01894 20000, .01989
26000, .00683

1cell volumes and masses print table 50

cell		atom density	gram density	input volume	calculated volume	mass	pieces	reason volume not calculated
1	1	7.48597E-02	2.68707E+00	.00000E+00	1.14940E+07	3.08853E+07	1	
2	2	8.38290E-02	1.90533E+00	.00000E+00	2.20163E+07	4.19483E+07	1	
3	3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	0	infinite

1problem summary

run terminated when 130 kcode cycles were done.

+ 08/16/96 14:21:45

Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40f1) 5000 Years 600K probid = 08/16/96 10:52:15

0

neutron creation	tracks	weight (per source particle)	energy	neutron loss	tracks	weight (per source particle)	energy
source	520705	9.9865E-01	2.0325E+00	escape	121	1.3371E-04	9.7630E-05
				energy cutoff	0	0.	0.
				time cutoff	0	0.	0.
weight window	0	0.	0.	weight window	0	0.	0.
cell importance	0	0.	0.	cell importance	0	0.	0.
weight cutoff	0	6.1894E-02	4.9069E-05	weight cutoff	520907	6.2184E-02	3.9745E-05
energy importance	0	0.	0.	energy importance	0	0.	0.
dxtran	0	0.	0.	dxtran	0	0.	0.
forced collisions	0	0.	0.	forced collisions	0	0.	0.
exp. transform	0	0.	0.	exp. transform	0	0.	0.
upscattering	0	0.	3.1523E-07	downscattering	0	0.	1.9268E+00
				capture	0	6.1880E-01	6.3175E-02
(n,xn)	645	9.1944E-04	6.9393E-04	loss to (n,xn)	322	4.5905E-04	3.8266E-03
fission	0	0.	0.	loss to fission	0	3.7988E-01	3.9383E-02
total	521350	1.0615E+00	2.0333E+00	total	521350	1.0615E+00	2.0333E+00

number of neutrons banked	323	average lifetime, shakes		cutoffs
neutron tracks per source particle	1.0012E+00	escape	2.3624E+04	tco 1.0000E+34
neutron collisions per source particle	7.6491E+01	capture	8.9475E+03	eco .0000E+00
total neutron collisions	39829078	capture or escape	8.9494E+03	wc1 -5.0000E-01
net multiplication	1.0005E+00 .0000	any termination	9.7475E+03	wc2 -2.5000E-01
computer time so far in this run	173.12 minutes	maximum number ever in bank	2	
computer time in mcrun	173.05 minutes	bank overflows to backup file	0	
source particles per minute	3.0089E+03	field length	0	
random numbers generated	463070842	most random numbers used was	11052 in history 430100	

range of sampled source weights = 9.2039E-01 to 1.0678E+00

1neutron activity in each cell print table 126

cell		tracks entering	population	collisions	collisions * weight (per history)	number weighted energy	flux weighted energy	average track weight (relative)	average track mfp (cm)
1	1	601198	521028	32483446	4.6105E+01	3.3875E-04	5.1710E-01	8.0892E-01	2.5438E+00
2	2	104094	50166	7345632	7.4852E+00	4.6897E-05	2.0123E-01	5.7986E-01	1.3187E+00
total		705292	571194	39829078	5.3590E+01				

1keff results for: Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40f1) 5000 Years 600K probid = 08/16/96 10:52:15

the initial fission neutron source distribution was read from the srctp file named srctp .
the criticality problem was scheduled to skip 30 cycles and run a total of 130 cycles with nominally 4000 neutrons per cycle.
this problem has run 30 inactive cycles with 119861 neutron histories and 100 active cycles with 400844 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 520705 fission neutron source histories.
all cells with fissionable material were sampled and had fission neutron source points.

the results of the w test for normality applied to the individual collision, absorption, and track-length keff cycle values are:

the k(collision) cycle values appear normally distributed at the 95 percent confidence level
the k(absorption) cycle values appear normally distributed at the 95 percent confidence level
the k(trk length) cycle values appear normally distributed at the 95 percent confidence level

---

the final estimated combined collision/absorption/track-length keff = .94166 with an estimated standard deviation of .00081

the estimated 68, 95, & 99 percent keff confidence intervals are .94084 to .94247, .94003 to .94328, and .93950 to .94381

the estimated collision/absorption neutron removal lifetime = 8.94E-05 seconds with an estimated standard deviation of 1.90E-07

---

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.94222	.00130	.94092 to .94352	.93963 to .94481	.93878 to .94566	
absorption	.94125	.00109	.94016 to .94234	.93909 to .94342	.93838 to .94412	
track length	.94223	.00134	.94089 to .94358	.93956 to .94491	.93868 to .94578	
col/absorp	.94166	.00081	.94084 to .94247	.94004 to .94327	.93952 to .94380	-.0713
abs/trk len	.94165	.00082	.94083 to .94247	.94002 to .94328	.93949 to .94381	-.0762
col/trk len	.94222	.00130	.94091 to .94352	.93962 to .94481	.93877 to .94566	.9843
col/abs/trk len	.94166	.00081	.94084 to .94247	.94003 to .94328	.93950 to .94381	

```
1mcnp     version 4a    ld=10/01/93                        08/29/96 12:31:20
*************************************************************************                probid =   08/29/96 12:31:20
 inp=sp40g1 outp=sp40g10

        Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40g1) 10000 Years  600K
        C    Calico Hills Tuff 1.5095 g/cc  .40 porosity -  sphere surrounded by tuff
        C    Water and UO2 offset each other in porous space / H2O @ 500k
        C     CELL SPECIFICATIONS
        C     INNER WATER REGION
        1     1  7.48343-2   -1   IMP:N=1
        2     2  8.38290-2  1 -2  IMP:N=1
        C     OUTSIDE WORLD
        3     0  2   IMP:N=0

        C     SURFACE SPECIFICATIONS
        1     SO  140       $ INNER FUEL ZONE
        2     SO  200       $ TUFF REFLECTOR

        MODE  N
        KCODE  4000 1. 30 130
        C     KSRC   0 0 1  0 0 10  0 0 -20  0 0 29  0 20 5  0 0 -5  -10 0 -10
        C       0 -5 -20 -10 0 -13 0 -10 14 0 0 -15 -10 -5  -16 5 5 0 10 10 17
        C      MATERIAL SPECIFICATIONS
        c        32 (x .776 at 265 C) vol% water in calico Hills tuff - 8 vol% UO2
        c        3.0% Original Enrichment/ 20 GWD/MT decayed to Uranium isotopes
        c       10000 yr critical
        m1    62149.50c   2.8219E-09
              63151.55c   9.6170E-09
              60143.50c   1.9432E-07
              45103.50c   1.1304E-07
              54131.50c   9.9667E-08
              55133.50c   2.2906E-07
              62147.50c   7.6323E-08
              43099.50c   2.0502E-07
              64155.50c   2.9053E-10
              60145.50c   1.3161E-07
              62152.50c   1.3106E-08
              42095.50c   2.1753E-07
              48000.50c   4.2020E-09
              62150.50c   3.4356E-08
              36083.50c   1.7568E-08
              92233.50c   6.6328E-09
              92234.50c   6.0552E-07
              92235.53c   3.9787E-05
              92236.50c   1.0899E-05
              92238.53c   2.1513E-03
              93237.50c   2.4587E-06
              94238.50c   1.1952E-09
              94239.55c   1.9793E-06
              94240.50c   7.0065E-08
                 1001.53c 1.6059-2
                 8016.53c 4.0662-2
                11023.50c 3.9366-4
                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
                19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
        mt1     lwtr.03t
        c        40 (x .99 at 50 C) vol% water in calico Hills tuff
        m2       1001.53c 2.6477-2   8016.53c 4.1448-2  11023.50c 3.9366-4
                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
                19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
```

```
   57-       mt2     lwtr.02t
   58-       PRINT
1     initial source from file   srctp

 original number of points                          3911
    points not in any cell                  0
    points in cells of zero importance      0
    points in void cells                    0
    points in ambiguous cells               0
 total points rejected                             0
 points remaining                                3911
 points after expansion or contraction           3997
 nominal source size                             4000

 initial guess for k(eff.)                    1.000000

 cycles to skip before tallying                    30

 number of keff cycles that can be stored          260

 total fission nubar data are being used.

 warning.    lwtr.02t and   lwtr.03t are both called for.
1material composition                                                    print table 40

 the sum of the fractions of material     1 was 7.483317E-02

 material
  number      component nuclide, atom fraction

     1           62149,   .00000      63151,   .00000      60143,   .00000      45103,   .00000
                 54131,   .00000      55133,   .00000      62147,   .00000      43099,   .00000
                 64155,   .00000      60145,   .00000      62152,   .00000      42095,   .00000
                 48000,   .00000      62150,   .00000      36083,   .00000      92233,   .00000
                 92234,   .00001      92235,   .00053      92236,   .00015      92238,   .02875
                 93237,   .00003      94238,   .00000      94239,   .00003      94240,   .00000
                  1001,   .21460       8016,   .54337      11023,   .00526      12000,   .00309
                 13027,   .03484      14000,   .15242      19000,   .00743      20000,   .00761
                 26000,   .00188
 associated thermal s(a,b) data sets:    lwtr.03t
     2            1001,   .31585       8016,   .49444      11023,   .00470      12000,   .00276
                 13027,   .03110      14000,   .13606      19000,   .00663      20000,   .00679
                 26000,   .00167
 associated thermal s(a,b) data sets:    lwtr.02t



 material
  number      component nuclide, mass fraction

     1           62149,   .00000      63151,   .00000      60143,   .00002      45103,   .00001
                 54131,   .00001      55133,   .00002      62147,   .00001      43099,   .00001
                 64155,   .00000      60145,   .00001      62152,   .00000      42095,   .00001
                 48000,   .00000      62150,   .00000      36083,   .00000      92233,   .00000
                 92234,   .00009      92235,   .00567      92236,   .00156      92238,   .31042
                 93237,   .00035      94238,   .00000      94239,   .00029      94240,   .00001
                  1001,   .00981       8016,   .39423      11023,   .00549      12000,   .00341
                 13027,   .04264      14000,   .19418      19000,   .01317      20000,   .01383
```

	26000, .00475						
2	1001, .02326	8016, .57779	11023, .00789	12000, .00490			
	13027, .06130	14000, .27919	19000, .01894	20000, .01989			
	26000, .00683						

warning. 1 of the materials had unnormalized fractions.

1cell volumes and masses print table 50

cell		atom density	gram density	input volume	calculated volume	mass	pieces	reason volume not calculated
1	1	7.48343E-02	2.73956E+00	.00000E+00	1.14940E+07	3.14886E+07	1	
2	2	8.38290E-02	1.90533E+00	.00000E+00	2.20163E+07	4.19483E+07	1	
3	3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	0	infinite

1problem summary

run terminated when 130 kcode cycles were done.

+ 08/29/96 15:14:42

Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40g1) 10000 Years 600K probid = 08/29/96 12:31:20

0

neutron creation	tracks	weight (per source)	energy particle)	neutron loss	tracks	weight (per source)	energy particle)
source	520436	9.9916E-01	2.0352E+00	escape	153	1.6128E-04	1.1441E-04
				energy cutoff	0	0.	0.
				time cutoff	0	0.	0.
weight window	0	0.	0.	weight window	0	0.	0.
cell importance	0	0.	0.	cell importance	0	0.	0.
weight cutoff	0	6.0983E-02	2.7101E-05	weight cutoff	520613	6.1096E-02	6.6854E-05
energy importance	0	0.	0.	energy importance	0	0.	0.
dxtran	0	0.	0.	dxtran	0	0.	0.
forced collisions	0	0.	0.	forced collisions	0	0.	0.
exp. transform	0	0.	0.	exp. transform	0	0.	0.
upscattering	0	0.	2.9577E-07	downscattering	0	0.	1.9255E+00
				capture	0	6.2055E-01	6.4128E-02
(n,xn)	659	9.6723E-04	6.5978E-04	loss to (n,xn)	329	4.8289E-04	3.9434E-03
fission	0	0.	0.	loss to fission	0	3.7882E-01	4.2055E-02
total	521095	1.0611E+00	2.0358E+00	total	521095	1.0611E+00	2.0358E+00

number of neutrons banked	330	average lifetime, shakes		cutoffs	
neutron tracks per source particle	1.0013E+00	escape	3.1172E+04	tco	1.0000E+34
neutron collisions per source particle	7.4256E+01	capture	8.5120E+03	eco	.0000E+00
total neutron collisions	38645372	capture or escape	8.5157E+03	wc1	-5.0000E-01
net multiplication	1.0005E+00 .0000	any termination	9.2837E+03	wc2	-2.5000E-01

computer time so far in this run	163.31 minutes	maximum number ever in bank	2
computer time in mcrun	163.24 minutes	bank overflows to backup file	0
source particles per minute	3.1882E+03	field length	0
random numbers generated	449866891	most random numbers used was	10990 in history 491523

range of sampled source weights = 9.4540E-01 to 1.0782E+00

1neutron activity in each cell print table 126

cell		tracks entering	population	collisions	collisions * weight (per history)	number weighted energy	flux weighted energy	average track weight (relative)	average track mfp (cm)
1	1	602874	520766	31088264	4.4549E+01	3.6530E-04	5.2725E-01	8.1428E-01	2.5766E+00
2	2	106605	51877	7557108	7.7142E+00	4.7815E-05	2.0459E-01	5.8117E-01	1.3267E+00

total 709479 572643 38645372 5.2263E+01
1keff results for: Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40g1) 10000 Years 600K probid = 08/29/96 12:31:20

the initial fission neutron source distribution was read from the srctp file named srctp .
the criticality problem was scheduled to skip 30 cycles and run a total of 130 cycles with nominally 4000 neutrons per cycle.
this problem has run 30 inactive cycles with 119705 neutron histories and 100 active cycles with 400731 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 520436 fission neutron source histories.
all cells with fissionable material were sampled and had fission neutron source points.

the results of the w test for normality applied to the individual collision, absorption, and track-length keff cycle values are:

the k(collision) cycle values appear normally distributed at the 95 percent confidence level
the k(absorption) cycle values appear normally distributed at the 95 percent confidence level
the k(trk length) cycle values appear normally distributed at the 95 percent confidence level

the final estimated combined collision/absorption/track-length keff = .94531 with an estimated standard deviation of .00095

the estimated 68, 95, & 99 percent keff confidence intervals are .94436 to .94626, .94341 to .94721, and .94279 to .94783

the estimated collision/absorption neutron removal lifetime = 8.49E-05 seconds with an estimated standard deviation of 1.77E-07

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.94621	.00133	.94488 to .94755	.94356 to .94887	.94270 to .94973	
absorption	.94452	.00112	.94340 to .94565	.94228 to .94676	.94155 to .94749	
track length	.94663	.00133	.94530 to .94797	.94398 to .94929	.94311 to .95016	
col/absorp	.94520	.00094	.94426 to .94614	.94333 to .94706	.94273 to .94767	.1675
abs/trk len	.94537	.00094	.94443 to .94630	.94350 to .94723	.94289 to .94784	.1608
col/trk len	.94639	.00135	.94504 to .94775	.94370 to .94908	.94282 to .94996	.9819
col/abs/trk len	.94531	.00095	.94436 to .94626	.94341 to .94721	.94279 to .94783	

```
1mcnp     version 4a    ld=10/01/93                          08/29/96 20:06:21
 ************************************************************************                probid =   08/29/96 20:06:21
 inp=sp40e1n outp=sp40e1n0

        Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40e1n) 1000 Years  600K
        C    Calico Hills Tuff 1.5095 g/cc  .40 porosity -  sphere surrounded by tuff
        C    Water and UO2 offset each other in porous space / H2O @ 500k
        C     CELL SPECIFICATIONS
        C     INNER WATER REGION
        1     1  7.48831-2   -1   IMP:N=1
        2     2  8.38290-2  1 -2  IMP:N=1
        C     OUTSIDE WORLD
        3     0  2   IMP:N=0

        C     SURFACE SPECIFICATIONS
        1     SO  140       $ INNER FUEL ZONE
        2     SO  200       $ TUFF REFLECTOR

        MODE  N
        KCODE  4000 1. 30 130
        C     KSRC   0 0 1  0 0 10  0 0 -20  0 0 29  0 20 5  0 0 -5  -10 0 -10
        C       0 -5 -20 -10 0 -13 0 -10 14 0 0 -15 -10 -5  -16 5 5 0 10 10 17
        C      MATERIAL SPECIFICATIONS
        c        32 (x .776 at 265 C) vol% water in calico Hills tuff - 8 vol% UO2
        c        3.0% Original Enrichment/ 20 GWD/MT decayed to Uranium isotopes
        c        no UO2 infiltration after criticality initiation
        c       1000 yr critical
        m1    62149.50c    2.0302E-09
              62151.50c    1.9060E-10
              60143.50c    2.0165E-08
              45103.50c    1.0845E-08
              63151.55c    1.2151E-09
              64157.50c    1.1152E-11
              64155.50c    9.4362E-11
              48000.50c    3.2119E-10
              54131.50c    9.9667E-09
              55133.50c    2.3024E-08
              43099.50c    2.0926E-08
              62147.50c    7.7393E-09
              62152.50c    1.0071E-09
              60145.50c    1.3415E-08
              42095.50c    2.2139E-08
              92233.50c    7.1050E-10
              92234.50c    4.8134E-07
              92235.53c    3.7897E-05
              92236.50c    9.1899E-06
              92238.53c    1.9039E-03
              93237.50c    2.2038E-06
              94238.50c    1.2260E-09
              94239.55c    2.5206E-07
              94240.50c    1.1983E-09
                 1001.53c 1.6603-2
                 8016.53c 4.0422-2
                11023.50c 3.9366-4
                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
                19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
        mt1     lwtr.03t
        c        40 (x .99 at 50 C) vol% water in calico Hills tuff
        m2       1001.53c 2.6477-2   8016.53c 4.1448-2  11023.50c 3.9366-4
                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
```

```
   57-              19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
   58-       mt2    lwtr.02t
   59-       PRINT
1     initial source from file   srctp

 original number of points                          3931
    points not in any cell                  0
    points in cells of zero importance      0
    points in void cells                    0
    points in ambiguous cells               0
 total points rejected                                 0
 points remaining                                   3931
 points after expansion or contraction              3996
 nominal source size                                4000

 initial guess for k(eff.)                      1.000000

 cycles to skip before tallying                       30

 number of keff cycles that can be stored            260

 total fission nubar data are being used.

 warning.    lwtr.02t and   lwtr.03t are both called for.
1material composition                                                    print table 40

 material
  number     component nuclide, atom fraction

     1          62149,   .00000     62151,   .00000     60143,   .00000     45103,   .00000
                63151,   .00000     64157,   .00000     64155,   .00000     48000,   .00000
                54131,   .00000     55133,   .00000     43099,   .00000     62147,   .00000
                62152,   .00000     60145,   .00000     42095,   .00000     92233,   .00000
                92234,   .00001     92235,   .00051     92236,   .00012     92238,   .02543
                93237,   .00003     94238,   .00000     94239,   .00000     94240,   .00000
                 1001,   .22172      8016,   .53980     11023,   .00526     12000,   .00309
                13027,   .03481     14000,   .15232     19000,   .00742     20000,   .00761
                26000,   .00187
 associated thermal s(a,b) data sets:    lwtr.03t
     2           1001,   .31585      8016,   .49444     11023,   .00470     12000,   .00276
                13027,   .03110     14000,   .13606     19000,   .00663     20000,   .00679
                26000,   .00167
 associated thermal s(a,b) data sets:    lwtr.02t



 material
  number     component nuclide, mass fraction

     1          62149,   .00000     62151,   .00000     60143,   .00000     45103,   .00000
                63151,   .00000     64157,   .00000     64155,   .00000     48000,   .00000
                54131,   .00000     55133,   .00000     43099,   .00000     62147,   .00000
                62152,   .00000     60145,   .00000     42095,   .00000     92233,   .00000
                92234,   .00007     92235,   .00562     92236,   .00137     92238,   .28576
                93237,   .00033     94238,   .00000     94239,   .00004     94240,   .00000
                 1001,   .01055      8016,   .40765     11023,   .00571     12000,   .00354
                13027,   .04435     14000,   .20198     19000,   .01370     20000,   .01439
                26000,   .00494
```

```
     2          1001,   .02326      8016,   .57779      11023,   .00789      12000,   .00490
               13027,   .06130     14000,   .27919      19000,   .01894      20000,   .01989
               26000,   .00683
1cell volumes and masses                                                                    print table 50

        cell     atom          gram          input       calculated                          reason volume
                density       density        volume        volume          mass       pieces   not calculated

     1     1  7.48831E-02   2.63375E+00    .00000E+00   1.14940E+07   3.02724E+07      1
     2     2  8.38290E-02   1.90533E+00    .00000E+00   2.20163E+07   4.19483E+07      1
     3     3   .00000E+00    .00000E+00    .00000E+00    .00000E+00    .00000E+00      0      infinite
1problem summary

      run terminated when   130 kcode cycles were done.
+                                                                                          08/29/96 23:06:12
      Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40e1n) 1000 Years  600K          probid =   08/29/96 20:06:21
0
 neutron creation     tracks      weight        energy          neutron loss        tracks      weight        energy
                                  (per source particle)                                         (per source particle)

 source               520500    9.9904E-01    2.0312E+00        escape                 115    1.2670E-04    7.8653E-05
                                                                 energy cutoff            0    0.            0.
                                                                 time cutoff              0    0.            0.
 weight window             0    0.            0.                weight window            0    0.            0.
 cell importance           0    0.            0.                cell importance          0    0.            0.
 weight cutoff             0    6.3912E-02    4.5884E-05        weight cutoff       520675    6.3774E-02    2.7366E-05
 energy importance         0    0.            0.                energy importance        0    0.            0.
 dxtran                    0    0.            0.                dxtran                   0    0.            0.
 forced collisions         0    0.            0.                forced collisions        0    0.            0.
 exp. transform            0    0.            0.                exp. transform           0    0.            0.
 upscattering              0    0.            3.3925E-07        downscattering           0    0.            1.9282E+00
                                                                 capture                  0    6.1767E-01    6.2789E-02
 (n,xn)                  578    8.5082E-04    6.3997E-04        loss to (n,xn)         288    4.2410E-04    3.5549E-03
 fission                   0    0.            0.                loss to fission          0    3.8181E-01    3.7167E-02
     total            521078    1.0638E+00    2.0319E+00            total           521078    1.0638E+00    2.0319E+00

   number of neutrons banked                      290        average lifetime, shakes              cutoffs
   neutron tracks per source particle      1.0011E+00          escape            3.0491E+04          tco    1.0000E+34
   neutron collisions per source particle 7.9615E+01          capture           9.5352E+03          eco     .0000E+00
   total neutron collisions                  41439809          capture or escape 9.5378E+03          wc1   -5.0000E-01
   net multiplication                1.0004E+00  .0000         any termination   1.0389E+04          wc2   -2.5000E-01

 computer time so far in this run   179.70 minutes            maximum number ever in bank        2
 computer time in mcrun             179.64 minutes            bank overflows to backup file      0
 source particles per minute            2.8975E+03            field length                       0
 random numbers generated                480204045            most random numbers used was    12386 in history   367999

 range of sampled source weights = 9.3963E-01 to 1.0627E+00
1neutron  activity in each cell                                                                    print table 126

                 tracks     population   collisions   collisions     number        flux        average      average
        cell    entering                              * weight     weighted     weighted   track weight   track mfp
                                                    (per history)    energy       energy     (relative)      (cm)

     1     1      601923       520790     34078462    4.7927E+01   3.1328E-04   5.0746E-01   8.0331E-01   2.5104E+00
     2     2      105122        49858      7361347    7.4518E+00   4.5637E-05   1.9556E-01   5.7585E-01   1.3083E+00

     total        707045       570648     41439809    5.5379E+01
1keff results for: Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40e1n) 1000 Years  600K          probid =   08/29/96 20:06:21
```

the initial fission neutron source distribution was read from the srctp file named srctp .
the criticality problem was scheduled to skip 30 cycles and run a total of 130 cycles with nominally 4000 neutrons per cycle.
this problem has run 30 inactive cycles with 119728 neutron histories and 100 active cycles with 400772 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 520500 fission neutron source histories.
all cells with fissionable material were sampled and had fission neutron source points.

the results of the w test for normality applied to the individual collision, absorption, and track-length keff cycle values are:

the k(collision) cycle values appear normally distributed at the 95 percent confidence level
the k(absorption) cycle values appear normally distributed at the 95 percent confidence level
the k(trk length) cycle values appear normally distributed at the 95 percent confidence level

---

the final estimated combined collision/absorption/track-length keff = .93731 with an estimated standard deviation of .00088

the estimated 68, 95, & 99 percent keff confidence intervals are .93642 to .93819, .93555 to .93907, and .93497 to .93964

the estimated collision/absorption neutron removal lifetime = 9.54E-05 seconds with an estimated standard deviation of 1.78E-07

---

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.93689	.00133	.93556 to .93822	.93424 to .93954	.93338 to .94040	
absorption	.93762	.00120	.93643 to .93882	.93524 to .94001	.93446 to .94079	
track length	.93681	.00136	.93545 to .93818	.93410 to .93953	.93321 to .94042	
col/absorp	.93729	.00088	.93641 to .93817	.93554 to .93905	.93497 to .93962	-.0346
abs/trk len	.93727	.00089	.93638 to .93816	.93550 to .93904	.93492 to .93962	-.0343
col/trk len	.93692	.00133	.93559 to .93826	.93427 to .93958	.93340 to .94044	.9868
col/abs/trk len	.93731	.00088	.93642 to .93819	.93555 to .93907	.93497 to .93964	

```
1mcnp     version 4a     ld=10/01/93                          08/20/96 10:58:26
 ******************************************************************************                    probid =   08/20/96 10:58:26
 inp=sp40f1n outp=sp40f1nP

     1-        Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40f1n) 5000 Years  600K
     2-        C    Calico Hills Tuff 1.5095 g/cc  .40 porosity -  sphere surrounded by tuff
     3-        C    Water and UO2 offset each other in porous space / H2O @ 500k
     4-        C     CELL SPECIFICATIONS
     5-        C     INNER WATER REGION
     6-        1     1  7.48833-2   -1   IMP:N=1
     7-        2     2  8.38290-2  1 -2  IMP:N=1
     8-        C     OUTSIDE WORLD
     9-        3     0  2   IMP:N=0
    10-
    11-        C     SURFACE SPECIFICATIONS
    12-        1     SO  140       $ INNER FUEL ZONE
    13-        2     SO  200       $ TUFF REFLECTOR
    14-
    15-        MODE  N
    16-        KCODE  4000 1. 30 130
    17-        C     KSRC   0 0 1  0 0 10  0 0 -20  0 0 29  0 20 5  0 0 -5  -10 0 -10
    18-        C       0 -5 -20 -10 0 -13 0 -10 14 0 0 -15 -10 -5  -16 5 5 0 10 10 17
    19-        C      MATERIAL SPECIFICATIONS
    20-        c        32 (x .776 at 265 C) vol% water in calico Hills tuff - 8 vol% UO2
    21-        c        3.0% Original Enrichment/ 20 GWD/MT decayed to Uranium isotopes
    22-        c        no UO2 infiltration after criticality initiation
    23-        c       5000 yr critical
    24-        m1    62149.50c    2.7761E-09
    25-              62150.50c    1.5868E-08
    26-              60143.50c    9.8994E-08
    27-              45103.50c    5.5500E-08
    28-              63151.55c    5.7285E-09
    29-              64157.50c    1.8097E-11
    30-              64155.50c    2.3641E-10
    31-              48000.50c    1.8479E-09
    32-              54131.50c    4.9633E-08
    33-              55133.50c    1.1472E-07
    34-              43099.50c    1.0383E-07
    35-              62147.50c    3.8518E-08
    36-              62152.50c    5.8288E-09
    37-              60145.50c    6.6530E-08
    38-              42095.50c    1.0987E-07
    39-              92233.50c    3.4401E-09
    40-              92234.50c    5.1045E-07
    41-              92235.53c    3.6337E-05
    42-              92236.50c    9.4341E-06
    43-              92238.53c    1.9039E-03
    44-              93237.50c    2.1883E-06
    45-              94238.50c    1.2084E-09
    46-              94239.55c    1.1354E-06
    47-              94240.50c    2.3573E-08
    48-                 1001.53c 1.6603-2
    49-                 8016.53c 4.0422-2
    50-                11023.50c 3.9366-4
    51-                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
    52-                19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
    53-        mt1     lwtr.03t
    54-        c        40 (x .99 at 50 C) vol% water in calico Hills tuff
    55-        m2       1001.53c 2.6477-2   8016.53c 4.1448-2  11023.50c 3.9366-4
    56-                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
```

```
   57-              19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
   58-       mt2    lwtr.02t
   59-       PRINT
1     initial source from file   srctp

 original number of points                          4006
    points not in any cell                  0
    points in cells of zero importance      0
    points in void cells                    0
    points in ambiguous cells               0
 total points rejected                                 0
 points remaining                                   4006
 points after expansion or contraction              4002
 nominal source size                                4000

 initial guess for k(eff.)                       1.000000

 cycles to skip before tallying                       30

 number of keff cycles that can be stored             260

 total fission nubar data are being used.

 warning.    lwtr.02t and   lwtr.03t are both called for.
1material composition                                                    print table 40

 material
  number     component nuclide, atom fraction

     1          62149,   .00000     62150,   .00000     60143,   .00000     45103,   .00000
                63151,   .00000     64157,   .00000     64155,   .00000     48000,   .00000
                54131,   .00000     55133,   .00000     43099,   .00000     62147,   .00000
                62152,   .00000     60145,   .00000     42095,   .00000     92233,   .00000
                92234,   .00001     92235,   .00049     92236,   .00013     92238,   .02543
                93237,   .00003     94238,   .00000     94239,   .00002     94240,   .00000
                 1001,   .22172      8016,   .53980     11023,   .00526     12000,   .00309
                13027,   .03481     14000,   .15232     19000,   .00742     20000,   .00761
                26000,   .00187
 associated thermal s(a,b) data sets:    lwtr.03t
     2           1001,   .31585      8016,   .49444     11023,   .00470     12000,   .00276
                13027,   .03110     14000,   .13606     19000,   .00663     20000,   .00679
                26000,   .00167
 associated thermal s(a,b) data sets:    lwtr.02t



 material
  number     component nuclide, mass fraction

     1          62149,   .00000     62150,   .00000     60143,   .00001     45103,   .00000
                63151,   .00000     64157,   .00000     64155,   .00000     48000,   .00000
                54131,   .00000     55133,   .00001     43099,   .00001     62147,   .00000
                62152,   .00000     60145,   .00001     42095,   .00001     92233,   .00000
                92234,   .00008     92235,   .00539     92236,   .00140     92238,   .28576
                93237,   .00033     94238,   .00000     94239,   .00017     94240,   .00000
                 1001,   .01055      8016,   .40765     11023,   .00571     12000,   .00354
                13027,   .04435     14000,   .20198     19000,   .01370     20000,   .01439
                26000,   .00494
```

```
     2          1001,   .02326      8016,   .57779      11023,   .00789      12000,   .00490
               13027,   .06130     14000,   .27919      19000,   .01894      20000,   .01989
               26000,   .00683
1cell volumes and masses                                                          print table 50
```

cell		atom density	gram density	input volume	calculated volume	mass	pieces	reason volume not calculated
1	1	7.48833E-02	2.63371E+00	.00000E+00	1.14940E+07	3.02720E+07	1	
2	2	8.38290E-02	1.90533E+00	.00000E+00	2.20163E+07	4.19483E+07	1	
3	3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	0	infinite

```
1problem summary

      run terminated when   130 kcode cycles were done.
+                                                                          08/20/96 13:45:45
      Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40f1n) 5000 Years  600K      probid =   08/20/96 10:58:26
0
```

neutron creation	tracks	weight (per source	energy particle)	neutron loss	tracks	weight (per source	energy particle)
source	520250	9.9952E-01	2.0350E+00	escape	125	1.2726E-04	8.5181E-05
				energy cutoff	0	0.	0.
				time cutoff	0	0.	0.
weight window	0	0.	0.	weight window	0	0.	0.
cell importance	0	0.	0.	cell importance	0	0.	0.
weight cutoff	0	6.2529E-02	4.9763E-05	weight cutoff	520416	6.2465E-02	3.5211E-05
energy importance	0	0.	0.	energy importance	0	0.	0.
dxtran	0	0.	0.	dxtran	0	0.	0.
forced collisions	0	0.	0.	forced collisions	0	0.	0.
exp. transform	0	0.	0.	exp. transform	0	0.	0.
upscattering	0	0.	3.3445E-07	downscattering	0	0.	1.9318E+00
				capture	0	6.2192E-01	6.3293E-02
(n,xn)	580	8.4475E-04	6.2405E-04	loss to (n,xn)	289	4.2076E-04	3.5019E-03
fission	0	0.	0.	loss to fission	0	3.7796E-01	3.6996E-02
total	520830	1.0629E+00	2.0357E+00	total	520830	1.0629E+00	2.0357E+00

number of neutrons banked	291	average lifetime, shakes		cutoffs
neutron tracks per source particle	1.0011E+00	escape	3.2770E+04	tco 1.0000E+34
neutron collisions per source particle	7.8798E+01	capture	9.4023E+03	eco .0000E+00
total neutron collisions	40994695	capture or escape	9.4052E+03	wc1 -5.0000E-01
net multiplication	1.0004E+00 .0000	any termination	1.0237E+04	wc2 -2.5000E-01
computer time so far in this run	166.98 minutes	maximum number ever in bank		2
computer time in mcrun	166.91 minutes	bank overflows to backup file		0
source particles per minute	3.1169E+03	field length		0
random numbers generated	475422461	most random numbers used was		13087 in history 218100

```
 range of sampled source weights = 9.4340E-01 to 1.0823E+00
1neutron  activity in each cell                                                   print table 126
```

cell		tracks entering	population	collisions	collisions * weight (per history)	number weighted energy	flux weighted energy	average track weight (relative)	average track mfp (cm)
1	1	601804	520541	33709616	4.7579E+01	3.1834E-04	5.1046E-01	8.0540E-01	2.5162E+00
2	2	104929	49527	7285079	7.4097E+00	4.6737E-05	2.0187E-01	5.7843E-01	1.3171E+00
total		706733	570068	40994695	5.4988E+01				

```
1keff results for: Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40f1n) 5000 Years  600K      probid =   08/20/96 10:58:26
```

the initial fission neutron source distribution was read from the srctp file named srctp .
the criticality problem was scheduled to skip 30 cycles and run a total of 130 cycles with nominally 4000 neutrons per cycle.
this problem has run 30 inactive cycles with 120117 neutron histories and 100 active cycles with 400133 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 520250 fission neutron source histories.
all cells with fissionable material were sampled and had fission neutron source points.

the results of the w test for normality applied to the individual collision, absorption, and track-length keff cycle values are:

the k(collision) cycle values appear normally distributed at the 95 percent confidence level
the k(absorption) cycle values appear normally distributed at the 95 percent confidence level
the k(trk length) cycle values appear normally distributed at the 95 percent confidence level

---

the final estimated combined collision/absorption/track-length keff = .93482 with an estimated standard deviation of .00081

the estimated 68, 95, & 99 percent keff confidence intervals are .93401 to .93563, .93320 to .93643, and .93267 to .93696

the estimated collision/absorption neutron removal lifetime = 9.40E-05 seconds with an estimated standard deviation of 1.90E-07

---

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.93517	.00121	.93396 to .93638	.93276 to .93758	.93198 to .93836	
absorption	.93456	.00104	.93352 to .93561	.93249 to .93664	.93181 to .93731	
track length	.93519	.00125	.93393 to .93645	.93269 to .93769	.93187 to .93850	
col/absorp	.93482	.00081	.93401 to .93563	.93321 to .93643	.93268 to .93696	.0423
abs/trk len	.93482	.00082	.93399 to .93564	.93318 to .93645	.93265 to .93699	.0392
col/trk len	.93516	.00120	.93395 to .93636	.93276 to .93755	.93198 to .93833	.9870
col/abs/trk len	.93482	.00081	.93401 to .93563	.93320 to .93643	.93267 to .93696	

```
1mcnp     version 4a    ld=10/01/93                          08/29/96 16:44:37
 ******************************************************************************                    probid =   08/29/96 16:44:37
 inp=sp40g1n outp=sp40g1n0

     1-        Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40g1n) 10000 Years  600K
     2-        C    Calico Hills Tuff 1.5095 g/cc  .40 porosity -  sphere surrounded by tuff
     3-        C    Water and UO2 offset each other in porous space / H2O @ 500k
     4-        C     CELL SPECIFICATIONS
     5-        C     INNER WATER REGION
     6-        1     1  7.48814-2   -1   IMP:N=1
     7-        2     2  8.38290-2  1 -2  IMP:N=1
     8-        C     OUTSIDE WORLD
     9-        3     0  2   IMP:N=0
    10-
    11-        C     SURFACE SPECIFICATIONS
    12-        1     SO  140       $ INNER FUEL ZONE
    13-        2     SO  200       $ TUFF REFLECTOR
    14-
    15-        MODE  N
    16-        KCODE  4000 1. 30 130
    17-        C     KSRC   0 0 1  0 0 10  0 0 -20  0 0 29  0 20 5  0 0 -5  -10 0 -10
    18-        C       0 -5 -20 -10 0 -13 0 -10 14 0 0 -15 -10 -5  -16 5 5 0 10 10 17
    19-        C      MATERIAL SPECIFICATIONS
    20-        c        32 (x .776 at 265 C) vol% water in calico Hills tuff - 8 vol% UO2
    21-        c        3.0% Original Enrichment/ 20 GWD/MT decayed to Uranium isotopes
    22-        c        no UO2 infiltration after criticality initiation .
    23-        c       10000 yr critical
    24-        m1    62149.50c    2.8219E-09
    25-              63151.55c    9.6170E-09
    26-              60143.50c    1.9432E-07
    27-              45103.50c    1.1304E-07
    28-              54131.50c    9.9667E-08
    29-              55133.50c    2.2906E-07
    30-              62147.50c    7.6323E-08
    31-              43099.50c    2.0502E-07
    32-              64155.50c    2.9053E-10
    33-              60145.50c    1.3161E-07
    34-              62152.50c    1.3106E-08
    35-              42095.50c    2.1753E-07
    36-              48000.50c    4.2020E-09
    37-              62150.50c    3.4356E-08
    38-              36083.50c    1.7568E-08
    39-              92233.50c    6.6328E-09
    40-              92234.50c    5.4403E-07
    41-              92235.53c    3.4776E-05
    42-              92236.50c    9.7005E-06
    43-              92238.53c    1.9017E-03
    44-              93237.50c    2.1728E-06
    45-              94238.50c    1.1952E-09
    46-              94239.55c    1.9793E-06
    47-              94240.50c    7.0065E-08
    48-                 1001.53c 1.6603-2
    49-                 8016.53c 4.0422-2
    50-                11023.50c 3.9366-4
    51-                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
    52-                19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
    53-        mt1     lwtr.03t
    54-        c        40 (x .99 at 50 C) vol% water in calico Hills tuff
    55-        m2       1001.53c 2.6477-2   8016.53c 4.1448-2  11023.50c 3.9366-4
    56-                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
```

```
   57-              19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
   58-       mt2    lwtr.02t
   59-       PRINT
1     initial source from file   srctp

 original number of points                          4129
    points not in any cell                 0
    points in cells of zero importance     0
    points in void cells                   0
    points in ambiguous cells              0
 total points rejected                                0
 points remaining                                  4129
 points after expansion or contraction             3992
 nominal source size                               4000

 initial guess for k(eff.)                      1.000000

 cycles to skip before tallying                      30

 number of keff cycles that can be stored           260

 total fission nubar data are being used.

 warning.    lwtr.02t and   lwtr.03t are both called for.
1material composition                                                    print table 40

 material
  number     component nuclide, atom fraction

     1          62149,   .00000      63151,   .00000      60143,   .00000      45103,   .00000
                54131,   .00000      55133,   .00000      62147,   .00000      43099,   .00000
                64155,   .00000      60145,   .00000      62152,   .00000      42095,   .00000
                48000,   .00000      62150,   .00000      36083,   .00000      92233,   .00000
                92234,   .00001      92235,   .00046      92236,   .00013      92238,   .02540
                93237,   .00003      94238,   .00000      94239,   .00003      94240,   .00000
                 1001,   .22173       8016,   .53982      11023,   .00526      12000,   .00309
                13027,   .03482      14000,   .15232      19000,   .00742      20000,   .00761
                26000,   .00187
 associated thermal s(a,b) data sets:    lwtr.03t
     2           1001,   .31585       8016,   .49444      11023,   .00470      12000,   .00276
                13027,   .03110      14000,   .13606      19000,   .00663      20000,   .00679
                26000,   .00167
 associated thermal s(a,b) data sets:    lwtr.02t



 material
  number     component nuclide, mass fraction

     1          62149,   .00000      63151,   .00000      60143,   .00002      45103,   .00001
                54131,   .00001      55133,   .00002      62147,   .00001      43099,   .00001
                64155,   .00000      60145,   .00001      62152,   .00000      42095,   .00001
                48000,   .00000      62150,   .00000      36083,   .00000      92233,   .00000
                92234,   .00008      92235,   .00516      92236,   .00144      92238,   .28553
                93237,   .00032      94238,   .00000      94239,   .00030      94240,   .00001
                 1001,   .01055       8016,   .40779      11023,   .00571      12000,   .00355
                13027,   .04437      14000,   .20205      19000,   .01371      20000,   .01440
                26000,   .00494
```

```
     2          1001,   .02326      8016,   .57779      11023,   .00789      12000,   .00490
               13027,   .06130     14000,   .27919      19000,   .01894      20000,   .01989
               26000,   .00683
1cell volumes and masses                                                                    print table 50

        cell     atom          gram          input        calculated                          reason volume
                density       density       volume         volume          mass        pieces   not calculated

     1     1  7.48814E-02   2.63284E+00    .00000E+00   1.14940E+07   3.02619E+07      1
     2     2  8.38290E-02   1.90533E+00    .00000E+00   2.20163E+07   4.19483E+07      1
     3     3   .00000E+00    .00000E+00    .00000E+00    .00000E+00    .00000E+00      0      infinite
1problem summary

      run terminated when   130 kcode cycles were done.
+                                                                                          08/29/96 19:39:01
      Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40g1n) 10000 Years  600K          probid =  08/29/96 16:44:37
0
 neutron creation     tracks      weight        energy          neutron loss        tracks      weight        energy
                                  (per source particle)                                         (per source particle)

 source               521885    9.9639E-01    2.0383E+00        escape                 141    1.4277E-04    9.9555E-05
                                                                 energy cutoff            0    0.            0.
                                                                 time cutoff              0    0.            0.
 weight window             0    0.            0.                weight window            0    0.            0.
 cell importance           0    0.            0.                cell importance          0    0.            0.
 weight cutoff             0    6.1410E-02    3.3499E-05        weight cutoff       522038    6.1355E-02    2.3321E-05
 energy importance         0    0.            0.                energy importance        0    0.            0.
 dxtran                    0    0.            0.                dxtran                   0    0.            0.
 forced collisions         0    0.            0.                forced collisions        0    0.            0.
 exp. transform            0    0.            0.                exp. transform           0    0.            0.
 upscattering              0    0.            3.3139E-07        downscattering           0    0.            1.9352E+00
                                                                 capture                  0    6.2353E-01    6.3113E-02
 (n,xn)                  585    8.5591E-04    6.1523E-04        loss to (n,xn)         291    4.2578E-04    3.5293E-03
 fission                   0    0.            0.                loss to fission          0    3.7320E-01    3.6983E-02
     total            522470    1.0587E+00    2.0390E+00            total           522470    1.0587E+00    2.0390E+00

   number of neutrons banked                      294        average lifetime, shakes              cutoffs
   neutron tracks per source particle     1.0011E+00          escape            3.6578E+04          tco    1.0000E+34
   neutron collisions per source particle 7.8305E+01          capture           9.3155E+03          eco     .0000E+00
   total neutron collisions                 40866179          capture or escape 9.3194E+03          wc1   -5.0000E-01
   net multiplication               1.0004E+00  .0000         any termination   1.0148E+04          wc2   -2.5000E-01

 computer time so far in this run   174.17 minutes           maximum number ever in bank        2
 computer time in mcrun             174.10 minutes           bank overflows to backup file      0
 source particles per minute            2.9977E+03           field length                       0
 random numbers generated                473703477           most random numbers used was   13212 in history   186740

 range of sampled source weights = 9.1701E-01 to 1.1145E+00
1neutron  activity in each cell                                                                    print table 126

                 tracks     population   collisions   collisions     number        flux        average      average
        cell    entering                              * weight     weighted     weighted   track weight   track mfp
                                                    (per history)    energy       energy     (relative)      (cm)

     1     1      604475       522179     33444686    4.7067E+01   3.2383E-04   5.1426E-01   8.0512E-01   2.5256E+00
     2     2      106309        50538      7421493    7.5249E+00   4.6654E-05   2.0128E-01   5.7820E-01   1.3178E+00

     total        710784       572717     40866179    5.4592E+01
1neutron  weight balance in each cell -- external events                                            print table 130
```

cell		entering	source	energy cutoff	time cutoff	exiting	total
1	1	1.0592E-01	9.9639E-01	.0000E+00	.0000E+00	-1.5379E-01	9.4852E-01
2	2	1.5379E-01	.0000E+00	.0000E+00	.0000E+00	-1.0606E-01	4.7728E-02
total		2.5971E-01	9.9639E-01	.0000E+00	.0000E+00	-2.5986E-01	9.9625E-01

1neutron weight balance in each cell -- variance reduction events print table 130

cell		weight window	cell importance	weight cutoff	energy importance	dxtran	forced collision	exponential transform	total
1	1	.0000E+00	.0000E+00	-4.3948E-05	.0000E+00	.0000E+00	.0000E+00	.0000E+00	-4.3948E-05
2	2	.0000E+00	.0000E+00	9.9491E-05	.0000E+00	.0000E+00	.0000E+00	.0000E+00	9.9491E-05
total		.0000E+00	.0000E+00	5.5543E-05	.0000E+00	.0000E+00	.0000E+00	.0000E+00	5.5543E-05

1keff results for: Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40g1n) 10000 Years 600K probid = 08/29/96 16:44:37

the initial fission neutron source distribution was read from the srctp file named srctp .
the criticality problem was scheduled to skip 30 cycles and run a total of 130 cycles with nominally 4000 neutrons per cycle.
this problem has run 30 inactive cycles with 120052 neutron histories and 100 active cycles with 401833 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 521885 fission neutron source histories.
all cells with fissionable material were sampled and had fission neutron source points.

the results of the w test for normality applied to the individual collision, absorption, and track-length keff cycle values are:

the k(collision) cycle values appear normally distributed at the 95 percent confidence level
the k(absorption) cycle values appear normally distributed at the 95 percent confidence level
the k(trk length) cycle values appear normally distributed at the 95 percent confidence level

---

the final estimated combined collision/absorption/track-length keff = .93357 with an estimated standard deviation of .00080

the estimated 68, 95, & 99 percent keff confidence intervals are .93277 to .93437, .93197 to .93517, and .93145 to .93569

the estimated collision/absorption neutron removal lifetime = 9.33E-05 seconds with an estimated standard deviation of 2.08E-07

---

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.93359	.00119	.93240 to .93477	.93122 to .93595	.93045 to .93672	
absorption	.93356	.00108	.93248 to .93465	.93141 to .93572	.93070 to .93642	
track length	.93358	.00118	.93240 to .93477	.93122 to .93594	.93045 to .93671	
col/absorp	.93357	.00081	.93276 to .93439	.93196 to .93519	.93143 to .93572	.0189
abs/trk len	.93357	.00080	.93277 to .93437	.93198 to .93517	.93146 to .93569	-.0083
col/trk len	.93358	.00119	.93240 to .93477	.93122 to .93595	.93045 to .93672	.9826
col/abs/trk len	.93357	.00080	.93277 to .93437	.93197 to .93517	.93145 to .93569	

```
1mcnp     version 4a    ld=10/01/93                          08/29/96 23:06:12
 ******************************************************************************                    probid =   08/29/96 23:06:12
 inp=sp40e1y outp=sp40e1y0

     1-        Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40e1y) 1000 Years  600K
     2-        C    Calico Hills Tuff 1.5095 g/cc  .40 porosity -  sphere surrounded by tuff
     3-        C    Water and UO2 offset each other in porous space / H2O @ 500k no fp
     4-        C     CELL SPECIFICATIONS
     5-        C     INNER WATER REGION
     6-        1     1  7.48783-2   -1   IMP:N=1
     7-        2     2  8.38290-2  1 -2  IMP:N=1
     8-        C     OUTSIDE WORLD
     9-        3     0  2   IMP:N=0
    10-
    11-        C     SURFACE SPECIFICATIONS
    12-        1     SO  140       $ INNER FUEL ZONE
    13-        2     SO  200       $ TUFF REFLECTOR
    14-
    15-        MODE  N
    16-        KCODE  4000 1. 30 130
    17-        C     KSRC   0 0 1  0 0 10  0 0 -20  0 0 29  0 20 5  0 0 -5  -10 0 -10
    18-        C       0 -5 -20 -10 0 -13 0 -10 14 0 0 -15 -10 -5  -16 5 5 0 10 10 17
    19-        C      MATERIAL SPECIFICATIONS
    20-        c        32 (x .776 at 265 C) vol% water in calico Hills tuff - 8 vol% UO2
    21-        c        3.0% Original Enrichment/ 20 GWD/MT decayed to Uranium isotopes
    22-        c       1000 yr critical
    23-        m1    92233.50c   7.1050E-10
    24-              92234.50c   4.8749E-07
    25-              92235.53c   3.8398E-05
    26-              92236.50c   9.3098E-06
    27-              92238.53c   1.9289E-03
    28-              93237.50c   2.2324E-06
    29-              94238.50c   1.2260E-09
    30-              94239.55c   2.5206E-07
    31-              94240.50c   1.1983E-09
    32-                 1001.53c 1.6549-2
    33-                 8016.53c 4.0446-2
    34-                11023.50c 3.9366-4
    35-                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
    36-                19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
    37-        mt1     lwtr.03t
    38-        c        40 (x .99 at 50 C) vol% water in calico Hills tuff
    39-        m2       1001.53c 2.6477-2   8016.53c 4.1448-2  11023.50c 3.9366-4
    40-                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
    41-                19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
    42-        mt2     lwtr.02t
    43-        PRINT
1     initial source from file   srctp

 original number of points                          3886
    points not in any cell                  0
    points in cells of zero importance      0
    points in void cells                    0
    points in ambiguous cells               0
 total points rejected                                 0
 points remaining                                   3886
 points after expansion or contraction              4000
 nominal source size                                4000

 initial guess for k(eff.)                      1.000000
```

cycles to skip before tallying 30

number of keff cycles that can be stored 260

total fission nubar data are being used.

warning. lwtr.02t and lwtr.03t are both called for.

1material composition print table 40

material number — component nuclide, atom fraction

1	92233,	.00000	92234,	.00001	92235,	.00051	92236,	.00012
	92238,	.02576	93237,	.00003	94238,	.00000	94239,	.00000
	94240,	.00000	1001,	.22101	8016,	.54016	11023,	.00526
	12000,	.00309	13027,	.03482	14000,	.15233	19000,	.00742
	20000,	.00761	26000,	.00187				
associated thermal s(a,b) data sets:			lwtr.03t					
2	1001,	.31585	8016,	.49444	11023,	.00470	12000,	.00276
	13027,	.03110	14000,	.13606	19000,	.00663	20000,	.00679
	26000,	.00167						
associated thermal s(a,b) data sets:			lwtr.02t					

material number — component nuclide, mass fraction

1	92233,	.00000	92234,	.00007	92235,	.00567	92236,	.00138
	92238,	.28834	93237,	.00033	94238,	.00000	94239,	.00004
	94240,	.00000	1001,	.01047	8016,	.40624	11023,	.00568
	12000,	.00353	13027,	.04417	14000,	.20116	19000,	.01365
	20000,	.01433	26000,	.00492				
2	1001,	.02326	8016,	.57779	11023,	.00789	12000,	.00490
	13027,	.06130	14000,	.27919	19000,	.01894	20000,	.01989
	26000,	.00683						

1cell volumes and masses print table 50

cell		atom density	gram density	input volume	calculated volume	mass	pieces	reason volume not calculated
1	1	7.48783E-02	2.64439E+00	.00000E+00	1.14940E+07	3.03948E+07	1	
2	2	8.38290E-02	1.90533E+00	.00000E+00	2.20163E+07	4.19483E+07	1	
3	3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	0	infinite

1problem summary

run terminated when 130 kcode cycles were done.

+ 08/30/96 01:03:50

Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40e1y) 1000 Years 600K probid = 08/29/96 23:06:12

0

neutron creation	tracks	weight (per source particle)	energy	neutron loss	tracks	weight (per source particle)	energy
source	519879	1.0002E+00	2.0295E+00	escape	143	1.4537E-04	1.3409E-04
				energy cutoff	0	0.	0.
				time cutoff	0	0.	0.
weight window	0	0.	0.	weight window	0	0.	0.

cell importance	0	0.	0.	cell importance	0	0.	0.
weight cutoff	0	6.3554E-02	4.0956E-05	weight cutoff	520045	6.3956E-02	3.4808E-05
energy importance	0	0.	0.	energy importance	0	0.	0.
dxtran	0	0.	0.	dxtran	0	0.	0.
forced collisions	0	0.	0.	forced collisions	0	0.	0.
exp. transform	0	0.	0.	exp. transform	0	0.	0.
upscattering	0	0.	3.3603E-07	downscattering	0	0.	1.9260E+00
				capture	0	6.1583E-01	6.2745E-02
(n,xn)	617	9.1000E-04	6.6890E-04	loss to (n,xn)	308	4.5424E-04	3.7825E-03
fission	0	0.	0.	loss to fission	0	3.8431E-01	3.7476E-02
total	520496	1.0647E+00	2.0302E+00	total	520496	1.0647E+00	2.0302E+00

number of neutrons banked	309	average lifetime, shakes		cutoffs
neutron tracks per source particle	1.0012E+00	escape	3.4660E+04	tco 1.0000E+34
neutron collisions per source particle	7.9209E+01	capture	9.4506E+03	eco .0000E+00
total neutron collisions	41179192	capture or escape	9.4543E+03	wc1 -5.0000E-01
net multiplication	1.0005E+00 .0000	any termination	1.0292E+04	wc2 -2.5000E-01

computer time so far in this run	117.53 minutes	maximum number ever in bank	2
computer time in mcrun	117.48 minutes	bank overflows to backup file	0
source particles per minute	4.4253E+03	field length	0
random numbers generated	477822584	most random numbers used was	10822 in history 272095

range of sampled source weights = 9.3414E-01 to 1.0689E+00

1neutron activity in each cell print table 126

cell		tracks entering	population	collisions	collisions * weight (per history)	number weighted energy	flux weighted energy	average track weight (relative)	average track mfp (cm)
1	1	600222	520188	33940512	4.7813E+01	3.1479E-04	5.0778E-01	8.0371E-01	2.5126E+00
2	2	103684	49573	7238680	7.3886E+00	4.6662E-05	2.0187E-01	5.7994E-01	1.3171E+00
total		703906	569761	41179192	5.5202E+01				

1keff results for: Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40e1y) 1000 Years 600K probid = 08/29/96 23:06:12

the initial fission neutron source distribution was read from the srctp file named srctp .
the criticality problem was scheduled to skip 30 cycles and run a total of 130 cycles with nominally 4000 neutrons per cycle.
this problem has run 30 inactive cycles with 120410 neutron histories and 100 active cycles with 399469 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 519879 fission neutron source histories.
all cells with fissionable material were sampled and had fission neutron source points.

the results of the w test for normality applied to the individual collision, absorption, and track-length keff cycle values are:

the k(collision) cycle values appear normally distributed at the 95 percent confidence level
the k(absorption) cycle values appear normally distributed at the 95 percent confidence level
the k(trk length) cycle values appear normally distributed at the 95 percent confidence level

---

the final estimated combined collision/absorption/track-length keff = .94399 with an estimated standard deviation of .00088

the estimated 68, 95, & 99 percent keff confidence intervals are .94311 to .94487, .94224 to .94574, and .94167 to .94632

the estimated collision/absorption neutron removal lifetime = 9.44E-05 seconds with an estimated standard deviation of 1.91E-07

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.94424	.00128	.94296 to .94552	.94170 to .94679	.94087 to .94762	
absorption	.94381	.00113	.94268 to .94494	.94155 to .94607	.94082 to .94680	
track length	.94420	.00129	.94291 to .94550	.94163 to .94678	.94079 to .94762	
col/absorp	.94400	.00088	.94312 to .94488	.94225 to .94574	.94168 to .94631	.0573
abs/trk len	.94398	.00088	.94310 to .94486	.94223 to .94573	.94166 to .94630	.0497
col/trk len	.94424	.00128	.94295 to .94552	.94168 to .94679	.94084 to .94763	.9858
col/abs/trk len	.94399	.00088	.94311 to .94487	.94224 to .94574	.94167 to .94632	

```
1mcnp     version 4a    ld=10/01/93                          08/29/96 23:27:14
 ******************************************************************************                    probid =   08/29/96 23:27:14
 inp=sp40e1z outp=sp40e1z0

    1-        Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40e1z) 1000 Years  600K
    2-        C    Calico Hills Tuff 1.5095 g/cc  .40 porosity -  sphere surrounded by tuff
    3-        C    Water and UO2 offset each other in porous space / H2O @ 500k no Pu239,U233
    4-        C     CELL SPECIFICATIONS
    5-        C     INNER WATER REGION
    6-        1     1  7.48781-2   -1   IMP:N=1
    7-        2     2  8.38290-2  1 -2  IMP:N=1
    8-        C     OUTSIDE WORLD
    9-        3     0  2   IMP:N=0
   10-
   11-        C     SURFACE SPECIFICATIONS
   12-        1     SO  140       $ INNER FUEL ZONE
   13-        2     SO  200       $ TUFF REFLECTOR
   14-
   15-        MODE  N
   16-        KCODE  4000 1. 30 130
   17-        C     KSRC   0 0 1  0 0 10  0 0 -20  0 0 29  0 20 5  0 0 -5  -10 0 -10
   18-        C       0 -5 -20 -10 0 -13 0 -10 14 0 0 -15 -10 -5  -16 5 5 0 10 10 17
   19-        C      MATERIAL SPECIFICATIONS
   20-        c        32 (x .776 at 265 C) vol% water in calico Hills tuff - 8 vol% UO2
   21-        c        3.0% Original Enrichment/ 20 GWD/MT decayed to Uranium isotopes
   22-        c       1000 yr critical
   23-        m1    62149.50c   2.0302E-09
   24-              62151.50c   1.9060E-10
   25-              60143.50c   2.0165E-08
   26-              45103.50c   1.0845E-08
   27-              63151.55c   1.2151E-09
   28-              64157.50c   1.1152E-11
   29-              64155.50c   9.4362E-11
   30-              48000.50c   3.2119E-10
   31-              54131.50c   9.9667E-09
   32-              55133.50c   2.3024E-08
   33-              43099.50c   2.0926E-08
   34-              62147.50c   7.7393E-09
   35-              62152.50c   1.0071E-09
   36-              60145.50c   1.3415E-08
   37-              42095.50c   2.2139E-08
   38-              92234.50c   4.8749E-07
   39-              92235.53c   3.8398E-05
   40-              92236.50c   9.3098E-06
   41-              92238.53c   1.9289E-03
   42-              93237.50c   2.2324E-06
   43-              94240.50c   1.1983E-09
   44-                 1001.53c 1.6549-2
   45-                 8016.53c 4.0446-2
   46-                11023.50c 3.9366-4
   47-                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
   48-                19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
   49-        mt1     lwtr.03t
   50-        c        40 (x .99 at 50 C) vol% water in calico Hills tuff
   51-        m2       1001.53c 2.6477-2   8016.53c 4.1448-2  11023.50c 3.9366-4
   52-              12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
   53-              19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
   54-        mt2     lwtr.02t
   55-        PRINT
1     initial source from file   srctp
```

```
original number of points                          4072
   points not in any cell                     0
   points in cells of zero importance         0
   points in void cells                       0
   points in ambiguous cells                  0
total points rejected                                0
points remaining                                  4072
points after expansion or contraction             3995
nominal source size                               4000

initial guess for k(eff.)                    1.000000

cycles to skip before tallying                      30

number of keff cycles that can be stored           260

total fission nubar data are being used.

warning.    lwtr.02t and   lwtr.03t are both called for.
1material composition                                                                    print table 40

material
 number     component nuclide, atom fraction

    1          62149,   .00000      62151,   .00000      60143,   .00000      45103,   .00000
               63151,   .00000      64157,   .00000      64155,   .00000      48000,   .00000
               54131,   .00000      55133,   .00000      43099,   .00000      62147,   .00000
               62152,   .00000      60145,   .00000      42095,   .00000      92234,   .00001
               92235,   .00051      92236,   .00012      92238,   .02576      93237,   .00003
               94240,   .00000       1001,   .22101       8016,   .54016      11023,   .00526
               12000,   .00309      13027,   .03482      14000,   .15233      19000,   .00742
               20000,   .00761      26000,   .00187
associated thermal s(a,b) data sets:    lwtr.03t
    2           1001,   .31585       8016,   .49444      11023,   .00470      12000,   .00276
               13027,   .03110      14000,   .13606      19000,   .00663      20000,   .00679
               26000,   .00167
associated thermal s(a,b) data sets:    lwtr.02t



material
 number     component nuclide, mass fraction

    1          62149,   .00000      62151,   .00000      60143,   .00000      45103,   .00000
               63151,   .00000      64157,   .00000      64155,   .00000      48000,   .00000
               54131,   .00000      55133,   .00000      43099,   .00000      62147,   .00000
               62152,   .00000      60145,   .00000      42095,   .00000      92234,   .00007
               92235,   .00567      92236,   .00138      92238,   .28835      93237,   .00033
               94240,   .00000       1001,   .01047       8016,   .40626      11023,   .00568
               12000,   .00353      13027,   .04417      14000,   .20117      19000,   .01365
               20000,   .01433      26000,   .00492
    2           1001,   .02326       8016,   .57779      11023,   .00789      12000,   .00490
               13027,   .06130      14000,   .27919      19000,   .01894      20000,   .01989
               26000,   .00683
1cell volumes and masses                                                                 print table 50

      cell     atom          gram          input       calculated                          reason volume
```

		density	density	volume	volume	mass	pieces	not calculated
1	1	7.48781E-02	2.64432E+00	.00000E+00	1.14940E+07	3.03939E+07	1	
2	2	8.38290E-02	1.90533E+00	.00000E+00	2.20163E+07	4.19483E+07	1	
3	3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	0	infinite

1problem summary

run terminated when 130 kcode cycles were done.

+ 08/30/96 02:07:57

Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40e1z) 1000 Years 600K probid = 08/29/96 23:27:14

0

neutron creation	tracks	weight (per source particle)	energy (per source particle)	neutron loss	tracks	weight (per source particle)	energy (per source particle)
source	520651	9.9875E-01	2.0338E+00	escape	121	1.3229E-04	9.5317E-05
				energy cutoff	0	0.	0.
				time cutoff	0	0.	0.
weight window	0	0.	0.	weight window	0	0.	0.
cell importance	0	0.	0.	cell importance	0	0.	0.
weight cutoff	0	6.4212E-02	3.6000E-05	weight cutoff	520815	6.4324E-02	2.9960E-05
energy importance	0	0.	0.	energy importance	0	0.	0.
dxtran	0	0.	0.	dxtran	0	0.	0.
forced collisions	0	0.	0.	forced collisions	0	0.	0.
exp. transform	0	0.	0.	exp. transform	0	0.	0.
upscattering	0	0.	3.3894E-07	downscattering	0	0.	1.9301E+00
				capture	0	6.1794E-01	6.3167E-02
(n,xn)	570	8.4918E-04	6.1622E-04	loss to (n,xn)	285	4.2459E-04	3.4855E-03
fission	0	0.	0.	loss to fission	0	3.8099E-01	3.7578E-02
total	521221	1.0638E+00	2.0345E+00	total	521221	1.0638E+00	2.0345E+00

number of neutrons banked	285	average lifetime, shakes		cutoffs
neutron tracks per source particle	1.0011E+00	escape	3.2924E+04	tco 1.0000E+34
neutron collisions per source particle	7.9735E+01	capture	9.5362E+03	eco .0000E+00
total neutron collisions	41514025	capture or escape	9.5393E+03	wc1 -5.0000E-01
net multiplication	1.0004E+00 .0000	any termination	1.0394E+04	wc2 -2.5000E-01

computer time so far in this run	160.64 minutes	maximum number ever in bank	1
computer time in mcrun	160.58 minutes	bank overflows to backup file	0
source particles per minute	3.2424E+03	field length	0
random numbers generated	481148074	most random numbers used was	11622 in history 491370

range of sampled source weights = 9.3197E-01 to 1.0750E+00

1neutron activity in each cell print table 126

cell		tracks entering	population	collisions	collisions * weight (per history)	number weighted energy	flux weighted energy	average track weight (relative)	average track mfp (cm)
1	1	602847	520936	34127072	4.7895E+01	3.1399E-04	5.0852E-01	8.0207E-01	2.5127E+00
2	2	105896	50141	7386953	7.4968E+00	4.6151E-05	1.9946E-01	5.7737E-01	1.3134E+00
total		708743	571077	41514025	5.5391E+01				

1keff results for: Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40e1z) 1000 Years 600K probid = 08/29/96 23:27:14

the initial fission neutron source distribution was read from the srctp file named srctp .
the criticality problem was scheduled to skip 30 cycles and run a total of 130 cycles with nominally 4000 neutrons per cycle.
this problem has run 30 inactive cycles with 119671 neutron histories and 100 active cycles with 400980 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 520651 fission neutron source histories.
all cells with fissionable material were sampled and had fission neutron source points.

the results of the w test for normality applied to the individual collision, absorption, and track-length keff cycle values are:

the k(collision) cycle values appear normally distributed at the 95 percent confidence level
the k(absorption) cycle values appear normally distributed at the 95 percent confidence level
the k(trk length) cycle values appear normally distributed at the 95 percent confidence level

---

the final estimated combined collision/absorption/track-length keff = .93493 with an estimated standard deviation of .00078

the estimated 68, 95, & 99 percent keff confidence intervals are .93415 to .93572, .93337 to .93650, and .93286 to .93701

the estimated collision/absorption neutron removal lifetime = 9.56E-05 seconds with an estimated standard deviation of 2.07E-07

---

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.93541	.00113	.93427 to .93654	.93315 to .93766	.93242 to .93839	
absorption	.93444	.00118	.93326 to .93562	.93209 to .93679	.93133 to .93755	
track length	.93544	.00117	.93427 to .93662	.93311 to .93778	.93234 to .93854	
col/absorp	.93494	.00078	.93416 to .93572	.93338 to .93650	.93287 to .93701	-.0919
abs/trk len	.93494	.00080	.93414 to .93574	.93335 to .93654	.93283 to .93706	-.0861
col/trk len	.93539	.00113	.93426 to .93653	.93314 to .93765	.93240 to .93838	.9801
col/abs/trk len	.93493	.00078	.93415 to .93572	.93337 to .93650	.93286 to .93701	

```
1mcnp     version 4a    ld=10/01/93                              08/29/96 19:39:01
 ******************************************************************************                probid =   08/29/96 19:39:01
 inp=sp40g1y outp=sp40g1y0

    1-       Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40g1y) 10000 Years  600K
    2-       C    Calico Hills Tuff 1.5095 g/cc  .40 porosity -  sphere surrounded by tuff
    3-       C    Water and UO2 offset each other in porous space / H2O @ 500k no fp
    4-       C     CELL SPECIFICATIONS
    5-       C     INNER WATER REGION
    6-       1     1  7.48330-2   -1   IMP:N=1
    7-       2     2  8.38290-2  1 -2  IMP:N=1
    8-       C     OUTSIDE WORLD
    9-       3     0  2   IMP:N=0
   10-
   11-       C     SURFACE SPECIFICATIONS
   12-       1     SO  140       $ INNER FUEL ZONE
   13-       2     SO  200       $ TUFF REFLECTOR
   14-
   15-       MODE  N
   16-       KCODE  4000 1. 30 130
   17-       C     KSRC   0 0 1  0 0 10  0 0 -20  0 0 29  0 20 5  0 0 -5  -10 0 -10
   18-       C       0 -5 -20 -10 0 -13 0 -10 14 0 0 -15 -10 -5  -16 5 5 0 10 10 17
   19-       C      MATERIAL SPECIFICATIONS
   20-       c        32 (x .776 at 265 C) vol% water in calico Hills tuff - 8 vol% UO2
   21-       c        3.0% Original Enrichment/ 20 GWD/MT decayed to Uranium isotopes
   22-       c       10000 yr critical
   23-       m1    92233.50c   6.6328E-09
   24-             92234.50c   6.0552E-07
   25-             92235.53c   3.9787E-05
   26-             92236.50c   1.0899E-05
   27-             92238.53c   2.1513E-03
   28-             93237.50c   2.4587E-06
   29-             94238.50c   1.1952E-09
   30-             94239.55c   1.9793E-06
   31-             94240.50c   7.0065E-08
   32-                1001.53c 1.6059-2
   33-                8016.53c 4.0662-2
   34-               11023.50c 3.9366-4
   35-               12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
   36-               19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
   37-       mt1     lwtr.03t
   38-       c        40 (x .99 at 50 C) vol% water in calico Hills tuff
   39-       m2       1001.53c 2.6477-2   8016.53c 4.1448-2  11023.50c 3.9366-4
   40-               12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
   41-               19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
   42-       mt2     lwtr.02t
   43-       PRINT
1     initial source from file   srctp

 original number of points                          4023
    points not in any cell                     0
    points in cells of zero importance         0
    points in void cells                       0
    points in ambiguous cells                  0
 total points rejected                                0
 points remaining                                  4023
 points after expansion or contraction             4001
 nominal source size                               4000

 initial guess for k(eff.)                    1.000000
```

cycles to skip before tallying 30

number of keff cycles that can be stored 260

total fission nubar data are being used.

warning. lwtr.02t and lwtr.03t are both called for.

1material composition print table 40

the sum of the fractions of material 1 was 7.483182E-02

material number — component nuclide, atom fraction

1	92233,	.00000	92234,	.00001	92235,	.00053	92236,	.00015
	92238,	.02875	93237,	.00003	94238,	.00000	94239,	.00003
	94240,	.00000	1001,	.21460	8016,	.54338	11023,	.00526
	12000,	.00309	13027,	.03484	14000,	.15242	19000,	.00743
	20000,	.00761	26000,	.00188				
associated thermal s(a,b) data sets:			lwtr.03t					
2	1001,	.31585	8016,	.49444	11023,	.00470	12000,	.00276
	13027,	.03110	14000,	.13606	19000,	.00663	20000,	.00679
	26000,	.00167						
associated thermal s(a,b) data sets:			lwtr.02t					

material number — component nuclide, mass fraction

1	92233,	.00000	92234,	.00009	92235,	.00567	92236,	.00156
	92238,	.31045	93237,	.00035	94238,	.00000	94239,	.00029
	94240,	.00001	1001,	.00981	8016,	.39427	11023,	.00549
	12000,	.00341	13027,	.04264	14000,	.19420	19000,	.01318
	20000,	.01384	26000,	.00475				
2	1001,	.02326	8016,	.57779	11023,	.00789	12000,	.00490
	13027,	.06130	14000,	.27919	19000,	.01894	20000,	.01989
	26000,	.00683						

warning. 1 of the materials had unnormalized fractions.

1cell volumes and masses print table 50

cell		atom density	gram density	input volume	calculated volume	mass	pieces	reason volume not calculated
1	1	7.48330E-02	2.73928E+00	.00000E+00	1.14940E+07	3.14854E+07	1	
2	2	8.38290E-02	1.90533E+00	.00000E+00	2.20163E+07	4.19483E+07	1	
3	3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	0	infinite

1problem summary

run terminated when 130 kcode cycles were done.

+ 08/29/96 21:26:32

Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40g1y) 10000 Years 600K probid = 08/29/96 19:39:01

0

neutron creation	tracks	weight (per source particle)	energy	neutron loss	tracks	weight (per source particle)	energy

source	520281	9.9946E-01	2.0382E+00	escape	149	1.6730E-04	1.4604E-04
				energy cutoff	0	0.	0.
				time cutoff	0	0.	0.
weight window	0	0.	0.	weight window	0	0.	0.
cell importance	0	0.	0.	cell importance	0	0.	0.
weight cutoff	0	6.1396E-02	3.5204E-05	weight cutoff	520441	6.1227E-02	2.4254E-05
energy importance	0	0.	0.	energy importance	0	0.	0.
dxtran	0	0.	0.	dxtran	0	0.	0.
forced collisions	0	0.	0.	forced collisions	0	0.	0.
exp. transform	0	0.	0.	exp. transform	0	0.	0.
upscattering	0	0.	2.9787E-07	downscattering	0	0.	1.9292E+00
				capture	0	6.1647E-01	6.3851E-02
(n,xn)	615	9.0114E-04	6.0068E-04	loss to (n,xn)	306	4.4829E-04	3.7092E-03
fission	0	0.	0.	loss to fission	0	3.8345E-01	4.1915E-02
total	520896	1.0618E+00	2.0388E+00	total	520896	1.0618E+00	2.0388E+00

number of neutrons banked	309	average lifetime, shakes		cutoffs
neutron tracks per source particle	1.0012E+00	escape	3.2217E+04	tco 1.0000E+34
neutron collisions per source particle	7.4518E+01	capture	8.5808E+03	eco .0000E+00
total neutron collisions	38770499	capture or escape	8.5847E+03	wc1 -5.0000E-01
net multiplication	1.0005E+00 .0000	any termination	9.3585E+03	wc2 -2.5000E-01

computer time so far in this run	107.38 minutes	maximum number ever in bank	2
computer time in mcrun	107.32 minutes	bank overflows to backup file	0
source particles per minute	4.8477E+03	field length	0
random numbers generated	451369347	most random numbers used was	13557 in history 65329

range of sampled source weights = 9.2357E-01 to 1.0675E+00

1neutron activity in each cell print table 126

cell		tracks entering	population	collisions	collisions * weight (per history)	number weighted energy	flux weighted energy	average track weight (relative)	average track mfp (cm)
1	1	601228	520590	31280058	4.4781E+01	3.6133E-04	5.2618E-01	8.1350E-01	2.5733E+00
2	2	104805	51172	7490441	7.6401E+00	4.7485E-05	2.0377E-01	5.8027E-01	1.3246E+00
total		706033	571762	38770499	5.2421E+01				

1keff results for: Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40g1y) 10000 Years 600K probid = 08/29/96 19:39:01

the initial fission neutron source distribution was read from the srctp file named srctp .
the criticality problem was scheduled to skip 30 cycles and run a total of 130 cycles with nominally 4000 neutrons per cycle.
this problem has run 30 inactive cycles with 119593 neutron histories and 100 active cycles with 400688 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 520281 fission neutron source histories.
all cells with fissionable material were sampled and had fission neutron source points.

the results of the w test for normality applied to the individual collision, absorption, and track-length keff cycle values are:

the k(collision) cycle values appear normally distributed at the 99 percent confidence level, but not at 95 percent
the k(absorption) cycle values appear normally distributed at the 95 percent confidence level
the k(trk length) cycle values appear normally distributed at the 95 percent confidence level

---

the final estimated combined collision/absorption/track-length keff = .95562 with an estimated standard deviation of .00095

the estimated 68, 95, & 99 percent keff confidence intervals are .95467 to .95657, .95373 to .95751, and .95311 to .95813

the estimated collision/absorption neutron removal lifetime = 8.59E-05 seconds with an estimated standard deviation of 1.92E-07

---

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.95629	.00141	.95488 to .95770	.95348 to .95910	.95257 to .96001	
absorption	.95516	.00113	.95403 to .95630	.95290 to .95742	.95217 to .95816	
track length	.95613	.00147	.95466 to .95761	.95321 to .95906	.95225 to .96002	
col/absorp	.95559	.00094	.95464 to .95653	.95371 to .95747	.95310 to .95808	.1287
abs/trk len	.95551	.00095	.95456 to .95646	.95361 to .95741	.95299 to .95803	.1162
col/trk len	.95641	.00140	.95501 to .95782	.95362 to .95921	.95270 to .96012	.9841
col/abs/trk len	.95562	.00095	.95467 to .95657	.95373 to .95751	.95311 to .95813	

```
1mcnp     version 4a    ld=10/01/93                          08/29/96 15:14:43
 ******************************************************************************                    probid =   08/29/96 15:14:43
 inp=sp40g1z outp=sp40g1z0

    1-        Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40g1z) 10000 Years  600K
    2-        C    Calico Hills Tuff 1.5095 g/cc  .40 porosity -  sphere surrounded by tuff
    3-        C    Water and UO2 offset each other in porous space / H2O @ 500k no pu239,u233
    4-        C     CELL SPECIFICATIONS
    5-        C     INNER WATER REGION
    6-        1     1  7.48323-2   -1    IMP:N=1
    7-        2     2  8.38290-2  1 -2   IMP:N=1
    8-        C     OUTSIDE WORLD
    9-        3     0  2    IMP:N=0
   10-
   11-        C     SURFACE SPECIFICATIONS
   12-        1     SO  140        $ INNER FUEL ZONE
   13-        2     SO  200        $ TUFF REFLECTOR
   14-
   15-        MODE  N
   16-        KCODE  4000 1. 30 130
   17-        C     KSRC   0 0 1  0 0 10  0 0 -20  0 0 29  0 20 5  0 0 -5  -10 0 -10
   18-        C       0 -5 -20 -10 0 -13 0 -10 14 0 0 -15 -10 -5  -16 5 5 0 10 10 17
   19-        C      MATERIAL SPECIFICATIONS
   20-        c        32 (x .776 at 265 C) vol% water in calico Hills tuff - 8 vol% UO2
   21-        c        3.0% Original Enrichment/ 20 GWD/MT decayed to Uranium isotopes
   22-        c       10000 yr critical
   23-        m1    62149.50c   2.8219E-09
   24-              63151.55c   9.6170E-09
   25-              60143.50c   1.9432E-07
   26-              45103.50c   1.1304E-07
   27-              54131.50c   9.9667E-08
   28-              55133.50c   2.2906E-07
   29-              62147.50c   7.6323E-08
   30-              43099.50c   2.0502E-07
   31-              64155.50c   2.9053E-10
   32-              60145.50c   1.3161E-07
   33-              62152.50c   1.3106E-08
   34-              42095.50c   2.1753E-07
   35-              48000.50c   4.2020E-09
   36-              62150.50c   2.3522E-08
   37-              36083.50c   1.7568E-08
   38-              92234.50c   6.0552E-07
   39-              92235.53c   3.9787E-05
   40-              92236.50c   1.0899E-05
   41-              92238.53c   2.1513E-03
   42-              93237.50c   2.4587E-06
   43-              94240.50c   7.0065E-08
   44-                 1001.53c 1.6059-2
   45-                 8016.53c 4.0662-2
   46-                11023.50c 3.9366-4
   47-                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
   48-                19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
   49-        mt1     lwtr.03t
   50-        c        40 (x .99 at 50 C) vol% water in calico Hills tuff
   51-        m2       1001.53c 2.6477-2   8016.53c 4.1448-2  11023.50c 3.9366-4
   52-                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
   53-                19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
   54-        mt2     lwtr.02t
   55-        PRINT
1     initial source from file   srctp
```

original number of points		3929
points not in any cell	0	
points in cells of zero importance	0	
points in void cells	0	
points in ambiguous cells	0	
total points rejected		0
points remaining		3929
points after expansion or contraction		3996
nominal source size		4000

initial guess for k(eff.) 1.000000

cycles to skip before tallying 30

number of keff cycles that can be stored 260

total fission nubar data are being used.

warning. lwtr.02t and lwtr.03t are both called for.

1material composition print table 40

the sum of the fractions of material 1 was 7.483117E-02

material number — component nuclide, atom fraction

1	62149,	.00000	63151,	.00000	60143,	.00000	45103,	.00000
	54131,	.00000	55133,	.00000	62147,	.00000	43099,	.00000
	64155,	.00000	60145,	.00000	62152,	.00000	42095,	.00000
	48000,	.00000	62150,	.00000	36083,	.00000	92234,	.00001
	92235,	.00053	92236,	.00015	92238,	.02875	93237,	.00003
	94240,	.00000	1001,	.21460	8016,	.54338	11023,	.00526
	12000,	.00309	13027,	.03484	14000,	.15242	19000,	.00743
	20000,	.00761	26000,	.00188				
associated thermal s(a,b) data sets:			lwtr.03t					
2	1001,	.31585	8016,	.49444	11023,	.00470	12000,	.00276
	13027,	.03110	14000,	.13606	19000,	.00663	20000,	.00679
	26000,	.00167						
associated thermal s(a,b) data sets:			lwtr.02t					

material number — component nuclide, mass fraction

1	62149,	.00000	63151,	.00000	60143,	.00002	45103,	.00001
	54131,	.00001	55133,	.00002	62147,	.00001	43099,	.00001
	64155,	.00000	60145,	.00001	62152,	.00000	42095,	.00001
	48000,	.00000	62150,	.00000	36083,	.00000	92234,	.00009
	92235,	.00567	92236,	.00156	92238,	.31051	93237,	.00035
	94240,	.00001	1001,	.00981	8016,	.39435	11023,	.00549
	12000,	.00341	13027,	.04265	14000,	.19423	19000,	.01318
	20000,	.01384	26000,	.00475				
2	1001,	.02326	8016,	.57779	11023,	.00789	12000,	.00490
	13027,	.06130	14000,	.27919	19000,	.01894	20000,	.01989
	26000,	.00683						

warning. 1 of the materials had unnormalized fractions.

1cell volumes and masses print table 50

cell		atom density	gram density	input volume	calculated volume	mass	pieces	reason volume not calculated
1	1	7.48323E-02	2.73877E+00	.00000E+00	1.14940E+07	3.14795E+07	1	
2	2	8.38290E-02	1.90533E+00	.00000E+00	2.20163E+07	4.19483E+07	1	
3	3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	0	infinite

1problem summary

run terminated when 130 kcode cycles were done.

+ 08/29/96 17:52:51

Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40g1z) 10000 Years 600K probid = 08/29/96 15:14:43

0

neutron creation	tracks	weight (per source	energy particle)	neutron loss	tracks	weight (per source	energy particle)
source	520709	9.9864E-01	2.0320E+00	escape	126	1.4674E-04	1.8263E-04
				energy cutoff	0	0.	0.
				time cutoff	0	0.	0.
weight window	0	0.	0.	weight window	0	0.	0.
cell importance	0	0.	0.	cell importance	0	0.	0.
weight cutoff	0	6.5427E-02	3.9852E-05	weight cutoff	520897	6.5405E-02	4.4389E-05
energy importance	0	0.	0.	energy importance	0	0.	0.
dxtran	0	0.	0.	dxtran	0	0.	0.
forced collisions	0	0.	0.	forced collisions	0	0.	0.
exp. transform	0	0.	0.	exp. transform	0	0.	0.
upscattering	0	0.	3.1466E-07	downscattering	0	0.	1.9232E+00
				capture	0	6.2837E-01	6.3662E-02
(n,xn)	626	9.0213E-04	6.7489E-04	loss to (n,xn)	312	4.4990E-04	3.8210E-03
fission	0	0.	0.	loss to fission	0	3.7060E-01	4.1847E-02
total	521335	1.0650E+00	2.0327E+00	total	521335	1.0650E+00	2.0327E+00

number of neutrons banked	314	average lifetime, shakes	cutoffs
neutron tracks per source particle	1.0012E+00	escape 2.2585E+04	tco 1.0000E+34
neutron collisions per source particle	7.7377E+01	capture 9.0354E+03	eco .0000E+00
total neutron collisions	40290887	capture or escape 9.0374E+03	wc1 -5.0000E-01
net multiplication	1.0005E+00 .0000	any termination 9.8759E+03	wc2 -2.5000E-01
computer time so far in this run	158.10 minutes	maximum number ever in bank	2
computer time in mcrun	158.04 minutes	bank overflows to backup file	0
source particles per minute	3.2948E+03	field length	0
random numbers generated	468265673	most random numbers used was	12747 in history 380287

range of sampled source weights = 9.4719E-01 to 1.1001E+00

1neutron activity in each cell print table 126

cell		tracks entering	population	collisions	collisions * weight (per history)	number weighted energy	flux weighted energy	average track weight (relative)	average track mfp (cm)
1	1	604960	521023	32711757	4.6078E+01	3.3838E-04	5.1509E-01	8.0376E-01	2.5463E+00
2	2	108819	52131	7579130	7.7076E+00	4.6983E-05	2.0137E-01	5.7908E-01	1.3195E+00
total		713779	573154	40290887	5.3786E+01				

1keff results for: Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40g1z) 10000 Years 600K probid = 08/29/96 15:14:43

the initial fission neutron source distribution was read from the srctp file named srctp .

the criticality problem was scheduled to skip 30 cycles and run a total of 130 cycles with nominally 4000 neutrons per cycle.
this problem has run 30 inactive cycles with 120373 neutron histories and 100 active cycles with 400336 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 520709 fission neutron source histories.
all cells with fissionable material were sampled and had fission neutron source points.

the results of the w test for normality applied to the individual collision, absorption, and track-length keff cycle values are:

the k(collision) cycle values appear normally distributed at the 99 percent confidence level, but not at 95 percent
the k(absorption) cycle values appear normally distributed at the 95 percent confidence level
warning. the k(trk length) cycle values do not appear normally distributed at the 99 percent confidence level

---

the final estimated combined collision/absorption/track-length keff = .90902 with an estimated standard deviation of .00090

the estimated 68, 95, & 99 percent keff confidence intervals are .90813 to .90992, .90724 to .91081, and .90665 to .91140

the estimated collision/absorption neutron removal lifetime = 9.04E-05 seconds with an estimated standard deviation of 2.10E-07

---

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.90969	.00123	.90846 to .91092	.90724 to .91214	.90645 to .91293	
absorption	.90829	.00115	.90714 to .90944	.90600 to .91058	.90526 to .91132	
track length	.90945	.00128	.90816 to .91073	.90689 to .91200	.90605 to .91284	
col/absorp	.90894	.00089	.90805 to .90983	.90716 to .91071	.90658 to .91129	.1073
abs/trk len	.90880	.00091	.90789 to .90970	.90699 to .91060	.90640 to .91119	.1026
col/trk len	.90986	.00123	.90863 to .91109	.90741 to .91231	.90662 to .91311	.9827
col/abs/trk len	.90902	.00090	.90813 to .90992	.90724 to .91081	.90665 to .91140	

```
1mcnp     version 4a    ld=10/01/93                          08/29/96 13:42:02
 ******************************************************************************                probid =   08/29/96 13:42:02
 inp=sp40g1x outp=sp40g1x0

     1-        Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40g1x) 10000 Years  600K
     2-        C    Calico Hills Tuff 1.5095 g/cc  .40 porosity -  sphere surrounded by tuff
     3-        C    Water and UO2 offset each other in porous space / H2O @ 500k / extended iso
     4-        C     CELL SPECIFICATIONS
     5-        C     INNER WATER REGION
     6-        1     1  7.48351-2   -1   IMP:N=1
     7-        2     2  8.38290-2  1 -2  IMP:N=1
     8-        C     OUTSIDE WORLD
     9-        3     0  2   IMP:N=0
    10-
    11-        C     SURFACE SPECIFICATIONS
    12-        1     SO  140       $ INNER FUEL ZONE
    13-        2     SO  200       $ TUFF REFLECTOR
    14-
    15-        MODE  N
    16-        KCODE  4000 1. 30 130
    17-        C     KSRC   0 0 1  0 0 10  0 0 -20  0 0 29  0 20 5  0 0 -5  -10 0 -10
    18-        C       0 -5 -20 -10 0 -13 0 -10 14 0 0 -15 -10 -5  -16 5 5 0 10 10 17
    19-        C      MATERIAL SPECIFICATIONS
    20-        c        32 (x .776 at 265 C) vol% water in calico Hills tuff - 8 vol% UO2
    21-        c        3.0% Original Enrichment/ 20 GWD/MT decayed to Uranium isotopes
    22-        c       10000 yr critical
    23-        m1    62149.50c   2.8219E-09
    24-              63151.55c   9.6170E-09
    25-              60143.50c   1.9432E-07
    26-              45103.50c   1.1304E-07
    27-              54131.50c   9.9667E-08
    28-              55133.50c   2.2906E-07
    29-              62147.50c   7.6323E-08
    30-              43099.50c   2.0502E-07
    31-              64155.50c   2.9053E-10
    32-              60145.50c   1.3161E-07
    33-              62152.50c   1.3106E-08
    34-              42095.50c   2.1753E-07
    35-              48000.50c   4.2020E-09
    36-              62150.50c   3.4356E-08
    37-              36083.50c   1.7568E-08
    38-              55135.50c   2.2566E-07
    39-              64157.50c   2.3440E-11
    40-              44101.50c   1.7655E-07
    41-              63153.55c   6.5102E-09
    42-              59141.50c   1.9708E-07
    43-              62151.50c   2.1282E-10
    44-              47109.50c   5.0518E-09
    45-              46105.50c   4.5152E-08
    46-              40093.50c   1.4043E-07
    47-              64152.50c   2.4488E-09
    48-              46108.50c   7.0411E-09
    49-              92233.50c   6.6328E-09
    50-              92234.50c   6.0552E-07
    51-              92235.53c   3.9787E-05
    52-              92236.50c   1.0899E-05
    53-              92238.53c   2.1513E-03
    54-              93237.50c   2.4587E-06
    55-              94238.50c   1.1952E-09
    56-              94239.55c   1.9793E-06
```

```
   57-              94240.50c   7.0065E-08
   58-                 1001.53c 1.6059-2
   59-                 8016.53c 4.0662-2
   60-                11023.50c 3.9366-4
   61-                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
   62-                19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
   63-        mt1     lwtr.03t
   64-        c        40 (x .99 at 50 C) vol% water in calico Hills tuff
   65-        m2       1001.53c 2.6477-2   8016.53c 4.1448-2  11023.50c 3.9366-4
   66-                12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
   67-                19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
   68-        mt2     lwtr.02t
   69-        PRINT
1     initial source from file   srctp

 original number of points                          3974
    points not in any cell                  0
    points in cells of zero importance      0
    points in void cells                    0
    points in ambiguous cells               0
 total points rejected                                 0
 points remaining                                   3974
 points after expansion or contraction              3996
 nominal source size                                4000

 initial guess for k(eff.)                       1.000000

 cycles to skip before tallying                       30

 number of keff cycles that can be stored            260

 total fission nubar data are being used.

 warning.    lwtr.02t and   lwtr.03t are both called for.
1material composition                                                    print table 40

 the sum of the fractions of material    1 was 7.483397E-02

 material
  number     component nuclide, atom fraction

     1          62149,   .00000      63151,   .00000      60143,   .00000      45103,   .00000
                54131,   .00000      55133,   .00000      62147,   .00000      43099,   .00000
                64155,   .00000      60145,   .00000      62152,   .00000      42095,   .00000
                48000,   .00000      62150,   .00000      36083,   .00000      55135,   .00000
                64157,   .00000      44101,   .00000      63153,   .00000      59141,   .00000
                62151,   .00000      47109,   .00000      46105,   .00000      40093,   .00000
                64152,   .00000      46108,   .00000      92233,   .00000      92234,   .00001
                92235,   .00053      92236,   .00015      92238,   .02875      93237,   .00003
                94238,   .00000      94239,   .00003      94240,   .00000       1001,   .21460
                 8016,   .54336      11023,   .00526      12000,   .00309      13027,   .03484
                14000,   .15242      19000,   .00743      20000,   .00761      26000,   .00188
 associated thermal s(a,b) data sets:    lwtr.03t
     2           1001,   .31585       8016,   .49444      11023,   .00470      12000,   .00276
                13027,   .03110      14000,   .13606      19000,   .00663      20000,   .00679
                26000,   .00167
 associated thermal s(a,b) data sets:    lwtr.02t
```

material number	component nuclide, mass fraction							
1	62149,	.00000	63151,	.00000	60143,	.00002	45103,	.00001
	54131,	.00001	55133,	.00002	62147,	.00001	43099,	.00001
	64155,	.00000	60145,	.00001	62152,	.00000	42095,	.00001
	48000,	.00000	62150,	.00000	36083,	.00000	55135,	.00002
	64157,	.00000	44101,	.00001	63153,	.00000	59141,	.00002
	62151,	.00000	47109,	.00000	46105,	.00000	40093,	.00001
	64152,	.00000	46108,	.00000	92233,	.00000	92234,	.00009
	92235,	.00567	92236,	.00156	92238,	.31040	93237,	.00035
	94238,	.00000	94239,	.00029	94240,	.00001	1001,	.00981
	8016,	.39421	11023,	.00549	12000,	.00341	13027,	.04263
	14000,	.19417	19000,	.01317	20000,	.01383	26000,	.00475
2	1001,	.02326	8016,	.57779	11023,	.00789	12000,	.00490
	13027,	.06130	14000,	.27919	19000,	.01894	20000,	.01989
	26000,	.00683						

warning. 1 of the materials had unnormalized fractions.

1cell volumes and masses print table 50

	cell	atom density	gram density	input volume	calculated volume	mass	pieces	reason volume not calculated
1	1	7.48351E-02	2.73972E+00	.00000E+00	1.14940E+07	3.14904E+07	1	
2	2	8.38290E-02	1.90533E+00	.00000E+00	2.20163E+07	4.19483E+07	1	
3	3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	0	infinite

1problem summary

run terminated when 130 kcode cycles were done.

+ 08/29/96 16:44:36

Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40g1x) 10000 Years 600K probid = 08/29/96 13:42:02

0

neutron creation	tracks	weight (per source)	energy particle)	neutron loss	tracks	weight (per source)	energy particle)
source	520005	9.9999E-01	2.0413E+00	escape	129	1.3901E-04	8.1805E-05
				energy cutoff	0	0.	0.
				time cutoff	0	0.	0.
weight window	0	0.	0.	weight window	0	0.	0.
cell importance	0	0.	0.	cell importance	0	0.	0.
weight cutoff	0	6.0598E-02	4.5024E-05	weight cutoff	520214	6.0835E-02	4.5386E-05
energy importance	0	0.	0.	energy importance	0	0.	0.
dxtran	0	0.	0.	dxtran	0	0.	0.
forced collisions	0	0.	0.	forced collisions	0	0.	0.
exp. transform	0	0.	0.	exp. transform	0	0.	0.
upscattering	0	0.	2.9393E-07	downscattering	0	0.	1.9316E+00
				capture	0	6.2071E-01	6.4198E-02
(n,xn)	675	9.8269E-04	7.2896E-04	loss to (n,xn)	337	4.9053E-04	4.1077E-03
fission	0	0.	0.	loss to fission	0	3.7940E-01	4.1973E-02
total	520680	1.0616E+00	2.0420E+00	total	520680	1.0616E+00	2.0420E+00

number of neutrons banked	338	average lifetime, shakes		cutoffs	
neutron tracks per source particle	1.0013E+00	escape	3.0649E+04	tco	1.0000E+34
neutron collisions per source particle	7.3819E+01	capture	8.4525E+03	eco	.0000E+00
total neutron collisions	38386204	capture or escape	8.4556E+03	wc1	-5.0000E-01
net multiplication	1.0005E+00 .0000	any termination	9.2083E+03	wc2	-2.5000E-01

computer time so far in this run 182.24 minutes
computer time in mcrun 182.15 minutes
source particles per minute 2.8548E+03
random numbers generated 447516742

maximum number ever in bank 2
bank overflows to backup file 0
field length 0
most random numbers used was 11451 in history 377872

range of sampled source weights = 9.2421E-01 to 1.0616E+00

1neutron activity in each cell print table 126

cell		tracks entering	population	collisions	collisions * weight (per history)	number weighted energy	flux weighted energy	average track weight (relative)	average track mfp (cm)
1	1	599533	520343	31039933	4.4569E+01	3.6657E-04	5.2925E-01	8.1518E-01	2.5788E+00
2	2	102910	50260	7346271	7.5177E+00	4.7754E-05	2.0354E-01	5.8211E-01	1.3261E+00
total		702443	570603	38386204	5.2086E+01				

1keff results for: Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40g1x) 10000 Years 600K probid = 08/29/96 13:42:02

the initial fission neutron source distribution was read from the srctp file named srctp .
the criticality problem was scheduled to skip 30 cycles and run a total of 130 cycles with nominally 4000 neutrons per cycle.
this problem has run 30 inactive cycles with 119677 neutron histories and 100 active cycles with 400328 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 520005 fission neutron source histories.
all cells with fissionable material were sampled and had fission neutron source points.

the results of the w test for normality applied to the individual collision, absorption, and track-length keff cycle values are:

the k(collision) cycle values appear normally distributed at the 95 percent confidence level
the k(absorption) cycle values appear normally distributed at the 95 percent confidence level
the k(trk length) cycle values appear normally distributed at the 95 percent confidence level

the final estimated combined collision/absorption/track-length keff = .94482 with an estimated standard deviation of .00089

the estimated 68, 95, & 99 percent keff confidence intervals are .94393 to .94571, .94305 to .94659, and .94247 to .94717

the estimated collision/absorption neutron removal lifetime = 8.46E-05 seconds with an estimated standard deviation of 1.79E-07

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.94541	.00142	.94399 to .94683	.94259 to .94824	.94166 to .94916	
absorption	.94460	.00111	.94349 to .94571	.94239 to .94682	.94167 to .94754	
track length	.94528	.00138	.94390 to .94666	.94254 to .94802	.94164 to .94892	
col/absorp	.94490	.00091	.94400 to .94581	.94310 to .94671	.94251 to .94730	.0616
abs/trk len	.94487	.00089	.94398 to .94576	.94309 to .94664	.94252 to .94721	.0455
col/trk len	.94524	.00138	.94385 to .94662	.94248 to .94799	.94158 to .94889	.9818
col/abs/trk len	.94482	.00089	.94393 to .94571	.94305 to .94659	.94247 to .94717	

```
1mcnp     version 4a    ld=10/01/93                          08/29/96 13:28:41
*************************************************************************                probid =   08/29/96 13:28:41
 inp=sp40l outp=sp40l0

      Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40l) 100000 Year Cycle  350K
      C    Calico Hills Tuff 1.5095 g/cc  .40 porosity -  sphere surrounded by tuff
      C    Water and UO2 offset each other in porous space / H2O @ 300k
      C     CELL SPECIFICATIONS
      C     INNER WATER REGION
      1     1  8.03881-2   -1   IMP:N=1
      2     2  8.38290-2  1 -2  IMP:N=1
      C     OUTSIDE WORLD
      3     0  2   IMP:N=0

      C     SURFACE SPECIFICATIONS
      1     SO  140       $ INNER FUEL ZONE
      2     SO  200       $ TUFF REFLECTOR

      MODE  N
      KCODE  4000 1. 30 130
      C     KSRC   0 0 1  0 0 10  0 0 -20  0 0 29  0 20 5  0 0 -5  -10 0 -10
      C       0 -5 -20 -10 0 -13 0 -10 14 0 0 -15 -10 -5  -16 5 5 0 10 10 17
      C      MATERIAL SPECIFICATIONS
      c        32 (x .99 at 50 C) vol% water in calico Hills tuff - 8 vol% UO2
      c        3.0% Original Enrichment/ 20 GWD/MT decayed to Uranium isotopes
      c       10000 yr critical
      m1    62149.50c   3.0928E-09
            62150.50c   3.4659E-8
            60143.50c   3.4941E-07
            45103.50c   2.0316E-07
            63151.55c   1.3054E-08
            36083.50c   3.1787E-08
            64155.50c   2.2525E-10
            55135.50c   4.0782E-07
            54131.50c   1.8012E-07
            55133.50c   4.1790E-07
            43099.50c   3.2898E-07
            62147.50c   1.3874E-07
            62152.50c   2.6109E-8
            60145.50c   2.4081E-07
            42095.50c   3.9916E-07
            92233.50c   4.2045E-08
            92234.50c   8.4027E-07
            92235.50c   5.9382E-05
            92236.50c   1.6250E-05
            92238.50c   3.1474E-03
            93237.50c   3.5361E-06
            94239.55c   1.2735E-06
            94240.50c   1.2813E-08
               1001.50c 1.7714-2
               8016.50c 4.3539-2
              11023.50c 3.9366-4
              12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
              19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
      mt1     lwtr.01t
      c        40 (x .99 at 50 C) vol% water in calico Hills tuff
      m2       1001.53c 2.6477-2   8016.53c 4.1448-2  11023.50c 3.9366-4
              12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
              19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
      mt2     lwtr.01t
```

```
   57-       PRINT
1     initial source from file   srctp

 original number of points                          4244
    points not in any cell                 0
    points in cells of zero importance     0
    points in void cells                   0
    points in ambiguous cells              0
 total points rejected                                0
 points remaining                                  4244
 points after expansion or contraction             3989
 nominal source size                               4000

 initial guess for k(eff.)                     1.000000

 cycles to skip before tallying                      30

 number of keff cycles that can be stored            260

 total fission nubar data are being used.

 warning.    1001.50c and   1001.53c are both called for.

 warning.    8016.50c and   8016.53c are both called for.
1material composition                                                    print table 40

 material
  number     component nuclide, atom fraction

     1          62149,   .00000      62150,   .00000      60143,   .00000      45103,   .00000
                63151,   .00000      36083,   .00000      64155,   .00000      55135,   .00001
                54131,   .00000      55133,   .00001      43099,   .00000      62147,   .00000
                62152,   .00000      60145,   .00000      42095,   .00000      92233,   .00000
                92234,   .00001      92235,   .00074      92236,   .00020      92238,   .03915
                93237,   .00004      94239,   .00002      94240,   .00000       1001,   .22036
                 8016,   .54161      11023,   .00490      12000,   .00288      13027,   .03243
                14000,   .14189      19000,   .00692      20000,   .00708      26000,   .00175
 associated thermal s(a,b) data sets:    lwtr.01t
     2           1001,   .31585       8016,   .49444      11023,   .00470      12000,   .00276
                13027,   .03110      14000,   .13606      19000,   .00663      20000,   .00679
                26000,   .00167
 associated thermal s(a,b) data sets:    lwtr.01t



 material
  number     component nuclide, mass fraction

     1          62149,   .00000      62150,   .00000      60143,   .00003      45103,   .00001
                63151,   .00000      36083,   .00000      64155,   .00000      55135,   .00003
                54131,   .00001      55133,   .00003      43099,   .00002      62147,   .00001
                62152,   .00000      60145,   .00002      42095,   .00002      92233,   .00001
                92234,   .00010      92235,   .00719      92236,   .00198      92238,   .38606
                93237,   .00043      94239,   .00016      94240,   .00000       1001,   .00920
                 8016,   .35883      11023,   .00466      12000,   .00290      13027,   .03624
                14000,   .16506      19000,   .01120      20000,   .01176      26000,   .00404
     2           1001,   .02326       8016,   .57779      11023,   .00789      12000,   .00490
                13027,   .06130      14000,   .27919      19000,   .01894      20000,   .01989
```

26000, .00683

1cell volumes and masses print table 50

cell		atom density	gram density	input volume	calculated volume	mass	pieces	reason volume not calculated
1	1	8.03881E-02	3.22272E+00	.00000E+00	1.14940E+07	3.70421E+07	1	
2	2	8.38290E-02	1.90533E+00	.00000E+00	2.20163E+07	4.19483E+07	1	
3	3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	0	infinite

1problem summary

run terminated when 130 kcode cycles were done.

+ 08/29/96 16:52:06

Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40l) 100000 Year Cycle 350K probid = 08/29/96 13:28:41

0

neutron creation	tracks	weight (per source	energy particle)	neutron loss	tracks	weight (per source	energy particle)
source	519841	1.0003E+00	2.0322E+00	escape	79	9.4926E-05	8.1702E-05
				energy cutoff	0	0.	0.
				time cutoff	0	0.	0.
weight window	0	0.	0.	weight window	0	0.	0.
cell importance	0	0.	0.	cell importance	0	0.	0.
weight cutoff	0	5.6159E-02	5.7333E-05	weight cutoff	520196	5.6046E-02	5.6827E-05
energy importance	0	0.	0.	energy importance	0	0.	0.
dxtran	0	0.	0.	dxtran	0	0.	0.
forced collisions	0	0.	0.	forced collisions	0	0.	0.
exp. transform	0	0.	0.	exp. transform	0	0.	0.
upscattering	0	0.	1.2102E-07	downscattering	0	0.	1.9109E+00
				capture	0	5.9664E-01	6.1951E-02
(n,xn)	865	1.2543E-03	9.5469E-04	loss to (n,xn)	431	6.2505E-04	5.2194E-03
fission	0	0.	0.	loss to fission	0	4.0431E-01	5.5048E-02
total	520706	1.0577E+00	2.0332E+00	total	520706	1.0577E+00	2.0332E+00

number of neutrons banked	434	average lifetime, shakes		cutoffs	
neutron tracks per source particle	1.0017E+00	escape	1.9870E+04	tco	1.0000E+34
neutron collisions per source particle	6.1255E+01	capture	6.3316E+03	eco	.0000E+00
total neutron collisions	31842908	capture or escape	6.3329E+03	wc1	-5.0000E-01
net multiplication	1.0006E+00 .0000	any termination	6.8682E+03	wc2	-2.5000E-01

computer time so far in this run	133.81 minutes	maximum number ever in bank	2
computer time in mcrun	133.74 minutes	bank overflows to backup file	0
source particles per minute	3.8868E+03	field length	0
random numbers generated	378177980	most random numbers used was	10251 in history 399633

range of sampled source weights = 9.1137E-01 to 1.0585E+00

1neutron activity in each cell print table 126

cell		tracks entering	population	collisions	collisions * weight (per history)	number weighted energy	flux weighted energy	average track weight (relative)	average track mfp (cm)
1	1	576696	520274	26313447	3.9104E+01	4.4851E-04	5.7279E-01	8.4039E-01	2.4409E+00
2	2	75645	40265	5529461	5.7291E+00	4.9395E-05	2.2792E-01	5.9752E-01	1.3616E+00
total		652341	560539	31842908	4.4834E+01				

1keff results for: Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40l) 100000 Year Cycle 350K probid = 08/29/96 13:28:41

the initial fission neutron source distribution was read from the srctp file named srctp .

the criticality problem was scheduled to skip 30 cycles and run a total of 130 cycles with nominally 4000 neutrons per cycle.
this problem has run 30 inactive cycles with 120152 neutron histories and 100 active cycles with 399689 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 519841 fission neutron source histories.
all cells with fissionable material were sampled and had fission neutron source points.

the results of the w test for normality applied to the individual collision, absorption, and track-length keff cycle values are:

the k(collision) cycle values appear normally distributed at the 95 percent confidence level
the k(absorption) cycle values appear normally distributed at the 95 percent confidence level
the k(trk length) cycle values appear normally distributed at the 95 percent confidence level

---

the final estimated combined collision/absorption/track-length keff = .99942 with an estimated standard deviation of .00093

the estimated 68, 95, & 99 percent keff confidence intervals are .99849 to 1.00035, .99756 to 1.00127, and .99696 to 1.00188

the estimated collision/absorption neutron removal lifetime = 6.32E-05 seconds with an estimated standard deviation of 1.90E-07

---

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	1.00228	.00146	1.00082 to 1.00375	.99937 to 1.00520	.99842 to 1.00615	
absorption	.99783	.00111	.99672 to .99894	.99563 to 1.00003	.99491 to 1.00075	
track length	1.00239	.00148	1.00091 to 1.00388	.99944 to 1.00535	.99847 to 1.00631	
col/absorp	.99940	.00095	.99845 to 1.00035	.99752 to 1.00129	.99690 to 1.00190	.0741
abs/trk len	.99944	.00093	.99851 to 1.00037	.99759 to 1.00129	.99699 to 1.00190	.0249
col/trk len	1.00231	.00147	1.00084 to 1.00378	.99938 to 1.00524	.99842 to 1.00619	.9753
col/abs/trk len	.99942	.00093	.99849 to 1.00035	.99756 to 1.00127	.99696 to 1.00188	

```
1mcnp     version 4a    ld=10/01/93                          08/29/96 16:57:28
 ******************************************************************************                probid =   08/29/96 16:57:28
 inp=sp40ln outp=sp40ln0

    1-        Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40ln) 100000 Year Cycle  350K
    2-        C     Calico Hills Tuff 1.5095 g/cc  .40 porosity -  sphere surrounded by tuff
    3-        C     Water and UO2 offset each other in porous space / H2O @ 300k no UO2 infil
    4-        C      CELL SPECIFICATIONS
    5-        C      INNER WATER REGION
    6-        1      1  8.17479-2    -1    IMP:N=1
    7-        2      2  8.38290-2  1 -2   IMP:N=1
    8-        C      OUTSIDE WORLD
    9-        3      0  2    IMP:N=0
   10-
   11-        C      SURFACE SPECIFICATIONS
   12-        1      SO  140        $ INNER FUEL ZONE
   13-        2      SO  200        $ TUFF REFLECTOR
   14-
   15-        MODE  N
   16-        KCODE  4000 1. 30 130
   17-        C      KSRC    0 0 1   0 0 10   0 0 -20   0 0 29   0 20 5   0 0 -5   -10 0 -10
   18-        C        0 -5 -20 -10 0 -13 0 -10 14 0 0 -15 -10 -5   -16 5 5 0 10 10 17
   19-        C       MATERIAL SPECIFICATIONS
   20-        c         32 (x .99 at 50 C) vol% water in calico Hills tuff - 8 vol% UO2
   21-        c         3.0% Original Enrichment/ 20 GWD/MT decayed to Uranium isotopes
   22-        c      no UO2 infiltration
   23-        c        10000 yr critical
   24-        m1     62149.50c   3.0928E-09
   25-               62150.50c   3.4659E-8
   26-               60143.50c   3.4941E-07
   27-               45103.50c   2.0316E-07
   28-               63151.55c   1.3054E-08
   29-               36083.50c   3.1787E-08
   30-               64155.50c   2.2525E-10
   31-               55135.50c   4.0782E-07
   32-               54131.50c   1.8012E-07
   33-               55133.50c   4.1790E-07
   34-               43099.50c   3.2898E-07
   35-               62147.50c   1.3874E-07
   36-               62152.50c   2.6109E-8
   37-               60145.50c   2.4081E-07
   38-               42095.50c   3.9916E-07
   39-               92233.50c   4.2045E-08
   40-               92234.50c   5.3283E-07
   41-               92235.50c   3.4330E-05
   42-               92236.50c   1.0255E-05
   43-               92238.50c   1.8995E-03
   44-               93237.50c   2.1065E-06
   45-               94239.55c   1.2735E-06
   46-               94240.50c   1.2813E-08
   47-                  1001.50c 2.1182-2
   48-                  8016.50c 4.2711-2
   49-                 11023.50c 3.9366-4
   50-                 12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
   51-                 19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
   52-        mt1      lwtr.01t
   53-        c         40 (x .99 at 50 C) vol% water in calico Hills tuff
   54-        m2        1001.53c 2.6477-2   8016.53c 4.1448-2  11023.50c 3.9366-4
   55-                 12000.50c 2.3128-4  13027.50c 2.6070-3  14000.50c 1.1406-2
   56-                 19000.50c 5.5591-4  20000.50c 5.6949-4  26000.55c 1.4037-4
```

```
   57-       mt2     lwtr.01t
   58-       PRINT
1     initial source from file   srctp

 original number of points                          4031
    points not in any cell                  0
    points in cells of zero importance      0
    points in void cells                    0
    points in ambiguous cells               0
 total points rejected                              0
 points remaining                                4031
 points after expansion or contraction           4003
 nominal source size                             4000

 initial guess for k(eff.)                    1.000000

 cycles to skip before tallying                    30

 number of keff cycles that can be stored          260

 total fission nubar data are being used.

 warning.    1001.50c and   1001.53c are both called for.

 warning.    8016.50c and   8016.53c are both called for.
1material composition                                                  print table 40

 material
  number     component nuclide, atom fraction

     1          62149,   .00000     62150,   .00000     60143,   .00000     45103,   .00000
                63151,   .00000     36083,   .00000     64155,   .00000     55135,   .00000
                54131,   .00000     55133,   .00001     43099,   .00000     62147,   .00000
                62152,   .00000     60145,   .00000     42095,   .00000     92233,   .00000
                92234,   .00001     92235,   .00042     92236,   .00013     92238,   .02324
                93237,   .00003     94239,   .00002     94240,   .00000      1001,   .25911
                 8016,   .52247     11023,   .00482     12000,   .00283     13027,   .03189
                14000,   .13953     19000,   .00680     20000,   .00697     26000,   .00172
 associated thermal s(a,b) data sets:    lwtr.01t
     2           1001,   .31585      8016,   .49444     11023,   .00470     12000,   .00276
                13027,   .03110     14000,   .13606     19000,   .00663     20000,   .00679
                26000,   .00167
 associated thermal s(a,b) data sets:    lwtr.01t



 material
  number     component nuclide, mass fraction

     1          62149,   .00000     62150,   .00000     60143,   .00003     45103,   .00001
                63151,   .00000     36083,   .00000     64155,   .00000     55135,   .00003
                54131,   .00001     55133,   .00003     43099,   .00002     62147,   .00001
                62152,   .00000     60145,   .00002     42095,   .00002     92233,   .00001
                92234,   .00008     92235,   .00496     92236,   .00149     92238,   .27806
                93237,   .00031     94239,   .00019     94240,   .00000      1001,   .01313
                 8016,   .42009     11023,   .00557     12000,   .00346     13027,   .04325
                14000,   .19699     19000,   .01337     20000,   .01404     26000,   .00482
     2           1001,   .02326      8016,   .57779     11023,   .00789     12000,   .00490
```

13027, .06130 14000, .27919 19000, .01894 20000, .01989
26000, .00683

1cell volumes and masses print table 50

cell		atom density	gram density	input volume	calculated volume	mass	pieces	reason volume not calculated
1	1	8.17479E-02	2.70045E+00	.00000E+00	1.14940E+07	3.10390E+07	1	
2	2	8.38290E-02	1.90533E+00	.00000E+00	2.20163E+07	4.19483E+07	1	
3	3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	0	infinite

1problem summary

run terminated when 130 kcode cycles were done.

08/29/96 21:03:46

+ Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40ln) 100000 Year Cycle 350K probid = 08/29/96 16:57:28

0

neutron creation	tracks	weight (per source)	energy particle)	neutron loss	tracks	weight (per source)	energy particle)
source	519515	1.0009E+00	2.0355E+00	escape	75	8.9205E-05	7.2207E-05
				energy cutoff	0	0.	0.
				time cutoff	0	0.	0.
weight window	0	0.	0.	weight window	0	0.	0.
cell importance	0	0.	0.	cell importance	0	0.	0.
weight cutoff	0	5.8365E-02	1.1475E-05	weight cutoff	519716	5.8677E-02	2.1037E-05
energy importance	0	0.	0.	energy importance	0	0.	0.
dxtran	0	0.	0.	dxtran	0	0.	0.
forced collisions	0	0.	0.	forced collisions	0	0.	0.
exp. transform	0	0.	0.	exp. transform	0	0.	0.
upscattering	0	0.	1.9639E-07	downscattering	0	0.	1.9410E+00
				capture	0	6.1661E-01	5.8656E-02
(n,xn)	552	8.3282E-04	6.6934E-04	loss to (n,xn)	276	4.1641E-04	3.5466E-03
fission	0	0.	0.	loss to fission	0	3.8434E-01	3.2951E-02
total	520067	1.0601E+00	2.0362E+00	total	520067	1.0601E+00	2.0362E+00

number of neutrons banked	276	average lifetime, shakes		cutoffs	
neutron tracks per source particle	1.0011E+00	escape	2.6143E+04	tco	1.0000E+34
neutron collisions per source particle	7.7813E+01	capture	9.3603E+03	eco	.0000E+00
total neutron collisions	40425165	capture or escape	9.3618E+03	wc1	-5.0000E-01
net multiplication	1.0004E+00 .0000	any termination	1.0133E+04	wc2	-2.5000E-01
computer time so far in this run	163.20 minutes	maximum number ever in bank	1		
computer time in mcrun	163.13 minutes	bank overflows to backup file	0		
source particles per minute	3.1846E+03	field length	0		
random numbers generated	466085512	most random numbers used was	13224 in history		48043

range of sampled source weights = 9.3002E-01 to 1.0652E+00

1neutron activity in each cell print table 126

cell		tracks entering	population	collisions	collisions * weight (per history)	number weighted energy	flux weighted energy	average track weight (relative)	average track mfp (cm)
1	1	576159	519791	35393076	4.9758E+01	2.6001E-04	5.2591E-01	8.1420E-01	2.2047E+00
2	2	74196	36211	5032089	5.1829E+00	4.6889E-05	2.2497E-01	5.9223E-01	1.3423E+00
total		650355	556002	40425165	5.4941E+01				

1keff results for: Far-Field Consequence Study - 32% H2O/ 8% UO2 (sp40ln) 100000 Year Cycle 350K probid = 08/29/96 16:57:28

the initial fission neutron source distribution was read from the srctp file named srctp .
the criticality problem was scheduled to skip 30 cycles and run a total of 130 cycles with nominally 4000 neutrons per cycle.
this problem has run 30 inactive cycles with 119683 neutron histories and 100 active cycles with 399832 neutron histories.

this calculation has completed the requested number of keff cycles using a total of 519515 fission neutron source histories.
all cells with fissionable material were sampled and had fission neutron source points.

the results of the w test for normality applied to the individual collision, absorption, and track-length keff cycle values are:

the k(collision) cycle values appear normally distributed at the 95 percent confidence level
the k(absorption) cycle values appear normally distributed at the 95 percent confidence level
the k(trk length) cycle values appear normally distributed at the 95 percent confidence level

---

the final estimated combined collision/absorption/track-length keff = .94767 with an estimated standard deviation of .00087

the estimated 68, 95, & 99 percent keff confidence intervals are .94680 to .94853, .94594 to .94939, and .94537 to .94996

the estimated collision/absorption neutron removal lifetime = 9.36E-05 seconds with an estimated standard deviation of 1.93E-07

---

the estimated average keffs, one standard deviations, and 68, 95, and 99 percent confidence intervals are:

keff estimator	keff	standard deviation	68% confidence	95% confidence	99% confidence	corr
collision	.94652	.00131	.94520 to .94783	.94391 to .94912	.94306 to .94998	
absorption	.94858	.00119	.94739 to .94977	.94622 to .95094	.94545 to .95171	
track length	.94636	.00134	.94502 to .94771	.94369 to .94904	.94282 to .94991	
col/absorp	.94764	.00086	.94678 to .94851	.94593 to .94936	.94537 to .94992	-.0602
abs/trk len	.94760	.00087	.94673 to .94848	.94586 to .94934	.94529 to .94991	-.0574
col/trk len	.94656	.00132	.94524 to .94788	.94394 to .94918	.94308 to .95004	.9843
col/abs/trk len	.94767	.00087	.94680 to .94853	.94594 to .94939	.94537 to .94996	